

Motion in Art, chapter 1

Introduction

In the deepest part of the Altamira caves, in the North of Spain, the walls and ceilings are covered with images. The most surprising are the polychrome paintings on the ceiling. They cover a surface of 18 meters by 9 and we see deer and wild boar as well as the massive shapes of bison. These images, which were made between 18 000 and 14 000 BC, are of a surprisingly high artistic quality.

We are not sure why they were made. Some historians offer religious reasons. The place of the paintings, in the deepest, darkest, and most inaccessible part of the cave, as far from reality as possible, would indicate an area of ritual acts. Maybe they were made to summon an abundance of game, or bravery during the hunt? Other historians believe that, due to the remarkable artistic quality of the images, they are unique, individual creations. To support their claim, they draw our attention to the clever use the artist made of the unevenness of the walls and ceiling to give the animals relief and, in that way, emphasize to their weighty presence. Or they mention the variation in color and hue, or the exquisite treatment of shadow and light.

Art historian Siegfried Giedion adds another aspect to the paintings. Motion. The photo-images we look at can be deceptive when we try to discover what purpose these paintings served. As Giedion explains, these images should be examined by the flickering light of a torch, or that of a wick floating in animal fat. 1) Such light would only partially illuminate the walls and ceiling of the cave. It would make the images stir and quiver in a highly suggestive way. By manipulating the light, a shaman could make the animals appear on the plain and have them cross it. It would seem he could foretell the future, something that might have inspired the hunters and given them courage. Prehistoric man was almost, or completely, unfamiliar with images and watching these highly convincing pictures could have worked like an incantation.

However, these images were by no means the first way people dealt with motion. We started to use body movements to indicate things before we used our speech to do so. We still use our hands, arms and head when we want to tell something to a person whose language we don't speak. Or to emphasize the words we speak. We can express an amazing amount of things that way.

These movements acquired a certain quality in magical rituals. To influence their daily circumstances, primitive people created ceremonies in which repetitive movement played an important part. Movement became dance. These rituals served to affect certain situations such as a conflict with another tribe, the hunt, the departure of a diseased soul, or were meant as worship.

As dance itself does not leave evidence, it is impossible to say when it became part of human expression. One of the earliest indications of the use of dance can be found in the Bhimbetka cave paintings in central India. These paintings are 30 000 years old and depict, among other things, people dancing. It is quite reasonable to assume that dance is the first form of art.

In some cases we can study traditional dances that have been delivered unscratched through time, which gives us an idea of the use of dance in earlier times.

A tradition peculiar to the Tamil country - in evidence to this day - is the ritual dance in connection with the worship of Shiva. 2)

When people did not write and read, dance, together with the oral story, was a means to conserve important occurrences. Certain Maori dances still recall their migration from Polynesia to New Zealand.

A number of traditional Native American dances are meant to influence the outcome of the hunt. Some dancers play the part of the bison, others that of the hunters. These

dances first show the animals in motion, then in arrest. The better the scene was acted, the better the result of the hunt would be. There is another dance in case the hunt was a success, this time to appease the spirit of the animal killed. The tribe's shaman dresses himself with the skin of the dead animal and performs a ritual dance. In this way the animal is brought to life again and its spirit calmed, the balance maintained. Here we see the process of the hunt reversed; from arrest to movement. In more advanced civilizations dance kept its important place. Egyptian imagery shows women dancing in unison. The rhythmical motion of agricultural labor, such as the threshing of grain, could have inspired both dance and music. The same effect we undergo when we travel by train and easily transform the rhythm of the wheels on the rails into a melody.

In Greece, dance was brought together with music and poetry to form the Greek Tragedy. Apart from this sublime expression, dance took also place in other occasions. Homer, Euripides and Plato describe war dances, funeral dances, or the dances of the followers of Dionysus, the so-called Bacchantes. The Greek sought a balance between body and soul. It seems logical that dance, which is corporal movement controlled by the mind through rhythm and repetition, acted as a go-between.

Movement, or change, was detected by the first philosophers of our civilization, the pre-Socratics, as an important obstacle in defining physical reality. Wanting to base an explanation of the phenomena of the world on observation and reason, instead of falling back on magical thought, they were hindered by the constant transformation that was taking place in the world around them. Heraclitus defined this problem sharper than anyone else when he said that everything is in flux, everything is a process, there is no being, only becoming. And in a remarkable metaphor he states that we cannot step in the same river twice because its water is in constant flow. Nevertheless we identify it as the same river. The essence of the river is its eternal becoming.

While motion is linked to reality, arrest seems to be connected with the image. The ability of the image to halt reality is an important aid in explaining it. We experience the inconstancy of reality as confusing and its detention by means of images, or language, as a way to help to explain it. Religion, art, philosophy or science are all based on the faculty of putting a halt to reality. Which in turn puts us in dilemma. A true picture of the world would be ever-changing. Halting its change distorts truth. Heraclitus is said to have responded to this dilemma with a deliberately obscure and poetic expression of his thoughts, leaving them open for more than one explanation.

Plato, in agreement with Heraclitus that the world of the senses is in perpetual flux, realized that, when he wanted to establish definite descriptions, he had to create a condition in which enduring knowledge would be possible. He found this condition in the realm of *Forms*, or *Ideas*; eternal objects that exist out of the world of the senses and which we can only become aware of through reason. These *Forms* establish a definite character and are independent of the ongoing changes of our reality, which thus becomes unreal in Plato's view.

Aristotle, though a disciple of Plato for twenty years and sharing his notion that knowledge is possible, regards reality in quite the opposite way. He defines it as made up of observable phenomena. He sees the world composed of real, or natural, elements, grouped together by kind. These kinds mark real objective distinctions in the world. They are discovered, not created, and they endure despite change. Aristotle named them *categories* and said these kinds are perceived by the senses but understood by reason. Change, or motion, is a real and important factor in his view. Certain aspects of an element may change but seen through the notion of categories, the essence of the element remains unaltered.

While philosophers were grappling with these issues, Greek art seemed to follow them intuitively. We see a corresponding development from standstill towards motion.

The statues from the Archaic period, the Kouroi, were rather stiff representations of young men in a frontal stance. They are free standing, stone figures, their arms hanging down. Some wear what is called the *archaic smile*, which is sometimes seen as a way to give them a more human appearance. Often one of their legs advances timidly as though they propose to take a first step into the world of the living.

In the Classical period, sculpture starts to break away from the rigid, stylistically similar Kouroi. The *Charioteer of Delphi* is a more natural, realistic statement. His arms are lifted in his effort to manage his horses, although his position is still strangely erect. The *Artemision Bronze*, on the contrary, is a representation in full motion. We're not sure if the statue represents Zeus or Poseidon. His legs are spread and arms raised in a gesture that hints he is on the point of throwing a thunderbolt, or in Poseidon's case, a trident.

The *Dying Gaul*, as the sculpture from the Hellenistic period is inaccurately called, celebrates the Greek victory over the Celtic Galatians. The warrior, although dying, is full of movement. He is still seated among his weaponry, resisting his fate, but at the very point of collapsing and minutes away from death.

So step-by-step we see Greek sculpture breaking loose from its rigid shape and gradually taking on more complex postures. Obviously artists such as Fidiias or Praxilites were considering the expression of motion as a way of adding a sense of reality to their work. The late-Hellenistic *Laocoön group* was the apex of this striving. It was excavated in Rome in 1506 and came into possession of Pope Julius II. The sculpture group made a huge impression on Italian artists and is said to have had a major influence on the Italian Renaissance. We know that Michelangelo was deeply impressed by the group. Later works from the Florentine artist such as the *Rebellious Slave* and the *Dying Slave*, as well as the figures on the frescoes of the Sistine Chapel, show this.

Greek art concepts and abilities continued during Roman times, but after the fall of the Roman Empire the expertise disappeared. Early Christian art seems primitive to our eyes in comparison. The expression of motion underwent the same fallback and where artists tried to suggest movement it looks clumsy. The Church ruled over all aspects of life during these long years and art was an instrument of propaganda. Its only function was to illustrate and propagate the Christian belief and as such it worked with stereotyped images. It was only around 1350, a good 700 years after the fall of the Roman Empire, that artists started to leave the restrictions of religious representation behind them and to turn to the expression of reality. This happened in the Italian city-states, organizational replicas of the Greek city-states that had brought about the first climax of western art. Here a gradual recovery started. Boccaccio, in his early Renaissance chronicle, tells us the impression Giotto's work made on him.

The second, whose name was Giotto, was a man of such outstanding genius that there was nothing in the whole of creation that he could not depict with his stylus, pen or brush. And so faithful did he remain to Nature (who is the mother and the motive force of all created things, via the constant rotation of the heavens), that whatever he depicted has the appearance, not of a reproduction, but of the thing itself, so that one very often finds, with the works of Giotto, that people's eyes are deceived and they mistake the picture for the real thing. 3)

This says something about the way people experienced images before they became common phenomena. Around 1400 ad, images were still so rare, only to be seen in churches, that, according to what Boccaccio writes, a picture of Giotto, stiff as it seems to us, came across as very much alive

However, the expression of movement was not a first priority for the early Renaissance artists in their quest to recreate reality. Early in the 15th century, the

Florentine architect Filippo Brunelleschi had found a method of depicting space in a convincing way on a two-dimensional surface. This invention, called *linear perspective*, not only enabled the architect to draw persuasive plans of the buildings he designed to show to his clients and their builders; it also meant an evolution in projecting itself. Perspective meant an architect could create more complex forms. It changed architecture. We see the same happening in our time with the implementation of *Computer Aided Design*. Architects nowadays can introduce complex shapes such as curves or spirals into their buildings, shapes they were unable to calculate, perhaps even to imagine, before computer design.

Architecture was a fast developing field of art in early Renaissance Italy and so it is no wonder that this important innovation in depicting reality came from that side. It was another architect, Leon Battista Alberti who wrote the first treatise, *De Pictura*, on the use of perspective in painting. However, there was no strict separation between the different professions, and many architects also worked as painters and vice versa. Thus perspective was quickly taken up by painters such as Donatello, Massaccio or Chiberti as a way to enhance reality in their pictures. As a result, the emphasis was put on the two dimensional expression of space, rather than on the expression of motion, as a way of recreating reality.

Massaccio's fresco of the *Holy Trinity* is a good example of this overall concern for depicting space and the overlooking of motion. The four figures are completely static and only serve as points to enable the suggestion of space between them. And when Massaccio was forced to depict his figures in movement, as in his *Expulsion from Paradise*, he couldn't do it in a convincing way. Notwithstanding the terrible fury of the angel, Adam and Eve seem to be glued to the ground and the painter has to resort to drawing thin, repeated lines behind his figures, the same lines as we are so used to see in comics nowadays, to spurt them on.

It was not until Leonardo da Vinci arrived that this disregard for movement was undone.

1)

P.104

La galaxia Gutenberg

Marshall McLuhan

Galaxia Gutenberg, Circulo de Lectores S.A.

1993, Barcelona

2)

A survey of Hinduism, Page 279

Klaus K. Klostemaier

Suny Press, 1989

3)

Boccaccio, Giovanni

The Decameron, sixth day, fifth story (p 494)

Penguin classics

London, 1987

Motion in Art, chapter 2

A struggle in the dark

Leonardo da Vinci is generally regarded as a genius. He is seen as the first scientist, as an alchemist and magician, as a humanist and also as one of the greatest painters all time. He is the embodiment of the new man that rose up out of centuries full of darkness and ignorance. He is the last person in whom we still recognize ourselves when we travel back in time. Sigmund Freud wrote:

“... he was like a man who awoke too early in the darkness, while the others were all still asleep.” 1)

All of this is true, one way or another. Leonardo da Vinci was exceptionally talented and created a highly important body of work. But at the same time we cannot deny that, when we scrutinize the totality of his work, the majority of it annotated drawings, it strikes us as rather erratic. Leonardo was whimsical, jumped from one concept to another, did not always solve the problems he was confronted with, showed a lack of method, seldom tested his assumptions, hardly ever finished his projects, appropriated without any scruples the ideas of others, and didn't share his conclusions with his fellow men. His only known self-portrait, drawn around 1514 and titled *self portrait as an old man*, seems to be aware of the above. It shows him gazing inwards, the corners of his mouth drawn, and conveys disappointment bordering on sadness. He had wanted to do so much with his life and so little of it became reality.

Leonardo's collection of notebooks held an estimated 16 000 pages of drawings and notes and is doubtless the most important source of information on his way of thinking and doing. The collection is no longer complete, nor ordered chronologically. We know of some 8 000 pages, dispersed over private and museums collections. This mutilation of Leonardo's work started only a few years after his death.

Leonardo's method of working with the aid of notebooks covers a period of more than forty years. He did so in secret and we'll meet this reserve again with artists such as Marcel Duchamp or Andy Warhol. After Leonardo's death the enormous amount of notebooks came into the hands of his assistant Francisco Melzi. Melzi, who had been devoted to his master, didn't do more with it than copy certain parts with the idea of completing the *Tratato della Pittura* a book about painting that Leonardo had never finished. However, after Melzi's death the collection fell into the hands of Melzi's son in law, a certain Orazio. Orazio didn't value the work. He dismantled the notebooks and sold the pages to anyone interested. The rest was lost. In the 16th century the writer Pompeo Leoni managed to restore parts of the collection but his contribution was even more disastrous than Orazio's. Leoni cut up the pages and pasted the parts that most interested him in a new order. What he didn't use was left as snippets or disconnected pages. In 1598 he offered the newly re-composed notebooks for sale to king Felipe II of Spain. But before an agreement could be arranged the king died. Leoni left the largest part of the collection behind in Spain and only took back with him to Milan the part we now call the *Codex Atlanticus*; a collection of Leonardo's thoughts about mechanics and optics. The *Codex Atlanticus* is now treasured in the Ambrozino Library in Milan. The rest of the collection was dispersed over Europe. An important part is found in England; in the Windsor Collection, in the British Museum, in the Victoria and Albert Museum, and in the collection of the University of Oxford. Other parts are found in Turin's Biblioteca Reale, in the Institute de France in Paris, and in Madrid where in the Sixties an important number of pages was discovered in the Biblioteca Nacional; the so called *Codex Madrid*. The only collection that is found outside Europe is the *Codex Leicester*, now in hands of Bill Gates. The Leicester family had sold the collection to an American, Armand Hammer, who renamed the *Codex Leicester* in *Codex Hammer*. Bill Gates bought the collection from Hammer and restored the Codex's original name. So what is left of Leonardo's notebooks is incomplete, disordered, and squandered over two continents.

In some ways Leonardo himself is responsible for this situation. He wrote the notes that explain the drawings from the right to the left and in mirror writing. Not everybody enjoys reading in this way. And then there is his mysteriousness. Only a few people knew about the existence of his collection of notebooks, meaning that after his death there was no large body of opinion to acknowledge the importance of this body of work and keep it together and undamaged.

Leonardo's objective was to create of a kind of encyclopedia of everything known at his time. In his notebooks he brought together a lot of different subjects. In an introduction to one of the notebooks he wrote:

"This is to be a collection without order, taken from many papers, which I have copied here, hoping afterwards to arrange them according to the subjects of which they treat." 2)

Apparently he intended to write out these notes once more and put them into different chapters. This would explain the haste with which many of his drawings are made. Some are no more than the reflection of a sudden insight; sketches that were made in fewer than ten seconds, such as the one of the parachute. They are sprinkled with shopping lists, calculations, stories, diary entries, and notes on plans and intentions. The notebooks were meant for himself. They were the preparation for a huge work.

We should see the notebooks as one large work in which Leonardo has brought a considerable amount of different subjects together. By means of one style of drawing, but using several analytical ways of drawing within this style, some of them of his own invention such as the cross-section or the axonometric, he was able to bring these different subjects visually on one and the same level. This enables comparison. The use of only one style makes it possible to relate the course of the blood vessels with the meandering of a river through a valley, or to compare the arrangement of bones and muscles of the human body with the construction of a buttress of the Milan cathedral. Leonardo was an excellent draftsman who could draw anything that came before his eyes. Drawing was his way of exploring reality. This approach doesn't only explain the wide range of subjects he tackled but also the relationship he suggests between them. If he had used only written descriptions his subjects wouldn't have neared each other as much as they do with drawings. Leonardo's single concept of expression brings together subjects that are normally seen as separate. This led the way to a recent insight which holds that the separation of phenomena into categories is regarded as untruthful or artificial. Fritjof Capra expresses this view in his book about Leonardo da Vinci as follows:

"But today, a new systemic understanding of life is emerging at the forefront of science – an understanding in terms of metabolic processes and their patterns of organization. And those are precisely the phenomena Leonardo explored throughout his life." 3)

In Leonardo's work everything is about movement. We already notice in his first pictures a certain obsession with people in motion and the subject runs as a red line through the drawings and remarks of his notebooks. Such an interest was exceptional for a fifteenth-century Italian artist. Early Renaissance pictures are almost always rather static in their composition and the people that figure in them seem transfixed in their poses as if they were statues. The early Renaissance painter's goal was to portray the person in front of him, usually a well-known personality, in such a way that instant recognition was possible, usually with the aid of meaningful attributes like a crown or a mitre. Pictures were not made as the personal expression of the maker but for propaganda. Most of them were meant to affirm the importance of the person portrayed.

Leonardo started at the age of thirteen in the workshop of the famous Florentine painter, sculptor and silversmith Andrea di Verrocchio. He stayed there till he was twenty-one. Towards the end of his apprenticeship, when he was maybe twenty and already considered a highly talented painter, Verrocchio ordered him to add an angel to a painting called *the baptize of Christ* on which Verrocchio was working. This was not

unusual in the Renaissance. In the workshops of those days the master often took on the crucial parts of a work himself and left the minor parts to his pupils. However, if we are to believe the chronicler Vasari, Verrocchio was so impressed with Leonardo's angel that he never again touched a brush in his life again. 4)

It is not difficult to see why. The figures in *the baptize of Christ* are painted stock-still as if they are dummies in a shop window. They don't communicate with each other and don't seem to form part of the event that brought them together. All but Leonardo's angel. This last figure seems to be utterly transported by the importance of the happening it partakes in. Not only is the angel shown in the moment of kneeling, as if between two fixed positions, but its expression of rapture, an expression in motion, sets it apart from the other figures in this picture. Leonardo wrote in his notes on painting:

"The most important consideration in painting is that the movement of each figure expresses its mental state, such as desire, scorn, anger, pity, and the like." 5)

Leonardo used two ways to suggest motion in his pictures. He modeled the position of the body in such a way that the person seems to be in action. In this case the angel is in a position between standing and resting, with one knee on the ground. Leonardo also used gestures and facial expressions. In his pictures we find a large variety of them. He experimented a lot. There are sketches in his notebooks where he accentuated facial characteristics of people he met in the street. Mona Lisa's smile is world famous. Leonardo would bring both ways of suggesting motion to perfection in the *Last Supper* mural in Milan.

In his project *the Adoration of the Magi*, Leonardo, still a young artist, wanted to express the appearance of the Son of God on Earth. The project never got beyond a series of sketches and the under-painting in oil of the picture. Nevertheless these uncompleted images show the dizzying amount of movement Leonardo had in mind. What is normally considered a quiet, somewhat solemn, gathering, here is shown as a wild and raucous celebration. One of these sketches shows a large, canopied space, nothing like a stable, fitted up with staircases, arches and a gallery, crowded of people. Almost all of them are in action. On the balcony we see a group of people wrestling, and a naked man climbs the stairs on hands and knees. Under one of the arches another man wields an axe and in the distance of the immense space we distinguish a cluster of colliding horses and riders.

The under-painting proves that this isn't an idle fancy but a serious proposal. Centrally placed on the foreground we find Mary with her child in her arms. She is enveloped by a group of mostly old, bearded men who are working their way to her, literally crawling over the ground. A wider circle around this first group is made up of younger people who assume a more waiting attitude, limiting themselves to commenting. Space here is restricted to a ruin of crumbling staircases and some arches. Two trees are added to shape the space where the main action takes place. The boisterous movements in the background are sometimes explained as a portrait of the heathen world that is at the point of disappearing. However, the mayhem that takes place around Mary is almost as important. One can hardly call such an incomplete painting successful, but it demonstrates that Leonardo's interest in movement knew no limits and that all other pictorial aspects were of a lesser importance to him.

In 2002 a team of specialists from the Uffizi Museum in Florence discovered, during an inspection of the unfinished picture, that the under-painting had not been done by Leonardo himself. It appears that another painter, one unknown to us, had filled in Leonardo's drawing with the light and dark shades of ochre. It came as a huge disappointment to the staff of the Uffizi but it does not deny what we assert here; Leonardo's preoccupation with motion.

In 1483 Leonardo painted the portrait of Cecilia Gallirani, the mistress of Ludovico Sforza. Sforza was the master of Milan and Leonardo's employer. Leonardo had secured a place for himself at Sforza's court by writing him a letter in which he paraded his abilities. He described himself as a military expert, capable of constructing moveable bridges, of designing devastating fortifications, of digging underground passages and of inventing war materials such as cannons or an armoured car. That he was a painter he only mentions at the end of the letter as though it has just crossed his mind.

"Also I can carry out sculpture in marble, bronze or clay, and also I can do in painting whatever can be done, as well as any other, be he who may." 6)

In Cecilia's portrait Leonardo shows how much his treatment of motion sets him apart from his fellow painters. The head of the young woman is turned as if she wants to know who is entering the room. The ermine in her arms repeats this movement in its curved pose. Cecilia is portrayed as she looks over her shoulder while at the same time she stops the ermine from escaping from her arms, holding it with her long and gracious fingers. These ways were bringing the portrait to life in a new and extraordinary way.

A study in pencil, with the different positions a hand can take, shows Leonardo's obsession with gesture as a means of expression of emotion, of inner motion. He was convinced that he could display the soul of the person portrayed by showing the gestures and facial expressions.

"The hands and the arms in all their actions must display the intention of the mind that moves them, as far as possible, because by means of them whoever has a sympathetic judgment follows mental intentions in all their movements." 7)

When we compare his work with that of his contemporaries we realize how much this was a new idea. We are used to the idea that artists use all kind of means available to express their intentions, but in the early Renaissance the artists followed pictorial codes. Innovation, although often present, was of no special value by itself. We can see, for example, a clear difference in attitude towards painting between Verrocchio and his pupil Leonardo. While Verrocchio's first concern was to direct a profitable workshop, Leonardo chose for originality and freedom of creation and sought the support of a patron. Leonardo's approach changed the art of painting and many later artists studied his work because of its innovating qualities.

In the same year when he finished Cecilia's portrait, Leonardo was working on a picture that is called *the Madonna of the Rocks*. In this picture he has used all the possibilities of the gesture as a conductor of intention. To be honest, he overdid it a bit here. In this amazing ballet of pointing, blessing, supporting, protecting and praying, the hands and their gestures are the first thing that attracts our attention.

The gestures are arranged in a circular pattern. By looking straight at us, the angel is able to catch our attention at first. Its hand with the pointed index finger directs our gaze towards baby John the Baptist, whose hands, folded in prayer, lead our eyes to baby Jesus, who in turn raises a hand in a blessing gesture and redirects our gaze to Mary's face at the top of the pyramid of figures. By the inclination of her head and the long lines of her robe, Mary directs us back to baby John who transfers our gaze once more to baby Jesus. In this way Leonardo creates a pictorial loop that traps our gaze and keeps it within the picture. Mary's other hand hovers in a somewhat ambivalent gesture, something between protecting and threatening, above the angel's pointing

hand, and in this way creates a second loop that sends our straying eyes back to the first loop. With the exception of that of the angel's, the facial expressions of those present support these gestures with their directions. The way the bodies are posed plays a supportive, but less important role, in the suggestion of movement in this picture.

When we study the totality of this picture we might come to the conclusion that it was Leonardo's intention to express a certain religious moment, although it's not clear which one. However, it seems more obvious that he freely played with the possibilities of gestures and facial expressions and let his form-will prevail above the expression of a certain message. The refusal to accept the finished painting, by the brotherhood that commissioned it, speaks for itself.

Leonardo explored the possibilities of expressing movement once more in his famous *Last Supper* where he creates a complex sequence of actions around the quiet person of Jesus. In this mural Leonardo reached a perfect balance between gesture, facial expression and pose. Here we observe indignation, guilt, astonishment, fear, anger, protest, resignation, disbelief, sadness, and all of this emptied over the impassive figure in the center. The apostles implore, point, wonder, deny, request, claim, declare and dispute. This is one noisy picture. We can almost hear the loud voices and the scraping of the benches over the floor.

“A picture or rather the figures therein should be represented in such a way that the spectator may easily recognize the purpose in their minds by their attitudes ... as is the case with a deaf and dumb person who, when he sees two men in conversation – although he is deprived of hearing, can nevertheless understand the nature of their discussion from the attitudes and gestures of the speakers.” 8)

Leonardo now masters the complexity he was looking for in *the Adoration of the Magi*. As we will see, this complexity is highly structured.

The position of the table in this painting is highly theatrical. Of the thirteen participants at the meal, eleven are seated, facing us, at the long side of the table, while two of them sit at either of the short ends. The fourth side of the table is completely empty, just as it would be on a stage. The position of the mural in space, in the refectory of the Dominican Convent of Santa Maria delle Grazie in Milan, as well as its scale, helps a lot to confirm the theatrical impression. It seems if we can't look anywhere else in this large, rectangular room but to the fourth wall that is covered from the left to the right by the mural. By means of Leonardo's skilled use of perspective the picture seems a continuation of the room. As in the theatre all the action is directed towards us.

It's obvious that pictures direct themselves to their spectators, or at least to their first spectator, the artist. But in this picture all elements cooperate to create a bond between actors and audience, a closed circle that includes us in the dramatic action and turns us into accomplices. In more conventional pictures we're onlookers rather than participants. For Leonardo's contemporaries, who were not as trained in looking at images as we are, seeing this mural must have been an experience that would have come close to being actually present at the last supper. Seen this way this picture is an early example of a “site specific” work of art. By means of linear perspective actual space and pictorial space have become one.

In such a large picture it's difficult to guide the eye of the spectator. Its proportion, almost twice as long as high, makes it difficult to create the circular movement that guides the spectator through the image. Leonardo solved this problem thus. First, the eye falls on the centrally placed figure of Jesus. From there it travels over the different groups of apostles, gets caught up in their different actions and goes back and forth, steered by their poses, gestures and expressions. To ensure that our eye falls first on the person of Jesus, Leonardo places him in the very center of the picture, there were all the lines of the perspective come together, while his dark hair, placed against the

light rectangle of the window behind him, forms the picture's sharpest contrast. He spreads his arms in a gesture that works as a net for our eyes, making our gaze hang on his figure a few more split seconds. In the uproar caused by his announcement that "one of you will betray me", he keeps perfectly still, something that further distinguishes him from his surroundings. When our eyes have rested upon him for a moment, they start to register the waves of emotion that the reaction from the different apostles creates, a reaction William Wordsworth summarizes with:

"while the unguilty seek unquestionable meanings". 9)

It's hard to say which course the eye takes through the maelstrom of poses, gestures and expressions, though it's clear that at both ends of the table the action subdues a little with the less inflamed figures of Bartholomew and Simon which makes that our eyes feel inclined to move back towards the centre of the image.

So what's happening? At the left side of the picture we see, next to Bartholomew, Jacob. In shock he reaches around Andrew and puts his hand on Peter's shoulder. Andrew raises his hands in dismay while Peter, with an expression so intense that it borders on anger, seems to want to correct Jesus. As he rises from his seat he places himself past Judas who, in his fear to be found out, leans back. Judas position at the table is literally awkward. He is bent over the table, probably knocking over plates and cups, and needs his right elbow to steady himself. His spatial position is in conflict with that of John, the apostle next to him, as though Leonardo wanted to express that there is no place at this table for traitors. John's body is turned away from Jesus in abhorrence. The direction of his head introduces our gaze into a circle that consists of John, Judas, then back to Andrew whose raised hands stop us going down the table and renew our way towards the centre by means of Jacob's hand on Peter's shoulder. Peter's forward movement sends us further to John again.

When our eyes travel to the other side of the picture they will probably stop first at the compact group formed by Thomas, Jacob the Elder and Philip. Thomas, his forefinger raised, is lecturing Jesus. Jacob the Elder, nearly touching his master, opens his arms in a gesture that wants to express disbelief. And Philip rises from the table and clutches his hart in his wish to convince Jesus of his innocence. The next group of three apostles is made up of Matthew, Thaddeus and Simon. They are connected with the former group by the outstretched arm of Matthew that cuts into the figure of Philip. The members of this last group are talking among themselves, bewildered by the words just spoken. Simon's position at the end at of the table and the edge of the picture, together with his gesture of incomprehension, directs our gaze back towards the center. Matthew's gesture, which speaks of surprise and disbelief, is used by Leonardo to ease our gaze back to the group of Thomas, Jacob the Elder and Philip and via them to the central figure.

In conclusion we could say that, while the composite movement of the four apostles at the left side of the central figure is checked by the counter-movement of Judas and John, the movement at the right site falls apart into two groups of which the first one is directed straight at Jesus while the second one is fixed upon itself though connected with the first one by Matthew's gesture. The unbalance that results from Judas' backwards movement is annulled by the fiercer movements of the apostles at the pictures other site. In the large amount of tumultuous action that this picture offers, the only place the eye can find a place to rest is the silent, central figure, completely in line with the doctrine of Christianity. This turbulent mural could be rightly be seen as a pictorial machine and, as we shall see, its internal structure will be repeated in Duchamp's *Gran Verre, or Large Glass*; a work of art that is generally considered to be an image of a machine.

The *Last Supper* was a great success and, if we can believe the art historians, people queued to have a glimpse of it. The mural made Leonardo's reputation. It's a

pity that he, as an experiment, used a type of paint that wasn't able to resist the course of time. What we can see now is only a vague reflection of its original splendor.

Complexity of composition increases in the next, once again unfinished, painting; *Virgin with child and St Anne*. Apparently Leonardo wanted to fit the composition of three people and a lamb in a triangle with Anne's head as its apex. To maintain this scheme he sat Mary in Anne's lap. This is unusual, bordering on ridiculous. Only imagine the weight of a grown-up. Art historians explain this arrangement as though Leonardo tried to give shape to the strong bond between mother and daughter. They allege the same reason for the remarkable lack of age difference between the two women. But we doubt Leonardo's interest in the relationship between the people present in this painting, or in the animal that is almost strangled by the child for that matter. His only concern was the pictorial relationship. In fact, we see the same thing happen in the *Last Supper* where Leonardo, in his attempts to make the action more compact, places Judas in John's lap.

In the *Virgin with child and St Anne* the four closely joined bodies interact as one complex entity. The image shows directions, angles, rotation. It suggests a totality of motion that in its structure isn't unlike the driving axles and levers of a machine.

La Gioconda, or *Mona Lisa*, seems at first sight a perfect static and even traditional painting. If we want to look for movement here, it would have to be around the mouth, there where her seriousness is a the point of breaking into a smile. Indeed a rather subtle way to suggest movement. Nevertheless, the mouth is, maybe together with the slightly mocking eyes, the very center of this picture. So much has been said about this smile. It is often regarded as mysterious, as if it conceals some hidden meaning. However, by showing the moment between not smiling and smiling Leonardo illustrates the ambivalent character of his subjects. This fascinates us and provides the image with something that seems alive.

Vasari said:

"In the pit of the throat, if one gazed upon it intently, could be seen the beating of the pulse"

and

"reality was not more alive". 10)

Much that is written about the *Mona Lisa* comments on Leonardo's handling of the so-called *sfumato technique*. There appears to be some confusion about what exactly is understood by *sfumato* and its use. Leonardo describes its effect as follows:

"... and finally that your shadows and lights blend like smoke without strokes or borders." 11)

One can read that the "sfumato technique" is used in several places in the *Mona Lisa*, in the background; there where the hazy rockeries are, and in her face; notably around the mouth and eyes. It is sometimes described as the application of different transparent layers of oil paint. This last technique was indeed used in the background. However, it's called *glazing* and not *sfumato*. One takes a limited amount of oil paint, say a brush full, and mixes this with a large amount of turpentine; say 100 ml, which creates a highly transparent mixture. Then one applies this mixture with a soft brush across a completely dry surface. The result is a decrease in the values of color and hue of the area that underwent this treatment. It pulls the different planes together by submitting them to an equalizing action and softens the image, something that increases the effect of distance. The painter can put on as many layers as he or she

considers necessary as long as the previous layer is completely dry. The drying can take several days. Not a technique for impatient people.

As far as we can see, Leonardo used a clear greenish yellow mixture across the Mona Lisa's background. At the left side of the painting the treatment halts there where the yellow line of the road touches the red-brown colored open space. At the right side the glazing seems to stop here where the seat of the chair starts. The veil around her head is partly treated with the yellow mixture, something that heightens the effect of transparency. But it's hard to say what really happened. The discoloring of the layer of varnish, the protective last layer, acts in itself as an overall glazing, diminishing the effect of the separate layers of glazing. Besides, it is responsible for the eerie green light in which Lisa bathes.

The *sfumato* technique, as described above by Leonardo, consists of fading the edges between two surfaces of paint in such a way that they melt into each other. The effect is really different from glazing because with the *sfumato* technique the various contrasts and hues remain unaltered. One brings about the effect by setting up the surfaces in almost dry, undiluted oil paint. When the paint has dried sufficiently but is still manageable, the different surfaces are worked one into the other and their perimeters are eliminated by the aid of a soft dry brush. Leonardo used this technique around the Mona Lisa's mouth, creating the subtle swelling of the under lip and the deep shadow in the corners of the mouth. Around the eyes the same technique causes the gradual transformation of the brow into the eye-sockets. More or less the whole build-up of the face is created in this way.

We see then that there is a real difference between the two methods. Both can be combined of course. The German painter Gerhard Richter can be seen as the contemporary master of the *sfumato* technique. The *sfumato* image appears to the spectator to be slightly out of focus, making the eye want to adjust, as when we are looking at an unsharp photo. As this adjustment is impossible, the eye seeks to correct its focus and perceives movement. This effect must have interested Leonardo enormously.

Leonardo again shows his concern for complex movement in a project that he was asked to undertake, thanks to the agency of his friend Niccolò Machiavelli, by the city of Florence. *The Battle of Anghiari*, as the picture was called, would decorate one of the walls of the council chamber of the Palazzo Vecchio, opposite of Michelangelo's mural *Battle of Cascina*.

Once more, the mural was lost. It is said that the quality of the layers of paint, due to Leonardo's constant experiments with different types of paint, deteriorated in such a way that, sixty years later, the mural was repainted by Vasari, whose, as Robert Wallace says:

“second-rate mural remains on the wall today” 12)

Leonardo planned to picture a group of horsemen, fighting for the flag standard, against the panorama of a battlefield. In the sketches that remain to us we see the faces of the combatants disfigured with hate, anger or fear. In 1502, the year before he was commissioned to paint the *Battle of Anghiari*, Leonardo accompanied Cesare Borgia as an advisor on some military expeditions and must have witnessed various battles. Machiavelli was also present and his observations of Borgia's ways of doing formed the inspiration for his famous treatise on power politics; *Il Principe*. Although it is said that the battles of Borgia's campaign were rather Italian affairs with little bloodshed and much clamor, they must have made an impression on Leonardo. The faces of his warriors are very stirring. On the few preparatory sketches that are left to us we see the distorted features of the clashing men. How the complete mural looked, we more or less know thanks to the Flemish painter Paul Rubens who in 1605, forty years after the original was destroyed, made a copy from a copy.

Rubens, still a young painter, traveled through Italy studying art. He painted in the Baroque style, in vogue then, and he put much emphasis on motion. No wonder that he was interested in Leonardo's oeuvre. His copy, a drawing of the central scene of the picture, shows a cluster of horses and riders engaged in furious battle, a maelstrom of pivoting and twisting motion in which every element of the composition adds to the overall expression of complexity. It seems that Leonardo, just as Rubens was, once again had more interest in representing movement than in expressing his "abhorrence of war", as current opinion wants to read the painting. Again, as in the *Last Supper* and *Virgin with child and St Anne*, the space where the action takes place seems too small for the number of participants; four horses and seven men in total. It is hard to understand where everyone is positioned. The Milanese horseman on the left, who somewhat resembles a centaur, has got a hold of the far end of the standard; a deed which forces him into an almost impossible position. In a few seconds he will lose his balance as a result of the force his opponents exercise on the standard. The open space his rearing horse creates is filled with a kneeling warrior who protects himself, his shield raised, against the hoofs of the horse. His face is turned towards the center of the action, as are the face and sword of the above-mentioned rider. A second Milanese horseman wields his sword to undo the grip of a Florentine horseman on the other end of the standard. This thundering Florentine and his cohort shape the right side of the cluster that winds itself around the diagonally placed standard. All lines at the right side support the shock-force of the Florentine attack. These lines are created with legs of the horse, the sword and outstretched arm of the Florentine rider in the foreground. All of them run at an angle of 90 degrees to the standard, thus underlining the power of the Florentine claim. Apart from the major collision, all kinds of other movement take place. Two horses literally join the battle, their front legs entangled, biting at each other, their faces full of hate. Beneath them, again to fill up an empty space which otherwise would have diminished the furor of the picture, two men are wrestling with each other. The drawing is covered with an irregular pattern of blotches of light and shadow, the broken rhythm of which enhances the illusion of movement. If we accept Rubens' copy as a true representation, we can regard Leonardo's design as the culmination of his interest in the dynamics of rearing horses, an interest which started with *the Adoration of the Magi* and continued in the sketches he made for the never-realized statue of a horse and rider for Ludovico Sforza. More sketches from prancing horses would follow as a preparation for a picture with the subject of Saint George and the dragon some years later.

Leonardo's interest in movement is clearly visible in his paintings. However, in the sketches which he filled his notebooks with, it is the foremost subject. Working with pen and ink as a way to be able to switch from drawing to writing or vice versa without interruption, he investigated a great number of different subjects as mechanisms, or put differently, in the way they are able to move. Muscles and bones, the transformation of mathematical bodies, the course of a river, rays of light, water currents, the pressure on a buttress, transmissions, airplanes or rainstorms, almost all of his explorations are connected by this one question; how does this function?

By means of the use of one style of drawing Leonardo was able to bring different subjects in a visual way on one level, something that makes it possible to compare them and trespass the boundaries that separate them. His studies of the workings of muscles and the skeleton enabled him to create designs for couplings and levers. His observations of the flight of birds brought him to images of flying machines.

Representations of the movement of free-flowing curly hair are repeated in the turbulence of water streaming into a basin. Working in this way made him trespass the conventional limits of science, limits that were set by Aristotle almost 1800 years earlier and which found their expression in the so called categories. It brought Leonardo an insight into the connectivity of artificially separated phenomena. This insight bestows

the notebooks with a value that reaches beyond the artistic alone. His model in a way anticipates recent scientific theory.

Investigation in most fields of science has become so specialized that frequently the knowledge gained from research in one specific field remains separated from knowledge acquired in other fields, not to mention that coming from areas outside science itself. Specialization is necessary to reach a certain level of investigation, but it can leave the scientist unable to see his or her results in the context of wider knowledge. More and more we need an inclusive way of thinking, one enabling us to have an overview. The way of thinking that Leonardo suggests in his notebooks.

One of the sketches Leonardo made in preparation for his design of *The Horse*, the equestrian statue for Ludovico Sforza, gives us an insight into his way of working and the part that drawing takes up in it. The sketch shows Leonardo's different deliberations. He wanted a highly dynamic totality in which the horse would prance, turning itself to the left, while the horseman bends himself to the right. This position, in which the full weight of the bronze group would rest on the hind legs of the horse, was technically impossible, as Leonardo soon realized. As a solution he draws a fallen warrior, shield raised in self-protection, beneath the front legs of the horse, creating in this way a second point of support, taking almost half of the weight of the hind legs. To experiment further with the balance of the group, he draws the sword arm of the horseman once pointing forward and once pointing backward. He does so in the same drawing; an example of purely visual thinking. The subject of a fallen warrior under the hoofs of a horse, was repeated in the *Battle of Anghiari* and Leonardo would use it again in a sketch for the *Trivulzio Monument*. Obviously the vibrant scene with all the possibilities of expressing motion appealed to him.

Drawings of horses are to be found throughout Leonardo's sketchbooks. We see them as parts of designs, as form-studies, as the representation of power and movement. Leonardo may have loved horses, as Vasari states (13) , but we have to remember that in those days the horse was the fastest means of transport and one of the main sources of power. Leonardo probably saw the horse in this more mechanical light, given his interest in motion.

In Leonardo's drawing of a *Star of Bethlehem* we can almost see the plant grow. Out of the long, wire-like leaves, which whirl around the stem of the plant, thin stalks rise up and carry the delicate flowers to the sunlight. The particular page is filled with leaves, flowers and seeds in a whole that seems to show the complete cycle of evolution. Representations of this kind are considered as the first botanical drawings. We see the suggestion of movement, that Leonardo puts into this drawing, repeated in a drawing in which water flows into a basin. He distinguishes three different types of water movement in the basin as it fills. Where the jet of water hits the contents of the basin there is an effervescence of water and air. It fizzes and bubbles. This turbulent movement lessens when the water moves outward and transforms itself in concentric circles. At the same time we see under the surface of the water long sweeping movements that coil at their ends. Especially this last activity reminds us of the whirling movement of the long leaves of the *Star of Bethlehem* around its stem. To be able to distinguish these movements separately, actions that normally happen too fast to be registered by the human eye, Leonardo must have possessed a superhuman facility of vision. This presumption is affirmed by his drawings of the flight of birds that note down the separate motions of beating wings. Study of slow-motion film shots from similar turbulence in water confirmed, four hundred years later, the correctness of Leonardo's observations.

Towards the end of his life Leonardo repeats this same movement of water in drawings of terrible storms. In one drawing the torrents of water wind themselves around obstacles such as rocks and buildings. It is hard to see through the fury of pencil-lines but it looks as though the water is funneled through a valley during a huge

flood. In another drawing of the same series we see how the same power crashes with terrible ferocity into a pile of stones. It is as if Leonardo, reaching the end of his life, can't deal with the fact that he has to leave the world that had been the place of his research for such a long time, and he destroys it rather than have it continue without him. It reminds us of Louis XV's famous statement "après moi la deluge", "after me the deluge", made in the same mood of melancholy and indifference.

And with some goodwill we can observe that same, coiling movement in the natural fall of the angel's hair that Leonardo, still a pupil, painted in the workshop of Verrocchio. This curly movement must have fascinated him throughout his life.

The use of one and the same way of representing different phenomena suggests a structural relationship between them. One has to be careful with conclusions here. There is no real proof that Leonardo saw these resemblances in a larger light than a likeness in form. More often than not artists fall into the grip of a certain shape and keep repeating it whenever the situation presents itself. Cy Twombly, for instance, incorporates time after time elements of scripture in his pictures and Piet Mondriaan was so devoted to the horizontals and verticals of *de Stijl* movement that he put a stop to his friendship with fellow painter Theo van Doesburg when the latter started to include diagonals in his work.

Leonardo's interest in research means we like to portray him as the first modern scientist and to grant him more insight than we in truth can verify. It remains a fact that most of his work consists of drawings and that the only works which, apart from his paintings, he has actually executed, were theater props at the court of Milan. On the other hand, many of these drawings are the fruit of exploration and experiment and, in particular, of a way of thinking that excluded nothing beforehand. Leonardo's constant use of one style of drawing makes it possible to look upon these drawings as representations of phenomena that occur on one plane. It is as if here we enter a world where no boundaries exist and where we can move from one atmosphere into another. That is why we feel somewhat justified in assuming that, because he employs one way of representation, he is suggesting that the movement of water, of plants, or of the fall of hair, follow one and the same principle. We find another example there where Leonardo applies the organization of the different movements of flying, movements he deduces by observing birds in flight, in the construction sketches for flying machines. In these sketches he doesn't state a relationship but tries to create one. More of these kinds of relationships we can find in his studies of human anatomy and in numerous drawings of transmissions, levers, drive axles and connections.

Beside these types of structural similarities between different phenomena we also encounter purely formal resemblances in Leonardo's work. Thomas' lecturing finger in the *Last Supper* is repeated in several pictures and drawings but its significance eludes us. It's in the under-painting of *the Adoration of the Magi* that we first meet this gesture. A figure behind the tree in the foreground points his finger up and provokes a reaction in his neighbor. Then we encounter the gesture in the so-called "*Burlington House cartoon*", a sketch with the theme of Saint Anne, Mary, and child, an early version of the *Madonna with child and Saint Anne*. The remarkable thing here is that the gesture, which is the main pictorial object of the drawing, hasn't been elaborated by means of light and shadow but left as a hard empty spot. As if Leonardo himself was in doubt about what he wanted to say with it.

Then we see the finger pointing upwards in two pictures that both represent John the Baptist and which were painted between 1513 and 1516, and also in a drawing from 1516, *Pointing Woman*. Many historians suggest a religious reason for this gesture in the two paintings. The argument is often that these were his last pictures but it remains to be seen if Leonardo saw this in the same way. As in almost all of his work, in these two pictures Leonardo used a religious subject for the benefit of his own fantasy and depicted John the Baptist in both paintings, totally at odds with the biblical presence of

this figure, as a beautiful and sensuous youth. The gesture seems more ironical than anything else, as though Leonardo wanted to direct our attention to a matter that takes place, something we can't see happening, outside the edges of the picture. Actually, we see the androgynous beauty of the youth repeated through his work in many different figures; beginning with the angel he painted in Verrocchio's workshop. Leonardo kept important parts of his work, as well as of his personality, hidden from his fellow men and one can imagine that in moments of vanity he came to using the gesture, that he discovered in *the Adoration of the Magi*, to point to a secret content. Probably Leonardo appeared to be religious for the sake of appearances. The Catholic Church accounted for a large part of the commissions of paintings, meaning religious subjects predominated. However, we have seen how freely and against-the-grain he dealt with these subjects, completely subject to his own pictorial aims. This doesn't indicate a religious nature. Apart from which it's difficult to imagine a god-fearing person would venture on the anatomical experiments, illegal in the eyes of the Church with its dogma of literal resurrection, done in the darkness of dungeons, lit only by candlelight. The pointing gesture, we see repeated in his work, might be the expression of this confidence in his own abilities, and a covert atheism connected with it. A subtle way to communicate with us, rather than with his contemporaries?

Leonardo drew several maps during his lifetime. There is map from Tuscany that dates from the year he spent on a military campaign with Cesare Borgia. This map shows from a bird's eye perspective an area that occupies maybe as much as ten thousand square kilometers in which ranges of hills and mountains, valleys, river courses, and villages and towns are being located with precision. A comparison between this map and the corresponding satellite image from *Google Earth* confirms the precision. Leonardo's inexistent point of view defies all comprehension. How has he been able to assemble this amazing quantity of information and then, once it was complete, combine it correctly in a single drawing?

Leonardo has invented other explanatory ways of drawing. In his anatomical drawings he uses the section, and also a type of drawing that offers views in between muscles, tendons and bones, a kind of *exploded view*, as we use nowadays to illustrate the hidden technology of, for example, a car. The drawings that depict the accessories for the casting of Sforza's equestrian statue and rider, drawings from casting-moulds or levers, have been made with a precise three-dimensional suggestion. And in certain designs of fortifications he seems to develop the axonometric, a way of drawing that creates a certain distortion of the subject but preserves all mutual proportions. To be able to understand how the complicated hairdo, he wanted to give his Leda, is assembled, he drew the front as well as the side of the head to make sure that the strands of hair had a logical continuation around the head.

At certain moments during his life Leonardo busied himself with architecture. In his design of 1488 for a church, he shows a preference for balance and proportion that has more to do with an interest in geometry than with the function of the building. The search for stability he shows in this design corresponds with the illustrations he later made for a book on geometry, written by Luca Pacioli, *De divina proporcione*. 14) These illustrations all show a remarkable spatial insight. He sought the same stability in his improvement of Vitruvius' classical prescription: *Homo ad circulum, homo ad quadratum* 15), where the navel, regarded as the centre of the ideal human figure, at the same time forms the centre of a square and a circle when the outstretched arms and legs touch the circumference of the circle and the corners of the square. Although Leonardo repositioned the square with respect to the circle, and created a more truthful set of proportions in this way, he still tried to fit the human figure into a scheme. It seems that during some years Leonardo went through a phase of geometrical concern and a corresponding Platonic view, which is not characteristic of his work as a whole.

We might conclude then that, on the whole, Leonardo's main concern is one for movement. Attention to, and marveling at, things in motion runs like a thread through his work. This fascination becomes clearest in his designs for apparatus and machines and in his investigations in human locomotion.

Leonardo was certainly not the first man to busy himself with motion and machines. The first images of machines were, as far as we know, drawn by Heron of Alexandria in the first century but we can push back man's preoccupation with change and motion towards the questions that ever changing reality evoked in the pre-Socratic philosophers. Those first western philosophers called themselves "phusikoi", from which sprang our word "physics". They were people who wondered about the reason of the workings of nature. They observed a reality made up of movement and change, considered this instability as insufficiently satisfying, and started looking for underlying principles that would render the constant transformation of reality unimportant. In their contemplations of reality they would sooner put an emphasis on similarity than on difference. They were inspired by the thought that an underlying principle could provide a general explanation for apparently different phenomena. This approach remains one of the fundamental acceptances of modern science.

The pre-Socratic philosophers created an extensive array of basic principles, or "arche" as they called it. Thales considered water as the fundamental substance, something he based on its essential role in the growth of organism. Pythagoras realized that mutual proportion of the phenomena could be expressed in numbers, an expression that diminishes their confusing diversity. Democritus stated that all elements in reality were eventually made up of a single miniscule and indivisible element that he called the atom.

It was Heraclitus who asserted that the basic problem we meet when dealing with reality is its changeability, expressed with "Panta rei"; "everything is in motion". It all shows that we experience movement basically as a contribution to insecurity. The constant, but irregular, change of reality makes it impossible for us to make reliable statements about the course of things. On the other hand, we experience the recreation of motion as the ability of controlling our fate. Artificial movement repeats itself and is reliable because of that. It stretches out as far as we want and thus enables a plan. It is significant that clocks were among the first machines man created. The will to craft a machine came sooner from a psychological than from a utilitarian need. Hence the first machines are "vain" machines; creations that were admired for their ability to create motion.

Heron of Alexandria, who lived from 10 to 70 AD, probably was a teacher at an educational institution that included the famous library. This assumption is based on the fact that his texts are written as teaching material. In these texts, among other things, he explains at large different types of machines. It is not clear from these descriptions which of these machines are of his own invention and which ones aren't. The Library of Alexandria was in his time the very centre of western culture. It not only served as a place where all available knowledge was gathered and conserved but also as a place where learned men from far away places met. The library contained many texts and it is not unreasonable to imagine that Heron could lay his hands on all kind of different material.

Apart from an interest in mechanisms and automata, his books deal with subjects such as optics, the use of the power of wind and water, as well as application of steam. Heron is considered the inventor of the windmill.

His *Birds* consists of a line-up of an oblong, covered basin that is mounted on a pedestal. A lion-head provides a saucer, placed on top of the basin, with water. Four birds are sitting on the branches of two shrubs that are placed on either side of the basin. Two of them bow themselves by turns towards the saucer, appear to be

drinking, and lift themselves up again. Next to the basin we see a tree and an owl, sitting on a post. The owl is turning alternately to the left and to the right.

This machine works, as far as we can gather from the drawing, as follows. The water that flows from the lion-head into the saucer is carried off into the airtight basin. As it fills up the air pressure in the basin increases. The only way the pressure can release itself is via two narrow pipes that are mounted on either side of the saucer. The pipes are blocked at their tops by the weight of the two drinking birds. These birds are mounted on hinges and when the air pressure rises above a certain maximum the birds are pushed up and topple over, giving us the impression that they are drinking from the saucer. An imbalance makes them topple back when the pressure has escaped. The drawing doesn't explain how the birds take turns to drink.

But there is more to this machine. The accumulating water in the basin is guided through a siphon to a smaller adjacent basin. The lesser volume of the second basin, together with a second wider siphon that lets the water out, makes the water level rise and drop rapidly. A float on the surface of the water is connected to a wire that runs by means of a pulley to the post that carries the owl, around which it is wired, and then continues to another pulley that is connected to the tree. At the end of the wire is a weight. When the water level in the second basin drops, the float is carried down and pulls the owl to the right. When the water level rises again, the pull of the float diminishes and the weight at the other end of the wire pulls the owl to the left.

It's not easy to see if it is all going to work but that is of a lesser importance than the fact that in the first century of our era someone busied himself with artificial movement. As Alexandria was the direct heir of the world of thought of the ancient Greeks, we could imagine Heron's motive of devising and drawing such machines as a direct consequence of his familiarity, handed down through Aristotle, with the preoccupations of the pre-Socratic philosophers with movement.

Heron was the first to draw machines to our knowledge, but machines existed before. The Greek and Roman theatre used the so-called "*Deus ex machina*" or "*God out of a machine*". In principle this is a theatrical gimmick that saves the plot from getting stuck by means of an unexpected intervention, often in the form of the appearance of a god. The invention of the "*Deus ex machina*" is attributed to Euripides and was used widely. As said, its main use was to keep the intrigue moving but it too must have meant a spectacular moment in the play. Often the appearance was created by means of a machine and the god was placed suddenly on the stage with the help of a crane.

Villard de Honnecourt was another forerunner when it comes to designing machines. He lived around 1240 in the north of France. He left us a portfolio that contains forty-three folios that show hundred-and-thirty-three drawings of all kinds of subjects among which are several ones of machines. We see a sawing-machine that works by waterpower and a device that could be a crane. 16) However, the drawings lack clarity and we can only guess how his machines might have functioned. He also drew some automata, including one of an eagle, and made anatomical sketches. We do not know if Leonardo knew of the portfolio, but a remarkable thing is Villard's drawing of a perpetuum mobile that we see literally repeated in one of the notebooks.

Leonardo drew two more machines with the principle of continuous movement. In spite of his awareness, more than two centuries before Newton's mechanical laws saw the light, that this kind of movement is mechanically impossible, he kept on devising these machines out of sheer fascination with their promise of perpetual motion.

In the early Renaissance the Venetian doctor Giovanni Fontana wrote a treatise on technology, the so-called *Bellicorum Instrumentorum Liber 17* . Giovanni Fontana lived from circa 1396 till circa 1455 and was an early renaissance man. He is considered a follower of Aristotle. He consulted a great many different sources, Latin, Greek as well as Arabic ones and wrote about a large variety of subjects. In the *Bellicorum* we see a

design for a bazooka, a pump, an assault machine, a vehicle and a toy animal that is able, by means of a simple mechanism, to open and shut its beak and wag its tail. Apart from these “modern designs”; fruits of a new way of thinking that seems to herald the coming Renaissance, we can find drawings that are reminiscent of earlier times like the one from a curing tree or a couple of drawings that illustrate a rather doubtful kind of medical treatment.

It is very possible that Leonardo was acquainted with the works of Giovanni Fontana. Florence as well as Milan, though separate city-states, were not that far from Venice and knowledge traveled, even in those days. Leonardo even visited Venice in 1499, when the city was under the threat of the expansion policy of the Ottoman Empire and for a few months he held a commission as a military advisor to the island city. But of course many of his designs date from earlier times. And even if Leonardo saw the Bellecorum, the drawings will have served him more as an inspiration than a direct source. Giovanni Fontana’s illustrations are unclear in their various mechanical concepts. Maybe only because his lack of the ability to draw. For example, any notion of linear perspective is absent. This skill was developed, around the same time as Giovanni Fontana lived, by the Italian architect Filippo Brunichelli, but perhaps this new knowledge came to late to Fontana’s ear to be used in his book. In fact we observe very little difference in visual effect between Villard de Honnecourt’s drawings and those of Giovanni Fontana’s in spite of the one hundred and fifty years of difference. It gives us an idea how painfully slow development was up till the Renaissance despite recent theories that rightly diminish the gap that Jacob Burckhardt created between the two ages. A curious similarity between Leonardo and Giovanni Fontana is the use of cipher that both designers used when commenting their drawings.

It is no wonder that Leonardo, with his concern for movement in nature, also showed an interest in the creation of artificial movement. Most of the machines Leonardo presents us in his notebooks owe a high degree of probability of working, not only because of his superb way of picturing them, which turns every design into a work of art, but also because of the ingenuity he displays before every problem he confronts. The flying machines generally arouse most of our fascination and yet these designs should be considered as Leonardo’s major failure of insight. Although highly inventive, many of these machines are based on the way birds function.

“Suppose that there is a body suspended, which resembles that of a bird, and that its tail is twisted to an angle of different degrees, you will be able by means of this to deduce a general rule as to the various twists and turns in the movements of birds occasioned by the bending of their tails. In all the various movements the heaviest part of the body which moves becomes the guide of the movement.” 18)

One doesn’t only read the impracticability of the concept in these words but also a desperate longing. To propel his machines Leonardo trusted upon human power. The weight of the pilot as well as the, sometimes considerable, dead weight of the flying machine in relation to human muscle power makes this starting point impossible. Leonardo lacked the concept of an engine. During twenty five years he dedicated thought and many a drawing to human flight until, in 1505, as far as we know, he suddenly left the idea and did not reconsider it. Maybe he realized it was impossible after all. Or maybe disappointment finally overtook him. We don’t know.

Apart from birds, he had also based his designs on the observation bats.

“Dissect the bat, and concentrate on this, and on the model arrange the machine.” 19)

One of the machines he drew is one that is made up of a large bowl, say 20 feet in diameter, with in its centre a wooden construction that contains a series of pulleys. A man, lodged inside the construction and using hand and foot power, brings the wheels into action which in turn transmits their motion, by means of the pulleys, to a kind of oars that start moving up and down. The drawing doesn't show any covering across the oars. The covering, which would be necessary to create sufficient bearing surface, was probably left out of the drawing to make the construction clear. Robert Wallace as describes it:

“perhaps the least sound design he ever made” 20)

Another drawing shows a flying machine with a slender frame on which a man would lay prone and manually operate artificial wings. The apparatus doesn't look too heavy and even has a certain elegance. Still Leonardo's most willing admirer must agree: it would never fly.

A completely different matter is the drawing of the helix. This machine like this, aeronautic engineers admit, could fly if being propelled by an engine. The rather large surface of the helix in comparison to the reduced frame of the machine adds some credibility to the design. In this case Leonardo bases himself on another principle; that of the creation of a vacuum under the bearing surface as a consequence of the rotating motion of the helix that would carry the flying machine. The bearing principle of a vacuum is easily visualized when we hold a spoon with its convex side up under a running tap.

Completely feasible, although technically we don't call it flying, is Leonardo's pyramid shaped design for a parachute. It is striking that he drew this revolutionary idea apparently in a great hurry. If we trace with our finger the lines of this drawing we notice that sketching it hasn't taken up more than ten seconds. It makes you wonder if Leonardo himself realized the genius of his idea.

It would take three hundred years before man took to the air in fact. In 1783 Pilâtre de Rozier and the marquis d'Arlandes made a flight of twenty-five minutes at a height of twenty seven hundred feet above Paris in an air balloon designed by the Montgolfier brothers. In 1912, the same year that Bleriot flew for the first time from Paris to London, Fernand Leger wrote about a visit that he paid, together with Constantin Brancussi and Marcel Duchamp, to an exhibition on aeronautic technology, where Duchamp put the following question to Brancussi:

“La peinture est morte. Qui pourra faire mieux cette hélice? Dis-moi, tu en serais capable, toi?” 21)

A sheet with drawings of different transmissions from 1490 bears witness to Leonardo's broad insight into mechanics and his extraordinary precision of depicting them. In this way of drawing, contrary to what is usually seen by draftsmen as clear, he used shadow. Often a correct use of light and dark, with some exceptions there where the shadows would obscure an essential design feature, adds greatly to the expression of the drawing. Typical technical drawings avoid shadow to render the information as clearly as possible and only a master in the “Chiaroscuro” as was Leonardo could clarify a drawn concept by adding shadow. We are not in the least hindered by it in following the course of motion through the mechanism of gears.

The transmissions, the sheet shows, were meant to improve the construction of the weaving-loom and would have done so, had they been applied. Nevertheless, when we look at the sheet with the different drawings, it is hard to wrest ourselves from the impression that Leonardo was as much in the grip of the pictorial possibilities as in technical improvements.

A transmission is not a machine but it is interesting that Leonardo, although he didn't have the concept of an engine, he sensed the importance of the transmission of movement; a key principle to be able to convey the single movement an engine produces into a series of different movements.

His automobile, an unfinished sketch from 1490, was probably made as a reference for future elaboration for here even the typical coded text lacks, is an especially appealing design. The car is one of the important symbols of our time and brought individual mechanical movement within reach of most of us living in the Western World. But although this sketch draws Leonardo close to us, it is not the first drawing of an autonomous moving vehicle. A hundred and fifty years before, Villard de Honnecourt drew, although very clumsily, a vehicle that has more of our modern day car than Leonardo's automobile.

Leonardo's one is being propelled by alternately releasing the power of two springs in a controlled way. "Escapement" is the technical term for this process. The power is transmitted by a gear mechanism to the wheels. While one spring releases its energy, the driver has to wind the other spring. At the same time he has to manage the vehicle through the traffic by means of what we could only describe as a rudder. No doubt it would be easier to walk.

The first use of springs as a means of propulsion is usually attributed to a German clock-maker, Peter Henlein, from Neurenberg. His timepieces gained fame around 1511, more than twenty years after Leonardo's car design.

Timepieces form a separate group of machines. That clocks are part of the earliest mechanisms designed is surely connected with the fact that no other artifact can provide us with such a strong illusion of managing our future. The clock presents us an outlook of unity and reliability. It hints that our undertakings are durable and that we are in control of them.

In the *Divina Comedia*, written around 1300, Dante already mentions the existence of timepieces.

"Then, as a horologe that calleth us ..." 22)

Until Henlein's innovation of a spring driven mechanism, clocks were usually set in motion by weights. One of the best-known and most ingenious timepieces is the *Astrarium*, or the astronomical clock, from Giovanni Dondi from 1364. It was almost one meter high and told, by means of several faces and hands, the hour and the minutes, the movements, according the theories of Ptolemy, of all known planets at the time, all festive days, including those without a fixed date such as Easter, as well as the solar and lunar eclipses. This last was made possible by a wheel that took eighteen years to turn once around his axis; a truly mechanical marvel.

Timepieces use a minimum of energy and the relative immobility of a clock, driven by weights or by a spring, made these machines popular. Giovanni Dondi presented his clock to his patron, Duke Gian Caleazzo Visconti, from Pavia. The object was placed in the library and people came from far and wide to admire the famous clock.

In 1916 Marcel Duchamp coined the expression "*machine célibataire*", or "*bachelor machine*" to describe the kind of machines that have another function than propulsion. Even an artifact as Dondi's clock that literally gave information, served in the first place to amaze and to charm. Many of Leonardo's designs seem to fall in this category. Although in some occasions he was contracted to solve architectural or engineering problems, most of the design problems in the notebooks are self-imposed. Sforza wasn't interested in his ideas on weaponry or fortifications. He employed Leonardo for purely artistically enterprises. In Cesare Borgia's service Leonardo comes across as a mere spectator. In Rome, where he worked for the papal mint, he designed machinery

but his efforts remained limited to sketches and it was Benvenuto Cellini who actually put the plans in working order. **23)** Many of the drawings in his notebooks reflect no more than a personal struggle with self-imposed problems and lack the necessary links between idea and execution. Leonardo thought of machines for his own pleasure and, maybe, also to consider himself as the first person who had an insight in things that belonged to the future.

Leonardo spent the last years of his life at the court of king François the First at Amboise, France. The king commissioned him to build a new royal palace at a site near the village of Romorantin. Curiously, Romorantin is the destination of one of the first surrealistic experiments with chance. In May 1924 André Breton and a group of fellow surrealists traveled by train from Paris to Blois, a place they selected by pointing blindly at the map of France. In Blois they started to walk in a random direction that brought them to Romorantin where they broke of the experiment, overcome by tiredness and boredom probably.

Not much is known about Leonardo's plans for a royal palace. Carlo Perelli, an Italian art historian, identified in 1972, on several seemingly unconnected pages from the notebooks, drawings that corresponded with the project. One sheet of the *Codex Atlanticus* shows a sketchy ground plan for the double palace between a geometric design of channels, while in the *Codex Arundel* sketches of palaces are to be seen. It seems that Leonardo thought once more about a hygienic city, an idea he had developed during his stay at the court of Ludovic Sforza. He suggested building a brand new capital. This new Milan would be divided into ten cities with no more than thirty thousand inhabitants each. Channels would dispose of the waste, which in his days accumulated on the streets of the cities, and the streets of the new city wouldn't be less wide than average height of the buildings joining them. Leonardo also devised a separation by different levels between pedestrians and traffic, an idea that would be taken up again at the beginning of the twentieth century by the Italian Futuristic architect and urbanist Antonio Sant'Elia. The channel water that was to keep the palace and other provisions clean was kept in motion by windmills.

“The main underground channel does not receive turbid waters, but that water runs in the ditches outside the town with four mills at the entrance and four at the outlet; and this may be done by damming the water above Romorantin.” **24)**

Leonardo, reaching even further into the future, speaks about pre-fab houses too:

“Let the houses be moved and arranged in order; and this will be done with facility because such houses are at first made in pieces on the open places, and can be fitted together with their timbers in the site where they are to be permanent.” **25)**

In 2010 the archeologist Simon Bryant discovered that the plans for a royal palace had not been limited to paper only. In a Napoleonic land registry he found a description of a huge piece of land along the Sauldre river. Archeological explorations showed that soil had been shifted between 1517 and 1519. At the same place remnants of limestone foundations were found. Yet the romantic poet William Wordsworth hints at the place of the palace a good hundred and fifty years earlier:

“And when my Friend
Pointed upon occasion to the Site
Of Romorantin, home of ancient Kings,” **26)**

In the same Napoleonic archive the names of the laborers who worked at the site were found. It is assumed that with Leonardo's death the project came to a halt. It's

interesting to speculate, and at the same time sad to realize that we'll never be sure, how Leonardo would have imagined the royal palace of France and its complementing gardens. How it turned out in reality we'll see in the next chapter.

1

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Motion in Art, chapter 3

And yet it moves

In 1642, the Dutch painter Rembrandt van Rijn finished a picture called, *De compagnie van kapitein Frans Banning Cocq en luitenant Willem van Ruytenberg maakt zich gereed om uit te marcheren*, or *The company of captain Frans Banning Cocq and lieutenant Willem van Ruytenberg preparing to march out*, commonly known as *De Nachtwacht*, or *The Night Watch*. From our perspective, looking out beyond it over centuries of art, it seems that all that had been achieved before, in many separate masterpieces, blends together in this picture. And starting from it, going back to our own time across four centuries of art, we do not find it matched. It is in this picture that Leonardo's elaborate gesturing, Titian's burning colors, and Caravaggio's *tenebrisme* merge into an extraordinary flare-up of vivacity.

What do we see when we look at it?

Our eyes fall upon a man who advances upon us. His left arm stretches out in front of him in a gesture that wants to strengthen the argument he is unfolding to his second in command, his eyes staring unseeingly in the near distance, concentrated as he is on his line of reasoning. At his left side, in a bright yellow uniform, the lieutenant is listening attentively, his face turned toward his captain, although something in his posture, his right hand firmly planted in his waist, his left hand strongly gripping his lance, combined with his resolved gaze, could give us the impression that his superior has yet to win his claim.

Then our eyes transfer to a girl, somewhat deeper in the picture, wearing a dress the same vivid yellow as the lieutenant's attire. She is keeping pace with a boy next to her, at whom she directs her gaze, which could be described as a mixture of excitement and concern. Not to the boy however our eyes travel. Instead we become aware of a soldier dressed in red, next to her. He comes forward while pouring gunpowder down the barrel of his rifle. The gesture takes our eyes further upwards, passing along a

group of faces, led further upwards by the shiny blade of a lance towards the standard that dominates the left hand corner of the picture. From there our gaze descends to the proud standard-bearer and then upon a group of people that seems to press forward, brandishing lances and swords, only to be stopped by the outstretched arm of a sergeant at the very right side of the picture. Then we become aware of the bulky drum beneath him, and across a pool of deep shadows, of a soldier in red, blowing clear the chamber of his gun from burned powder rests, with which our eyes return to the captain in which was a first rapid circular journey across the immense surface of *The Night Watch*, guided by the compositional qualities Rembrandt installed.

A second journey, more conscious and slower this time, reveals a secondary plane of action. We notice the difference in dress between the captain and his lieutenant. The first one is dressed in a civilian way; the typical, somewhat puritanical, dress of a Dutch gentleman, but adorned with a brilliant red sash, a mark of distinction 1). The second one wears a uniform, boots and a weapon. His white sash is bound around his breast rather than having it impede the movements of his fighting arm when worn over one shoulder, as his captain does. His hat is prettified with a white feather. Then, once more we fix your eyes on the girl; notice the splendor of her dress and, rather incongruous, the presence of a dead chicken hanging from her belt. After that we observe the boy, the girl is hurrying next to. Laurels adorn his helmet and he fires a gun, no doubt the reason for his companion's anxiety. His aim is redirected by a man who, using the back of his hand, tilts the barrel somewhat higher. A good thing too: the gun may have been loaded or not, but the spray of exploding gunpowder might have hurt someone standing near. Above this man, our eyes come to rest upon the various individuals that form the background. A man with a top hat, holding up his lance high in the air, a man with a plumed helmet, aiming his lance almost vertically, another one with a helmet but no visible weaponry. Then, on the other side of the standard-bearer, we become aware of a group of five soldiers, one of which remains hidden behind the others. Separated by the flag from the main group, they seem anxious to join the general movement. At the right side of the picture, we notice that the group behind the sergeant must be larger than we first thought. Some lances are taken from the wall against which they rest and many more are awaiting their owners. And then, peering into the shade, we see a dog barking at the drummer and, on the other side, leaving the picture, a boy running away from the central group. Behind this scene, the arc of what might be the one of the city's gates, or is it the entrance of a large building, looms in deep shadows.

The picture is huge, 363 by 437 cm.

It is a group portrait of a company of *Schutters*; a group of volunteers dedicated to the defense of one of Amsterdam's city districts. During the war with the Spanish monarchy, these companies had been a military necessity, but in Rembrandt's time membership was merely decorous; a step up the social ladder that could lead to important functions in the city's administration. This explains the unmilitary behavior of most of the affiliates, such as perilously waving lances or firing a gun, empty or not, amidst a crowd. Or their weird, almost theatrical, dress. In fact, the whole image speaks of chaos. We observe a large group of soldiers who try, by pushing their way forward, to close ranks behind their captain and his aid, but are impeded by their lack of discipline as well as by physical hindrances such as the children running between them, or a barking dog. Not that the captain seems to care much about the poor image his troops are presenting. He is in the middle of clarifying his thoughts. His aid, whom is suffering this, does seem more conscious of what is happening around him, but probably feels he cannot interrupt his superior.

Why would Rembrandt depict this group in such a lamentable state?

One explanation might be that Rembrandt, the foremost painter of the Dutch Republic, must have had something of a prankster. Some of the painter's early self-portraits suggest that such an assumption is not too far fetched. The disorder, the confusion, the sheer mess these soldiers turn parading into, could well be an ironical reflection on the goodwill and ineptness of his fellow countrymen. The gesture of the captain seems to support his own argument but could as well be interpreted as expressing: Look at us, this is who we are. He has taken off his left-hand glove, maybe in defiance of our mockery.

To the artist these gentlemen might have come across as over-serious about their careers. During the preparation for the painting, Rembrandt had these people coming into his studio, day in day out, sitting for him, telling him about their prospects, their schemes to rise in esteem, their plans once in power. It might have irked him sufficiently to play them a formidable trick.

On the other hand, in his *Discours de la méthode* René Descartes, a longtime resident of Amsterdam, gives a rather positive interpretation of the lax mentality of the Dutch soldier.

Mais ayent le coeur assez bon pour ne vouloir point qu'on me prit pour autre que je n'étois, je pensai qu'il falloit que je tâchasse par tous moyens à me rendre digne de la réputation qu'on me donnoit; et il y a justement huit ans que de désir me fit résoudre à m'éloigner de tous les lieux où je pouvois avoir des connaissances, et à me retirer ici, en un pays où la longue durée de la guerre a fait établir de tels ordres, que les armées qu'on y entretient ne semblent servir qu'à faire qu'on y jouisse des fruits de la paix avec d'autant plus de sûreté, et où, parmi la foule d'un grand peuple fort actif, et plus soigneux de ses propres affaires que curieux de celles d'autrui, sans manquer d'aucune des commodités qui sont dans les villes les plus fréquentées, j'ai pu vivre aussi solitaire et retire que dans les déserts les plus écartés. 2)

But Rembrandt also seriously intended to bring the subject of group-portraits of *schutters* to life. In the hands of his contemporaries these pictures were no more than a collection of individual portraits, grouped together on the canvas. Each member of the company paid the painter separately to be included in the group, a way of doing that often gave the result an effect of a collection of heads. Although *The Night Watch* was conceived in the same way, Rembrandt left all convention behind him and created something that was completely out of the usual.

No doubt motion is the main subject of this picture. The Baroque, of which we could consider Rembrandt as the furthest satellite out, was a style that valued movement highly.

Its blend of illusionism, light and colour, and movement is calculated to overwhelm the spectator by a direct emotional appeal. 3)

Almost every single element of this work of art, with exception of the building behind the scene, is pictured as in motion. Each integrant is active and a whole array of possible movements is displayed. We see people move forward, talk, gesticulate, push, drum, fire, wave, bend, blow, or lurch. Even the lances, resting against the wall, seem on the point of being grabbed by soldiers hidden still from our view outside the frame. It is a noisy scene too. We can almost hear their voices, the shuffle of many feet, occasional gunshots, the clang of weaponry reverberating in the hollow of the gate, while the roll of the drum will soon drown out everything. It is as if Rembrandt has taken Vondel's words, the foremost Dutch poet of those days, spoken in mild critic after seeing the painter's portrait of the Baptist lay preacher Cornelis Anslu known for his eloquence, to heart,

Op Cornelis Anslō

Ay, Rembrandt, mael Cornelis stem.
Het zichtbre deel is 't minst van hem:
't Onzichtbare kent, men slechts deur d'ooeren.
Wie Anslō zien wil, moet hem hooren. 4)

and made sound visible.

However, within the pandemonium that presents *The Night Watch* at first sight, we can find elements of organization. Underneath the apparent chaos rests a careful composition that guides the eye through the scene. Instead of turning our eyes away, as we often do when we see something that confuses us, there are directives that make us stay with the image. It is as if Rembrandt wants to tell us that despite the undisciplined appearance and the unmilitary stance of the company, that regardless of being so full of themselves, they are good and loyal citizens, worth of our esteem. To establish this organization, the artist makes use of three tools mainly: clair-obscur, direction, and, to a lesser extend, color.

Clair-obscur means the separation between light and dark parts. The use of a strong difference, such as is common in Rembrandt's work is called *tenebrisme*. The term comes from the Italian and reflects in the English adjective *tenebrous*. When we look at the picture with our eyes almost closed, we first observe the bright white shape of the captain's collar, flanked by two clear areas; the bright yellow garments of the girl and the lieutenant. Then we notice that they are surrounded by a series of smaller light spots that meander horizontally through the lower half of the picture. We also observe that most of the image remains in the shadows.

Painters often exaggerate the difference between light and dark. The bright quality of daylight can never be matched with white paint. To maintain the contrast between the lightest and the darkest places of the subject, the painter will overstress the darkness of the shadow areas. Although indefinitely less intense than daylight, the light areas will now give the impression of being very bright.

In *The Night Watch* Rembrandt employs the clair-obscur in such a way that our attention first falls on the captain and the people directly surrounding him. Only after we have taken them in, the effect allows us to examine the rest of the picture.

The second tool of organization Rembrandt uses is direction, and especially symmetry in direction. The parallel directions starting out from both sides of the group in the foreground serve the same purpose as the distribution of clair-obscur. They draw the eye away from the strong central elements in the picture. Leading us towards less demanding areas, they avoid that these elements take up all our attention. This effect reminds us of the gesture of Christ in Leonardo's *Last Supper*. As a matter of fact, Rembrandt made a study in pencil from what must have been a copy of the painting. A copy because we know the artist has never left his native country. The study, done around 1635, 7 years before completing *The Night Watch*, and thus probably unconnected, may still have drawn Rembrandt's attention to Leonardo's clever solution confronted with the problem of spreading the spectator's attention across the extremely wide picture; having Christ spreading his arms to both sides of the table towards the separate groups of apostles. 5) Rembrandt's study shows two masses of people in motion, one on the left and one the right of the main person. Precise construction of the persons building these masses does not seem of importance. All Rembrandt's attention in this sketch goes to the center figure as the connecting factor between the two groups.

The symmetry is all-important in connecting the different groups of people in *The Night Watch* and reestablishing their unity after our first disastrous encounter with the company.

Look at the direction of the captain's baton; it runs parallel with the gun the soldier in red handles, as well as with the pole that holds up the standard. By coordinating the way these lines run, Rembrandt relates the figures in the fore, middle, and background, and recreates the idea of a corps. Additionally, these parallel lines strengthen the contradictory movement of the two children behind the captain, brought in to liven up the picture.

Equal elements of symmetry we can find at the other side of the picture. The parallel directions of the lance, wielded by the man with the plumed helmet, the barrel of the gun, the one of which the chamber is blown clean by a soldier, and the lance the lieutenant holds in his right hand, connect the two opposed groups in the background with each other, and both groups with the figures in the foreground.

We can divide the large cluster of people in the background in two groups. There are those who move from left to right, the largest group which seems to swell over the small set around the captain, only to be stopped by the commanding gesture of the sergeant who forms part of the second group; the smaller one that moves from right to left. There is symmetry here too; the larger volume of the first group is counter-balanced by the bulky shape of the drum and the mighty array of spears, as well as the cords of the drum running parallel with the two lances already taken from the wall. The extraordinary image of a cross of three lances at the upper left side of the picture weights up against the large surface the standard takes in at the right side, balancing both sides, in the same way as the verticality, created by the lances resting against the wall is countered by the single, shiny lance, held up at the left side. These elements somewhat reduce the clash of the two groups of soldiers trying to fill in behind their leader.

The directions in which the people in the picture are looking helps getting the composition into grip too. They form delicate connections between different fractions of the image, binding them together. The drummer is watching his captain for a signal, the girl is looking at her companion with anxiousness, the standard-bearer admires the colors, the dog is anticipating the drummer's crescendo.

The positioning of the heads and their directions may even have formed an element in defining the different characters in the company.

Color is used with the same purpose as clair-obscur and direction. The main character of *The Night Watch*, Captain Frans Bannink Cocq, dressed in austere black, but not without a large white collar and a splendid red sash, is flanked by two figures in bright yellow, isolating the captain's dark costume from the equally dark background, pushing him forward into our field of vision. However, the whites of the lieutenant's sash, the plume on his hat and the dead chicken dangling from the girl's waistband, draw them together, playing their essential part in the organization of the clair-obscur. The reds of Bannink Cocq's sash, and the soldier's uniforms left and right from him, isolate foreground from background.

The unobtrusive greens of the standard bearer's uniform and the drummer connect these two exceptional positions in the company, and, together with smaller splashes of green such as the laurels on the boy's helmet, further help balancing the picture. As in many of Rembrandt's other works, there is no pure blue present in this picture.

But Rembrandt uses an even subtler form of distinguishing the group in the foreground. The soldiers in red and the boy behind the captain all are handling a gun, but they do so in different phases. The soldier at the left prepares his gun for firing, stocking the barrel with gunpowder, the boy fires a gun, and the soldier at the right cleans the chamber of his gun after firing. By depicting this process, Rembrandt

creates a circle around the main group in the same way as we encircle something with pencil we feel that is important.

Almost 100 years before Rembrandt completed his masterpiece, the world itself had come into motion. For almost two millennia, the Earth had been firmly anchored in the centre of the universe, with the stars and planets revolving around her in perfect circles. It had been given this foremost place by Aristotle, who in his *On the Heavens* 6) suggested a geocentric universe, composed of fifty-five concentric crystalline spheres, rotating at different speeds, with a fixed, spherical Earth at its centre. This state of affairs was to continue unchanged throughout eternity. Aristotle's universe existed of five elements, the familiar ones of earth, fire, water and air, of which Earth, Sun and Moon were made of, and aether, the substance of which the heavens were composed. Plato had already stated that the planets could only move in the most ideal way. This meant movement in perfect circles; the kind of motion closest resembling inertia.

And yet there is no difficulty in seeing that the perfect number of time fulfils the perfect year when all the eight revolutions, having their relative degrees of swiftness, are accomplished together and attain their completion at the same time, measured by the rotation of the same and equally moving. 7)

Aristotle's universe is accordingly built up from perfect concentric circles although the behavior of the planets was too irregular to fit in such a scheme. Some phenomena, such as the varying brightness of the planets or their retrograde movement, could not be explained.

In the following centuries, astronomers kept on trying to refine Aristotle's system, suggesting solutions by adding concentric movement within concentric movement, so called epicycles.

Finally, in the second century, the Alexandrian mathematician, astronomer, and cartographer Ptolemy collected these various ideas in a book called *Almagest*, which became the reference for astronomical knowledge for the next fourteen hundred years. Hence the term *Ptolemaic universe*.

Only in the sixteenth century, this state of affairs began to change. In 1543, after long years of deliberation, an unassuming and quiet man called Nicolas Copernicus published *De Revolutionibus*, a book that would change our view of things in such a way that many historians place the start of modern science with its publication.

In this book, Copernicus explains in a most careful way that the Ptolemaic concept of geocentrism, a vision in which the earth is regarded as the center of the universe, is erroneous and should be replaced for a heliocentric concept, of which he offers the outlines. To reach this conclusion, he had made extensive use of data gathered by others, using Hellenistic, Roman, as well as Arab sources. Prudently he left philosophical issues aside, and concentrated on the mechanical workings of the heavenly bodies and the mathematical consequences of their movements.

Copernicus was by no means the first to suggest the Earth's movement. As early as the third century B.C., the Greek astronomer Aristarchus of Samos has suggested heliocentrism. And in the Italy of Copernicus' study years, the concept certainly circulated. However, these ideas concentrated precisely on the philosophical significance of heliocentrism, and did not sought proof in the way of calculations.

Copernicus had completed the theories he explains in *De Revolutionibus* years before. But, aware of its explosive content, he kept them quiet for a long time. As he writes:

not nine years merely, but already going on four times nine 8)

As early as 1514, a few trusted friends could read a manuscript called *Commentariolus*, or *little commentary*, in which a heliocentric hypothesis was unfolded.

In 1532 he completed *De Revolutionibus*, which again a small circle of friends and colleagues could read, but which he refused to publish. Nevertheless, his fame began to grow and it became increasingly difficult for him to resist fully revealing his ideas. Finally, a young German mathematician, Georg Joachim von Lauchen, also called Rheticus, was able to convince him. The book was published in May 1543, the same month that Copernicus died.

It starts with a humble excuse for expressing his thoughts, directed at Pope Paul III. Let us look at some of these delicate phrases with which Copernicus starts putting forward his ideas.

I can easily conceive, most Holy Father, that as soon as some people learn that in this book which I have written concerning the revolutions of the heavenly bodies, I ascribe certain motions to the Earth, they will cry out at once that I and my theory should be rejected. For I am not so much in love with my own conclusions as not to weigh what others will think about them, and although I know that the meditations of a philosopher are far removed from the judgment of the laity, because his endeavor is to seek out the truth in all things, so far as this is permitted by God to the human reason, I still believe that one must avoid theories altogether foreign to orthodoxy. Accordingly, when I considered in my own mind how absurd a performance it must seem to those who know that the judgment of many centuries has approved the view that the Earth remains fixed as center in the midst of the heavens, if I should, on the contrary, assert that the Earth moves; I was at a long time at a loss to know whether I should publish the commentaries which I have written in proof of its motion, or whether it would not be better to follow the example of the Pythagoreans and of some others, who were accustomed to transmit the secrets of Philosophy not in writing but orally, and only to their relatives and friends, as the letter from Lysis to Hipparchus bears witness. 9)

In this first chapter of his book, Copernicus explains his doubts in publishing. Shrinking from the idea of contradicting the official view of the church, he seems to belittle his own efforts. But this is mere diplomacy. As a matter of fact, he had spread his ideas in the Pythagorean way and quite a few of his friends and colleagues had been aware of his vision for a long time.

They said I should find that the more absurd most men now thought this theory of mine concerning the motion of the Earth, the more admiration and gratitude it would command after they saw in the publication of my commentaries the mist of absurdity cleared away by most transparent proofs. So, influenced by these advisors and this hope, I have at length allowed my friends to publish the work, as they had long besought me to do. 10)

In the next alinea, he ventures into the reason he wrote his work. Speaking about the worn-out Ptolemaic model and his fellow mathematicians, he writes:

For, in the first place, they are so much in doubt concerning the motion of the sun and the moon, that they cannot even demonstrate and prove by observation the constant length of a complete year, and in the second place, in determining the motions both of these and of the five other planets, they fail to employ consistently one set of first principles and hypotheses, but use methods of proof based only upon apparent revolutions and motions. 11)

And to stretch his point, he gives an example that brings to mind Victor Frankenstein, assembling a body from assorted dead parts, as we will see later on.

Nor have they been able to discover or calculate from these the main point, which is the shape of the world and the fixed symmetry of its parts, but there procedure has been as if someone were to collect hands, feet, a head, and other members from various places, all very fine in themselves, but not proportionate to one body, and no single one corresponding in its turn to the others, so that a monster rather than a man would be formed from them. 12)

He continues with which is a rather actual view,

..., but the relative positions and magnitudes both of the stars and all their orbits, and of the heavens themselves, become so closely related that in none of its parts can anything be changed without causing confusion in the other parts and in the whole universe. 13)

And sure of his theories, he peeks into the future.

Nor do I doubt that ingenious and learned mathematicians will sustain me, if they are willing to recognize and weigh, not superficially, but with that thoroughness which Philosophy demands above all things, those matters which have been adduced by me in the work to demonstrate these theories. 14)

Johannes Kepler and Galileo Galilei would indeed create the necessary foundations that proved the heliocentric theory correct.

Why was Copernicus so careful in putting forward his ideas?

In his days, the Ptolemaic universe was more than a theory: it was an all including cosmology where religion, philosophy and science found each other. It had dominated for over a millennium, putting god-created man central in a world that radiated in perfect circles until the outer boundaries of what existed. Vitruvius' *Homo ad circumulum, homo ad quadratum*: where the navel is regarded as the centre of the ideal human figure framed in a circle and a square, later slightly corrected by Leonardo, illustrates the start of this system that emanates in all directions. Being suspended right in the middle of this system, subjected to the equality of all forces, the Earth was unable to move, and thus formed an excellent point of departure for elaborating further physics. Copernicus' theories took this reassurance away. Man lost his privileged place in the universe and turned into an outcast, adrift on a tiny planet in the immensity of space. This universe, as in the seventeenth century Newton would make clear, basing himself on the theories and calculations of various predecessors among which Copernicus, worked like a clockwork, governed by anonymous mechanics in complete independence of a creator, and unresponsive to man's wishes. Religion and physics became separated, with little place left for the first one. No wonder the Catholic Church, and initially the Protestant Church too, rejected any theory that involved heliocentrism.

Apart from the philosophical implications, Copernicus' theory denied that what was obvious. We experience the sun and planets revolving around us, and only a mass of calculations that were beyond most man proved the Earth's eccentricity. To most of his fellowmen the heliocentric model would have come across as creating problems instead of solving them.

A third reason for Copernicus long hesitations might have been his awareness that he had not solved all problems concerning the revolutions of the planets.

After his death, Copernicus' ideas remained in circulation, but without any sweeping consequences. Apparently the Catholic Church regarded these ideas not as containing any serious threat. It was not until Giordano Bruno, an Italian cleric and mathematician who lived from 1548 until 1600, manifested his freethinking, including that of the Earth

being in motion, that the Inquisition came into action. Bruno was seen as a difficult man who doubted many established ideas and used to do so in rather tactless manner. He had embraced Copernicus ideas, but was condemned for many other things too. He emphasized his claim that there were numerous celestial bodies with an interesting philosophical argument.

Being and existence are better than nonbeing and nonexistence, Moreover, just as one is better than none, many are better than one, and infinity more perfect than finitude. Thus it follows that the most perfect universe is that one which contains an infinity of worlds within its own infinitude. 15)

This was truly revolutionary. The following words, written, on the outer ring of Bartholomeu Velho's illustration of Ptolemy's universe, place God just outside the finite universe.

Dei et omnium electorum celum empireum habitaculum. 16)

We see the select few that were chosen peeping down on us over the edge of the universe as if they were watching some spectacle, with, in the upper right angle of the map, God urging them to do so. This was the accepted view. But Bruno's concept of the infinity of the universe left no place for God at all, turned the Bible into story-telling, and the Church's doctrine into deceit. Bruno was consequently burned at the stake on February 17th, of the year 1600.

Johannes Kepler, a German mathematician and astronomer, who lived from 1571 until 1630, also supported Copernicus theories, but did so in much more careful way. For one thing, he never doubted that God had created the universe and saw it as science's task to reveal God's plan.

In his first book, *Mysterium Cosmographicum*, or *the Cosmic Mystery*, Kepler puts forward a theory on the structure of the solar systems. In this structure, every planet of our solar system is cased in one of the five different Platonic solids, in such a way that each of them circumscribes the preceding and fits in the next. All of them are enclosed within a sphere that represents the orbit of Saturn, the planet furthest from the sun known in Kepler's time. This structure necessarily places the Sun in the centre, and the planets in orbit around it, and as such affirms Copernicus theory. 17) In the use of these solids, Kepler saw God's plan revealed. After all, Euclid had demonstrated that these five regular solids were the only ones possible. Scientific discoveries must have presented a dilemma to sixteenth century god-fearing men such a Kepler. If God had created the world, then where stopped explaining His work and started changing it? The Platonic solids have been regarded often as the classical building stones of our world. They are the same as Leonardo drew for a book on geometry, written by Luca Pacioli, *De divina proporcione*, or, *On sacred proportion*. In *Mysterium Cosmographicum*, Kepler tried to establish a relationship between God and the way the universe was working. It calls to mind Plato's *Timaeus* where *the maker of the universe* is also referred to as *father*. 18)

Kepler sent his book to eminent men all over Europe. One of them was the Danish astronomer Tycho Brahe. He invited Kepler to Prague, to the court of the Holy Roman emperor Rudolf the second, in whose service he was working as the imperial astronomer. Formerly Brahe had been in the service of the Danish king Frederic the second, who, himself an amateur astronomer, had facilitated Brahe the means to construct an observatory, situated on the isle of Hven, called *Stjerneborg*, which was an unicum in its time. Here, during various decades, Brahe was capable of collecting data a hundred times more accurate than those that figured in Ptolemy's *Almagest*. Brahe found Kepler's idea interesting and wanted to verify it with the help of his measurements. Kepler went to Prague where he was offered a job by Brahe to do the

necessary calculations for Brahe's own conception of the universe. The so-called Tychonic system was an arrangement in which all planets, apart from the Earth, orbited the Sun, which in its turn, together with the Moon, revolved around the Earth. With this system, Brahe denied the Earth motion, and kept in line with religious thought. Kepler found the idea absurd and only accepted the job because he wanted to lay hands on Brahe's precise measurements. Brahe never gave him the chance to do so, but after Danish astronomer died, in 1601, Kepler was able to use this accurate material. It led him to his *three laws of planetary motion*, two of them which he published in 1609, in his book *Astronomia nova seu Physica coelestis*. The third one would take him fifteen years more to complete. The laws describe the exact nature of the motion of the planets around the Sun. For two thousand years, humanity had believed the orbits of the planets were perfect circles and that they were moving with equal speed along their orbits. Kepler proved that their orbits were elliptical and their speed was irregular.

Brahe had ordered Kepler to solve the mystery of Mars. At some moments during its orbit, Mars appears to be going backwards, so called retrograde motion. It had puzzled astronomers during long centuries. Copernicus suggested that it was an effect of both the Earth and Mars being in motion, although he could not prove this. But Kepler, once in possession of Brahe's observations, realized that the momentary appearance of Mars going backwards was due to the fact that the two planets, Earth and Mars, traveled on elliptical orbits. Kepler's proof of the fact that the planets follow elliptical orbits is known as his First Law.

His Second Law resulted from the First Law. Once Kepler realized the fact of elliptical orbits, he was able to explain the variation in velocity of the planets. He discovered that the speed was less when the planet was at a greater distance from the sun. In fact, the ratio of the speed was the inverse of the ratio of the distance.

The Third Law treats the relationship between the time two planets need to orbit the Sun.

These three laws of planetary motion laid the footwork for Isaac Newton's laws of motion.

In his later years, Kepler would make use of a telescope. He stretches the importance of visual proof over mere calculations.

..., but now, by the aid of the telescope lately invented, the very eyes of astronomers are conducted straight to a thorough survey of the substance of the Milky Way; ... 19)

Galileo Galilei is often named the founding father of modern science. He made important contributions to many fields, among others the science of motion and that of astronomy. His book *Dialogues concerning two new sciences* is divided in four chapters, each describing a day of discussion and investigation with two of his friends, significantly naming himself Salviati. During day three and four, they investigate the various ways of motion. Day three is dedicated to uniform and naturally accelerated motion, day four they discuss projectile motion. No doubt, Galileo's most significant claim was that the natural state of objects was one of motion, not of rest. Things are always moving unless something impedes them to do so.

He was one of the first astronomers to use a telescope, though he did not invent the instrument as he acknowledges himself in his book *Sidereus Nuncius* or *The Starry Messenger*. The earliest telescope was developed in Holland around 1608, in the city of Middelburg. Galileo did improved the instrument though. His observations would transform the whole of astronomy. His telescope would peer beyond the Aristotelian spheres into the darkness of the universe, endlessly extending in the Cartesian way. When he was observing the planet Jupiter, he discovered the planet's four moons. The

discovery confirmed that the geocentric concept, in which all heavenly bodies circled the Earth, was erroneous.

Behold therefore, four stars reserved for your famous name, and those not belonging to the common and less conspicuous multitude of fixed stars, but in the bright ranks of the planets – four stars which, moving differently from each other, round the planet Jupiter, the most glorious of all the planets, as if they were his own children, accomplish the courses of their orbits with marvelous velocity, while all the while with one accord they complete all together mighty revolutions every ten years round the centre of the universe, that is, around the Sun. 20)

Later he concludes:

Besides, we have a notable and splendid argument to remove the scruples of those who can tolerate the revolution of the planets around the Sun in the Copernican system, yet are so disturbed by the motion of one Moon about the Earth, while both accomplish an orbit of a year's length about the Sun, that they consider that this theory of the constitution of the universe must be upset as impossible; for now we have not one planet only revolving about another, while both traverse a vast orbit around the Sun, but our sense of sight presents to us four satellites circling about Jupiter, like the Moon about the Earth, while the whole system travels over a mighty orbit around the Sun in the space of twelve years. 21)

The discovery of Jupiter's moons reads like a detective story, shadowing the suspects through the dark of the night.

Jan. 16. – At the first hour of the night I saw three satellites arranged in this order (Fig 9) Jupiter was between two of them, which were at a distance of $0' 40''$ from the planet on either side, and the third was west of Jupiter at a distance of $8'$. The satellites near to Jupiter appeared brighter than the satellite further off, but not larger. 22)

And while observing Venus, he noticed its phases: a phenomenon that Copernicus had already intuited but could not prove. This important discovery further contradicted the Ptolemaic model. The Roman Catholic Church could no longer ignore these reflections that overtly opposed biblical texts as well as the wisest men from antiquity. Up to Galileo's observations, the Copernican system of astronomy had been a theory which had only met little acceptance. Now things started to change. Galileo in a letter to Kepler:

From the observation of these wonderful phenomena we are supplied with a determination most conclusive, and appealing to the evidence of our senses, of two very important problems, which up to this day were discussed by the greatest intellects with different conclusions. One is that the planets are bodies not self-luminous (if we may entertain the same views about Mercury as we do about Venus). The second is that we are absolutely compelled to say that Venus (and Mercury also) revolves round the Sun, as do also all the rest of the planets. 23)

Soon after Galileo's discoveries, Kepler, with the aid of a telescope made by Galileo, verified these observations and published his findings in a pamphlet named *Narrative*.

In 1616, Galileo was heard by the Inquisition, and ordered to abandon all heliocentric opinions. In 1632 he published *Dialogues concerning the two chief world systems*. The

book angered the Pope and Galileo was summoned to Rome to appear before the Inquisition. He was found to hold sacrilegious beliefs. To save his skin, he was forced to recant his opinions. There is some discussion if Galileo, after renouncing his Copernican ideas, really muttered the famous words that label this chapter.

Although the Catholic Church had condemned Galileo, it could not stop the spreading of his findings. With the Church losing its authority over thought, reason alone became responsible for the gathering of knowledge and the scientific method was born. Galileo displays this modern attitude when he writes:

But why should I use only plausible arguments when I can almost absolutely demonstrate my conclusion? 24)

Or when he writes:

Finally, in the investigation of naturally accelerated motion we were led, by hand as it were, in following the habit and custom of nature herself, in all her various other processes, to employ only those means which are most common, simple and easy. 25)

And speaking about conservative attitudes, he says:

I would call it a strong desire to maintain old errors, rather than accept newly discovered truths. 26)

Kepler, safe from the Inquisition in Prague, said it even more clearly in his *Dissertatio cum Nuncio Sidereo*, or *Conversation with the starry messenger*, his answer to Galileo who had asked him his opinion on his observations:

O telescope, instrument of much knowledge, more precious than any scepter! Is not he who holds thee in his hand made king and lord of the works of God. 27)

In this truth seeking, authority had no place. The Catholic Church lost its control over intellectual life, and its dogmas were replaced by proof, open to critical questioning. From Galileo on, credibility became based on literal evidence. The fact of the Earth being in motion meant that our point of vision was in motion. It meant that there was no fixed point which we could use to establish our knowledge upon.

One of the most significant examples of this change of pattern in western thinking are the thoughts of Thomas Hobbes. There is a direct relationship between Hobbes' materialism, holding that matter is all there is, and Galileo's theories on motion. As Hobbes acknowledges himself:

After him (Copernicus), the doctrine of the motion of the Earth being now received, and a difficult question thereupon arising concerning the descent of heavy bodies, Galileus in our time, striving with that difficulty, was the first that opened to use the gate of natural philosophy universal, which is the knowledge of the nature of motion. 28)

Hobbes defines motion as:

The continual privation of one place, and acquisition of another. 29)

Hobbes saw man as a machine, made of moving parts that were motivated, or brought into motion, by the senses. Going from there, he put forward a complete

mechanistic view of reality. All was matter and, in accordance with Galileo's writings, all matter was in motion. Hobbes had met Galileo in Florence, in 1636, while traveling in Italy, and his ideas of motion clearly stem from Galileo's investigations on the subject as appears from the first lines of Hobbes' main work *Leviathan*:

For seeing life is but motion of Limbs, the beginning whereof is in some principall part within, why may we not say, that all Automata (Engines that move themselves by springs and wheelles as doth a watch), have an artificiall life? For what is the Heart, but a spring, and the Nerves, but so many Strings, and the Joynts, but so many Wheelles, giving motion to the whole Body, such as was intended by the Artificer? Art goes yet further, imitating that Rationall and most excellent work of Nature, Man. 30)

Somewhat further in the first chapter, Hobbes even defines the senses as matter in motion:

All which qualities called Sensible, are in the object that causeth them, but so many several motions of the matter, by which it presseth our organs diversly. Neither in us that are pressed, are they anything els, but divers motions; (for motion, produceth nothing but motion.) 31)

Hobbes then continues this materialistic view by carefully building, layer by layer, the great edifice of a state. His contribution was to extend these pure mechanical ideas to man itself, considering human beings as bodies in motion, motivated by purely physical factors, resulting in chaos when not checked upon. In *Leviathan* he envisages the results of an unchecked state of affairs, which he describes as *a war of every man against every man*. Louis XIV would call the same thing *le desordre*, or *the disorder*, as we will see in the next chapter. Only the state, more prevailing than any other authority, by exercising absolute power could guarantee order. Hobbes chooses an image of a huge sea-monster from the *Book of Job; the Leviathan*, as the symbol of this over-human power.

In the Dutch Republic we see Hobbes' ideas denied. Agreements and alliances, common interests, although taking on a chaotic appearance, seem to work just fine. The Night Watch, the very billboard of that society, visualizes such a common interest.

While Galileo was investigating and writing *The Starry Messenger* in Padua, a young painter from Milan arrived in Rome to make his name. It would be no exaggeration to say that what Galileo meant for science, Caravaggio meant for art. His innovative paintings were the start of a new way of picturing, a new outlook on reality, one which we now call the Baroque.

Both the scientist and the painter were portrayed by the sculptor Ottavio Leoni 32). According to Andrew Graham-Dixon, Leoni's portrait from Caravaggio dates from around 1600, while Galileo looks around forty in his portrait. This would place the portraits close together in time. We can only speculate if both men were aware of each other, but there exists a certain similarity in the way both used observation as a means to reach their objectives. Galileo proved Copernicus' hypothesis using a telescope. *The Starry Messenger* is illustrated with visual evidence such as illustrations and charts. Caravaggio based the naturalistic style which became his hallmark, and that made such a distinction with the mannerist style en vogue in his days, on direct observation from models. His pictures were life-like and the viewer related to them in a direct way. The people pictured were no idealized role models but people like them, recognizable in every, and often a shocking, way.

For both men, motion was a decisive element. Both sought to solidify the continuous motion their subjects were liable to. Galileo used his charts to understand the difference in the positions of planets and satellites. Caravaggio staged the scenes he

wanted to picture in his studio, carefully arranging persons and props, trying to compose the crucial moment in which the drama was at his highest.

Caravaggio's way of handling a subject became fully mature in two large pictures he painted in the Contarelli chapel of the San Luigi dei Francesi church in Rome, in 1600. Here we can see two scenes from the life of Saint Matthew. Both locate the precise moment in which the action of the specific part of the Bible story is at its dramatic pinnacle.

In the first we see a group of five men, sitting around a table, in a nondescript space, its only features being a window, its view covered with what might be oilpaper, and a vague indication, at the picture's very left side, of a door or an opening to a second space. The group around the table is caught in a flood of light that seems to come from an unseen source high up. In the middle of this group sits Levi, the tax collector; a man working for the Roman occupant. He is flanked on his right side by two young companions, his pages maybe, and on his left side by an elder and a younger man. Money is being counted out on the table in what might be a deal between business partners. We perceive them at the moment they are interrupted by two men entering the room. Both point at Levi, one in a questioning way, the other rather commanding. They are largely covered in shadows, only the upper parts of their bodies catch some of the incoming light, an effect that strengthens their sudden appearance. And indeed, the two young men nearest to the intruders react alarmed; one bends forwards, his hand reaching for his sword, while the other leans sideways, seeking the protection of his master. On the other hand, the two men on Levi's right side are so engrossed in counting their money that they are still unaware of the intrusion. Levi himself looks more surprised than alarmed. He points at himself, aware that he is the reason of the disturbance, half knowing what is coming, but not quite accepting it yet.

It is the moment of his calling. We witness a moment of change; the instant in which one mode transforms into another. Here Levi the tax collector becomes Matthew the apostle. In fact, the left part of the picture is still Levi, while the right part is already Matthew. The intruders are Christ and Peter. The actual transformation is symbolized in the play of three hands, their fingers pointing. They create a triangle, a divine arrow, which basis is made up by Christ and Peter and which apex penetrates Levi's chest and turns him into Matthew.

Not Christ, but the future apostle is the protagonist of this picture. He indicates so himself by pointing at his chest. However, our eyes first fall on his young companion with the plumed hat next to him, who takes the full blast of the main directions in this picture, formed by the pointing fingers and the incoming light. Only then, the composition takes us to Levi.

The light plays a decisive part in this picture. It cuts in harshly from above, creating a strong contrast between the parts that are lit and those that are not. Caravaggio wanted us only to see what is important to him, the rest he hid in deep shadows. This treatment of light and dark, the strong dramatic effect it creates, would influence Rembrandt decisively.

In some ways, *Vocazione di S. Matteo*, as the picture is called, reminds us of Leonardo's *Last Supper*, a work that the Milan born Caravaggio might have seen. The action in Caravaggio's painting is limited in comparison. But the moment is sharper, more defined; a snapshot from reality in which each and every element seems captured in full motion.

The second picture Caravaggio painted for the Contarelli Chapel, hanging on the opposite wall, is still more dramatic. It is called *Martirio di Santo Matteo* and illustrates the second important transformation in the life of Levi; that of apostle into martyr.

The scene is clothed in even deeper shadows. Except for the two main characters in this drama, everyone present is only partly illuminated. As we know from the Bible story, the action takes place in a church although our only visual indication of a church's interior is the presence of an altar, adorned with a Maltese cross. As in the *Vocazione*, Caravaggio has immersed all that is superfluous in impenetrable shadows,

leaving us concentrated on the very moment of Matthew becoming a martyr. We see Matthew laying backwards on a flight of steps that are leading up to the altar, trying to evade a youth with a sword who is bending over him. Blood has already been shed, and the expression of the pagan assailant leaves us in no doubt of Matthew's fate. This is somehow strengthened by the inertia of the majority of the bystanders. All but two seem to have accepted Matthew's fate. The only exceptions are a man who raises his hand in horror and a young boy, an alter boy maybe, who runs from the scene in pure terror. Then there is the angel in the top right angle, resting on a cloud and reaching out a palm leave, confirming Matthews's new destination. Once more, we see the action narrowed down to a precise moment, that in which Levi's second transformation takes place.

Both pictures lack any indication of perspective. Perhaps this was Caravaggio's most important innovation. Perspective had been one of the main elements in Renaissance imaging. In these two pictures Caravaggio broke with this tradition and created depth by placing persons and objects in front of another. In the *Vocazione*, the page at our side of the table gives us an indication of the space available, while in the *Martirio* the nudes in the foreground create a certain distance between the main action and us.

Both pictures take place in a dark non-space, much like a stage. The stark illumination with its heavy distinction between light and shadow adds to this last impression. As no lines or vanishing points are used, the illumination is the main conducting tool. It lights up the faces and gestures in a play of relationships, taking our eyes through the drama.

Caravaggio's new ideas had an important influence on Rembrandt. It did not take long for them to reach the Dutch Republic. Caravaggio's work caused a stir. According to Robb:

People rushed to see the extraordinary new work, and nobody writing about M could avoid mention of the moment he first amazed the public. 33)

While Graham-Dixon says that:

Las pinturas para la capilla Contarelli eran de una persuasiva originalidad para ser obras de arte públicas. De golpe llevaron el nuevo estilo de Caravaggio a un público mucho más amplio. 34)

It so happens that the Rembrandt's later teacher, the Dutch painter Pieter Lastman, resided in Rome between 1602 and 1607. It is reasonable to assume he saw the revolutionary paintings of the Contarelli chapel as they were much bespoke in these days. His own work show definite influences of his Italian experiences and he must have shared these with his pupils. Gary Schwartz draws our attention to a direct relationship between Rembrandt and Caravaggio with a Lastman painting as a go-between. 35) In 1602, Caravaggio's was commissioned a third painting for the Contarelli chapel, this time one that depicted Saint Matthew writing the gospel, inspired by an angel. His first attempt was refused by the priests of the San Luigi dei Francesi on grounds of being improper, and he had to produce a second version; the one that is still on show in the chapel. Pieter Lastman's painting *The sacrifice of Isaac* is clearly based on Caravaggio's *S.Matteo e l'angelo*, while Rembrandt's drawing and two paintings of *The sacrifice of Isaac* show obvious traces of Lastman's way of treating the subject. It is here that the Italian and Dutch Master come together.

In *The Night Watch* we can easily detect other elements of Caravaggio's influence, such as an illumination that only highlights what is important, drowning the superfluous in deep shadows. Or the undefined space in which the action takes place. Or the element of motion. Or that of transformation. And even the Caravaggio's modest self-

portrait, peeping out from the background, watching the carnage on the altar steps, may have been repeated. Some say that the helmeted man, at the right of the standard bearer, is Rembrandt's self-portrait. 36)

But in the case of *The Night Watch*, these ideas are applied to a mundane scene, adding an unexpected amount of visual potential to an event that lacks drama what so ever. It is here that the art of representing liberates itself from any purpose outside manifesting itself, and, as a result, reaches the culmination of its possibilities.

Motion itself is its subject. In the mass of people pictured, jockeying for a place behind their caption, we see Hobbes' definition of motion as *The continual privation of one place, and acquisition of another* illustrated. No picture made before came so close to reality.

Notes

1

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2

But because I am honest enough not wanting to be taken for someone I am not, I thought I should try and honor the reputation I am given with all means available; and it is precisely eight years that this desire made me distance myself from all the places where I could encounter friendship, and retire here, in a country where the long duration of the war has established such an order that the armies are kept only to make man enjoy, with much security, the benefits of piece, and where, amidst a great and very active people, more attentive to its own affairs than curious about the ones of others, and without missing none of the commodities which are part of the most frequented cities, that I could live in such seclusion and retreat as in the most forlorn desert.

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The invisible only is known by ear
Who wants to see Anslo, has to hear.

Dode verf?

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Motion in Art, chapter 4

The Sun King

The gardens of Versailles, south of Paris, occupy about 756 hectare in their present-day form. Large as this seems, it is nothing compared to the extension the park had at the end of the seventeenth century. In those days, including the privatized forests of Marly which were used as a hunting park, Versailles reached an extension of 8000 hectare. The wall that encircled the park measured 43 kilometers and included twenty-two watchtowers. 1) This enormous area was owned by a single man; Louis XIV, the Sun King.

The park was divided in two parts, the *Petit Parc*, more or less equal to the situation we find nowadays, and the surrounding *Gran Parc*, which was mainly made up of forest intersected with strait avenues and served for hunting. The *Petit Parc*, or *Small Park*, is still a large area and consists of various elements, all of them placed in a grid of strait lanes. Within this framework, the main feature is the palace. It is situated at the edge of the town of Versailles and acts as the gateway to the gardens. In fact, palace and gardens are each other's complements and Louis XIV regarded his gardens as an open-air extension of his residence. The gardens were made up of various formal elements like the *parterres*; low kept gardens with elaborate flowerbeds, or the *bosquets*; plots with high growing trees, dense bushes, and intersected with meandering paths and small clearings. There were also waterworks, many fountains, palisades, a winter garden, a zoo, and a second palace of smaller proportions; the *Grand Trianon*. The *Grand Parc* no longer exists.

A picture from 1668, painted by Pierre Patel, gives us an impression of the enormous extension the park had in Louis XIV's days. In the front we find the palace with its wings and annexes. The terrace at the rear side of the palace offers a view over the gardens, and further, across the *Petit Parc*, to the *Grand Parc* which continues several kilometers through the valley and is crisscrossed with straight avenues.

The main avenues begin at the *Apollo fountain* in the *Petit Parc* and seem to continue endlessly. They are thought to represent the beams of the sun. They lead to important features like the zoo, or the *Gran Trianon*, and are intersected by further avenues, thus forming a frame. It is geometric without being symmetric which gives it, in spite of the use of straight lines, a diverse aspect. In principle, one can continue this

frame endlessly with disrupting its structure and that is how it worked in the forty years that Louis XIV enlarged Versailles. Or as Ehrenfried Kluckert defines it:

“Das Grundkonzept geht von drei Bereichen aus, deren Bezugspunkt das Schloß ist, von dem aus die Alleen fächer- oder strahlenförmig, also sonnengleich, in den Raum streben und sich dort vielfältig verzweigen, um immer wieder neue Gartenanschnitten zu definieren. 2)

Still further and further the king drew these lines, annexed and eradicated villages, drained swamps, imported massive amounts of trees, and created a system of water supply in an undertaking unequalled in the Europe of his days. The spaces in the framework, the parterres and bosquets, have equal dimensions more or less. But each of them has a unique theme or subject.

An important place in the garden occupies the *Grand Canal*. This piece of water in the shape of a cross, whose east-west axis is 1800 meters long while its north-south axis reaches 1100 meters, was built at the lowest point of the valley and served as a drainage. But something like drainage was only a thing of minor importance in Louis XIV's plans. The first purpose of the *Grand Canal* was to make an impression. Jean-Baptiste Colbert, Louis' treasurer prompted the king to deeds of this kind:

“Ihre Majestät weiß, daß in Ermangelung kriegerischer Aktionen nichts die Größe und den Geist eines Fürsten mehr zur Geltung bringt als die Bauwerke. 3)

Ian Thompson suggests that the cross, apart from being an obvious religious symbol, acted like the cross on a treasure map, indicating the extreme importance of the place. 4) And indeed, when one looks up *Versailles* in *Google Earth*, it is the *Grand Canal* that strikes the eye.

Another important building part of the park was the *Menagerie*, perhaps the first zoo in the world. This building was situated about one kilometer southwest of the palace for hygienic reasons. It offered an attraction at the south side of the park that balanced the presence of the *Grand Trianon* at the north side across the *Grand Canal*. On an etching, made by one of the artists of the Perelle family, we see a pentagon with unequal sides. In the middle there is an eight-sided building whose upper floor, with its jaunty dome-shaped roof, served as an observation platform. Out of this central point, walls ran like spokes, forming the enclaves for the different species. A comparison with Leonardo's octagonal church design is obvious, but while the form-language seems to match, the octagonal shape of the *Menagerie*'s central building is based on the idea of granting a 360-degree view. Leonardo's octagon is merely the creation of a perfect platonic shape, devoid of every functional aspect.

The park is the most striking example of the *formal French garden*, a style of garden design based on a certain symmetry and a preference for order over natural development. The garden architect André le Nôtre brought this fashion to its climax in the twenty years that he worked at Versailles. It was imitated all over Europe with prominent examples as *het Loo* in Apeldoorn, Holland, *Schönbrunn* in Vienna, Austria, or *La Granja* in Segovia, Spain.

The precursor of the *formal French garden* is, as Hellena Atlee observes 5), the *Italian Renaissance garden* that, in its turn, is based on the *classical Roman garden*. In a fifteenth century textbook, *De Re Aedificatoria*, written by Leon Battista Alberti, we find the principles of the *Renaissance garden*. Alberti uses ideas that go back on Vitruvius. The villa was situated at the highest point to create a view of the garden from the terrace. A path climbed gradually up the hill towards the villa, here and there interrupted by portico's to provide a rest in the shadow. Everywhere vases and statues

were placed, supplementing the trees and bushes, the flowers and vines. A characteristic example is the *Villa d'Este garden* in Tivoli, Italy.

The *formal French garden* copies certain elements from the *Renaissance garden*, in particular its preference for a geometrical organization of space, but develops in its own way. Its architects preferred a closed complex, without doubt an influence of the medieval, walled-in, *cloister garden*. The difference in climate between Italy and France will have played a part too and suggested a more protected type of garden.

The densely planted frame of trees and bushes somewhat shielded the interior of the *bosquets* from the wind. The avenues that crisscrossed such gardens were lined with hedges for the same reason. Finally, the fact that the terrain in France is less capricious than in Italy led to different solutions and shapes.

The general characteristics of the *formal French garden* are; a geometrical lay-out, a terrace that overlooks the garden, a completely controlled, one could almost say deformed, vegetation, a central attention for the main building that is surrounded by low kept *parterres* so that it distinguishes itself from its environment, a central axis that leads away from the main building, water basins whose immobile surfaces work as mirrors and reflect the façades of the main building, and, lastly, a mythological theme for the statues that mark the various crossings of avenues and lanes and other important locations in the park. The designers of this type of garden saw it as a continuation of the building that gave it its reason. The *parterres* and *bosquets* had to evoke rooms while the hedge-lined avenues and lanes were thought to bring to mind the corridors of a building. Fountains were meant to suggest crystal chandeliers. The complex of edifices and gardens was regarded as one and the same thing. As Adrian von Buttlar says:

“Nicht nur, dass le Nôtres Alleen, Plätze und Bosketts formal eine organische Architektur darstellen, deren Grundrissbildungen an Idealstadtentwürfe erinnern, sie waren auch functionel “ausgedehnte Wohnung”
6)

Behind this design laid a philosophy, *Rationalism*, which sprang up in the 17th century. *Rationalism* is a way of thinking that starts with the principle that the mind has the capacity of establishing logical truths about the nature of reality, independent from the senses. It states that, as reality is subject to constant change, the information that reaches us by means of the senses is necessarily unreliable. In consequence truly reliable facts can be gained by logical arguments only. All that the senses contribute is temporary, insecure, coincidental, specific, and coming from a single angle. Therefore the rationalist considers that the knowledge reaching us by sense perception is inferior to the knowledge resulting from logical reasoning.

This way of thinking has been developed chiefly by René Descartes and his way of thinking seems to reflect in the garden design of Versailles. We know that the painter Le Brun, involved in the design of the royal palace, was familiar with Descartes' writings. It is not known if the other designers of Versailles were inspired by the French philosopher's notions, but it is not unlikely. The geometrical layout of the gardens suggests at least so much as an influence.

The *Renaissance*, with her combination of the adopted knowledge of the *Classics* and the fresh ideas of *Humanism* with its emphasis on individual attitude, had left a rich but, according to some, muddled blend of ideas. Descartes was one of the first philosophers who again felt the need to organize the huge amount of available knowledge and build a philosophical system in the same vein as Plato or Aristotle had done.

Descartes started from zero and approached all existing knowledge with an extremely skeptic attitude. Using precisely a relentless doubt at literally everything, he tried to establish something that was free of any uncertainty whatsoever; something on which we could build our knowledge. He searched for concepts that were independent

of impressions of our senses. He put forward that once the mind was free of sensory information, it was not devoid of concepts, and that these intuitive and innate ideas form the foundation of our knowledge. It implied that mind should be seen as separated from matter. Mathematics was such a concept.

Descartes argued as follows. Material things can be explained by means of mathematics. When we undo a material phenomenon of all of its particular attributes, we are left with its mathematical properties. These essential properties, without the phenomenon would no longer be itself, are extension, shape and movement. For Descartes, extension was the most important of the three.

And it is precisely extension, the almost endless continuation of avenues and groves that we see in Versailles, which makes the association with Descartes' ideas so obvious. In architectural theory we speak about *Cartesian space* when we want to indicate the use of a two or three-dimensional grid. Descartes did not distinguish between matter and space, and saw space as an extension or a continuation of matter. This proved to be an inspiring idea for architects at the time, of which the plans for *Baroque* cities like Karlsruhe or Potsdam in Germany, or the town of Versailles itself, bear witness.

The construction of Versailles, palace and garden, started in 1661 and continued as a personal quest of Louis XIV during the next forty years. He was assisted by a team of specialists but was very much in charge, and, as Germain Bazin says, in his heart an artist.

“Ich glaube, dass in der Persönlichkeit Ludwigs XIV der Künstler vorherrschend war. Er war von der echten Ungeduld des schöpferischen Menschen besessen, (...) der kreativ tätig sein wollte. 7)

His team of specialists included landscape architect André le Nôtre, architect Louis le Veau, engineer Dennis Jolly, painter Charles le Brun, the Florentine brothers and fountain designers François and Pierre Francine, sculptor François Girardon, treasury minister Jean-Baptiste Colbert and, in a later phase, architect Jules Hardouin-Mansart. Working as a team was quite new in those days. It replaced the Renaissance ideal of the individual artist, the *Homo universalis*, who could deal with a broad array of problems. Although the works of art that left the workshops of the *Renaissance* often were an effort of various persons; apprentices and fellows, it was always the master who originated the concept, did the important part of the artwork, and burdened the final responsibility. This structure crumbled when technology developed and a certain specialization became inevitable. A project as Versailles knew so many different aspects that it became too complex to be handled by a single person. Apart from that, it seems that history after 1500 was not able any longer to produce people of the caliber of Alberti, Leonardo or Michelangelo. In early Renaissance huge vistas suddenly opened and artists responded to that call. In Leonardo's sketchbooks we see the possibilities pop open one by one in his, often hasty, notes and drawings. A vast area was revealed to him and many of his responses remained incomplete and were never brought to an end. He was aware of this and gave himself continuously instructions as:

“Try to get Vitellone which is in the library of Pavia and treats on mathematics.” 8)

Or made up his mind to order lose information:

“Divide the treatise on birds into four books, of which the first deals with their flight by flapping their wings; the second of flight without flapping wings and with the help of the wind, the third of flight in general such as that of birds, bats, fishes, animals, insects; the last of the mechanism of motion.” 9)

The sketchbooks do not only speak of Leonardo's genius, but also of the great confusion this man felt, confronted as he was with the large amount of data that his open attitude fed him. Suddenly so many new things were happening. As Jacob Burckhardt writes:

“The world opened itself to him, as for no other mortal in those days perhaps.”
10)

One hundred years later such an individual approach was no longer viable.

Teamwork was based on the combination of different specializations. It was a rational objective that continues through our time and has taken on an ever more radical form. In *Team Versailles* the knowledge of the participants was still somewhat overlapping. Next to garden architecture Le Nôtre busied himself with fountain design, the painter Le Brun also created sculpture, and architect Mansart designed several *bosquets*. As we will see further on, the *Industrial Revolution*, apart from creating new ones, drew sharper outlines around the various specializations. The German composer Richard Wagner felt hindered by the segregation of knowledge. It made him develop the concept of the *Gesamtkunstwerk* in which specialization, if not put to an end, is melted into undistinguishable collaboration.

Thus the palace and park of Versailles were designed and build in unison. What once was a simple hunting lodge owned by Louis XIII, Louis XIV's father, and is described by Ian Thompson as a

“cheerful brick-and-stone mansion” 11),

changed into a sumptuous palace surrounded by a garden of an unknown scale. Louis XIV desired the French court and the French government to relocate in Versailles and to realize this an enormous complex was erected. It had to accommodate the thousands of people that made up the French royal household. But that was not all. The government with its institutions and hundreds of civil servants had to be transferred from Paris to Versailles and lodged too. And then there was the military. The operation started in 1661 and was completed in 1678. The *Mona Lisa* too was brought from the Louvre, in those days a royal palace, to Versailles and, so the story goes, hung in an honored place in the king's private cabinet.

Historians distinguish four different phases in the construction of palace and gardens. In 1661, Le Veau and Le Brun started on the extension of the hunting lodge. These first steps were discreet and merely served to accommodate the lodge as the entourage of a weeklong feast, called *les Plaisirs d'Île Enchantée* 12), given in honor of the king's official mistress. The intervention in the gardens was more wide-ranging. The existing *bosquets* and *parterres* were modified and some new ones were created. The *Orangerie* was built and the construction of the *Thétis grotto* was started.

When the festivities ended, it became clear that the facilities had failed considerably. Many of the six hundred guests had been forced to spend the nights in their carriages. Louis XIV now started with an ambitious plan for extension. Le Veau enlarged the lodge on three of its sides with new structures. These constructions are considered as the culmination of a French national style of architecture, one that detached itself from the predominant *Baroque* style of those days in favor of a more neoclassical language. Descartes' thoughts on extension seem to have found a shape here in the rhythmical duplication of the same façade unit. This design could be endlessly repeated and is responsible for the grand, but stern, result we know now as the palace of Versailles. It is significant that in 1655 the famous Italian Baroque architect Berini was relieved from

his work at the extension of the Louvre. Le Veau and Claude Perrault replaced Berini's exuberant *Baroque* style for a strict continuation of porticos, based on classical principals.

The addition to the Versailles palace was used, among other things, to create new quarters for the king and queen. On the second floor of the north wing, the so-called *piano nobile*, the *Grands Appartements du Roi* were set up. They consisted of seven connected rooms, also called *enfilade rooms*. The term is used for a sequence of rooms in which the doors are placed in such a way that they are mirroring each other with which a vista through all rooms becomes possible. *Les Grands Appartements de la Reine* were placed in the south wing and were a copy of the king's rooms.

Around the same time the garden was enlarged with ten new *bosquets*. The *Apollo* and *Latona* fountains were built, and the *Thétis grotto* was completed. The roof of the grotto was used as a water basin to meet the ever-growing need of water, created by the continuous addition of new fountains. Between 1668 and 1671 the *Grand Canal* was dug. It prolonged, physically as well as visually, the east-west axis of the park and acted as a gigantic mirror that reflects the light of the sky. Ships were being imported from Holland. Together with a collection of gondolas, a present from the Venetian doge, they formed the canal's fleet.

In 1678 a change of style took place that started with the construction of the *Hall of Mirrors* by the architect Jules Hardouin-Mansart. This gallery covered the terrace at the westside of the palace with its view over the gardens. From then on, the garden view was reflected by the mirrors that were placed on the eastern wall of the room, a view that entered the room by a corresponding series of glass doors in the western wall. It made the garden enter the palace and this new feature reversed the old role. First the garden had been an extension of the palace; now the palace looked like an extension of the garden.

Around the same time, the park started to lose Le Nôtre's vegetation-based style which was supplanted by Mansart's more architectural style. Mansart was a rising star and much favored by the king. The *Thétis grotto* as well as the *Orangerie*, both built by Le Veau, were demolished. The first had to give way to another extension of the palace. The second was replaced by a larger and more monumental complex, made up of stairs and a new orangerie. At the foot of the new orangerie, a large water reservoir was dug; the so-called *Piece d'Eau des Suisses*. In the gardens several *bosquets* were altered. Mostly these alterations were architectural in character, as was the *Colonnade* that took the place of the *Bosquet des Sources* and where vegetation was changed for marble.

Round 1705 the park underwent its last modification during Louis XIV's extensive reign. This change was sobering in spirit and corresponded with the moderation that characterized the last years of the Louis XIV's rule.

The park was in its days a wonder of the world and it still attracts, year in year out, many visitors. Not only palace and gardens are the largest in their kind, they are also the physical expression of absolute power. Louis XIV was an autocrat. Certain events in his youth had made him see the fragility and relativity of royal power and once arrived on the throne he was determined to retain his power. Versailles was going to be instrumental in that resolution.

As a child Louis XIV was instructed in the history of the French royal family. It gave him an insight in a tradition that, according to David J. Sturdy, goes back to the times of Clovis. 13) Monarchy was sacred in Louis' view, and French society considered as an established and unchangeable composition of elements. Everything had its place and the king ruled over all of it. This enormous scheme, in which the king answered to God only, was reflected in the layout of Versailles. Its structure was considered essential. In his, out of political grounds very early written, memoirs, Louis XIV says:

"Le desordre régnaît partout" 14),

and we ask ourselves how much conscious manipulation and how much unconscious paranoia are behind these words.

Fairly early in his seventy-five yearlong reign, Louis XIV resolved to transfer his court and government seat from Paris to Versailles. The complex he erected there had a single purpose: control. Or, to stay within the terms of this essay; immobility. All members of the French court were supposed to spend a large part of the year in Versailles. Carol McD Wallace:

“There, cooped up in a magnificent palace run according to a very strict etiquette, the great nobles of France idled away year after year.” 15)

It may be hard for us to imagine how, but under the direct eye of the king treason was less easy to organize. The king demanded absolute subordination of his subjects and granted or held back favors as a way of maintaining hierarchy. He owned a natural authority that eyewitness Louis de Rouvroy, better known as Saint-Simon, describes in his *Memoirs* as:

“... discourse pronounced with that terrifying majesty so natural to the King ...” 16)

One strived to be in the king's good books. The higher one was in the hierarchy, the closer one was to the king, much like the planets are arranged around the sun. This system worked so well that Sturdy calls it:

“a finely tuned vehicle for the execution of his will”. 17)

To keep the more than ten thousand idle palace dwellers amused, an enormous program of entertained was necessary. Palace and garden borrow a great deal of their function from this requirement. The design was based on arrest. In Louis XIV's concept of absolutism movement meant change, and that was the very first thing the king sought to avoid. Or as Sturdy sees it:

“Adherence to tradition did not imply an absence of innovation; but even the modifications, which he introduced into the exercise of French kinship, were designed to strengthen tradition, not overturn it.” 18)

He succeeded in this, as did his great-grandson and heir to the throne, Louis XV. For a long hundred years France suffered totalitarianism. It stifled all progress of society. However, the accumulation of arrest built up such a pressure that finally, in 1789, the structure gave way with the French Revolution.

The arrest, that Louis XIV deemed necessary to keep his total grip on French society, was realized in three ways; by means of centralization, by means of imagery, and by means of ritual. One can grasp the extend of the king's achievement in the following words from the memoirs of René Chateaubriand, who visited Versailles in the days of Louis XVI, a hundred years after work on the palace and gardens was started:

“On the next morning I went alone to the palace. Those who have never seen the pomp of Versailles may be said to have seen nothing, even after the dismantling of the old residence of the King, Louis XIV seemed always there.” 19)

Time had really come to a halt.

Thus Louis XIV immobilized the threat of assumption of power by centralizing all significant elements in Versailles. Not only was it the seat of government, the aristocracy too was forced to spend the greater part of the year under the direct gaze of the king. In this way Louis XIV was able to exercise absolute control over power. Careful manipulation of hierarchy formed part of this. Sturdy once more:

“ Louis preferred continuity and stability in this, the most important of his councils. Its membership rarely changed and came from a small number of families, especially those of Le Tellier, Colbert and Phélypeaux. By contrast, Louis excluded from the Conseil d'en Haut members of the royal family, great aristocrats, prelates, and the Chancellor of France.” 20)

The gathering of so many people and institutions in one place made necessary a complex that held the middle between a building and a city. Over ten thousand people are said to have lived in the royal palace. Ian Thompson speaks about traffic jams of palanquins in the corridors. And beyond the rooms we know from art history, there must have been many offices for the administration, and workshops, dorms and canteens for workfolk, servants and soldiers. The architectural shape is carefully chosen on its effect. George Bataille describes such an effect as follows:

“Thus great monuments rise up like dams, opposing a logic of majesty and authority to all unquiet elements: it is in the form of cathedrals and palaces that church and state speak and impose silence upon the crowds. Indeed, monuments obviously inspire good social behavior and offer even genuine fear.” 21)

The gardens formed a unity with the palace and acted as a continuation of its functions. Its main purpose was to keep the aristocracy busy, their minds distracted, far from plans for taking over power. The many attractions were an invitation to amuse one self, to settle into its comforts, and forget one's ambitions. It was an idealized world, far from the grim streets and appalling poverty of Paris. It must have intoxicated its users. The sheer size of the undertaking gave most aristocrats the impression that not only they found themselves in the French center of power, but in that of the world.

“ Versailles sollte nicht nur als Refugium oder Ort der Zerstreung und Lustbarkeiten dienen. Es verstand sich zugleich als Abbeviatur eines neuen Raumsystems, als Bedeutungsträger für eine neue Staats- und sogar Weltordnung.” 22)

Where else existed such splendor? Did not receive Versailles dignitaries from all over the world who were stunned to see so much beauty on such a scale? French aristocracy must have felt honored and privileged. As Carol McD Wallace describes it:

“The courtiers of Versailles had the daily satisfaction of knowing that they were in the most excruciatingly exclusive spot in the world, and they spent much of their time and attention on further refining the levels of exclusivity within that world.” 23)

The main reason of the grid that shaped the garden was to facilitate its constant and uninterrupted enlargement without breaking its basic structure. Apart from that it caused a division in smaller parts, which were used to create diversity. A network of straight lanes crisscrossed the garden without creating an all too obvious symmetry. It kept the design lively and unpredictable. Every single unit, *bosquet*, *parterre* or water surface, held a different attraction.

The system of strait lanes not only created variety. Its main avenues radiated outwards from the palace in all directions, like the spokes of a wheel, and produced enormous vistas. And although these lanes ended with the garden's boundaries, they must have given the courtiers an illusion of freedom. The impression that these lanes continued forever, generated the idea that the whole of France was connected with the court. Wilfried Hansmann speaks about the *attraction of endlessness*:

“Einerseits werde hierin die Expansion des Monarchen anschaulich, die bereits die Zeitgenossen als den Versuch deuteten, die Hofgrenzen mit den Staatsgrenzen zu verschmelzen. Andererseits zeigte sich darin der Wunsch, die Verbindung zum Land zu unterstreichen und den Absolutismus als eine Institution vorzustellen, die sich auf die breiten Volksschichten stützte.” 24)

In fact, this structure has remained more or less unchanged. When we open a roadmap of France we observe that the larger part of the main roads still branch out from Paris over the country as the rays of the sun.

The centralization in Louis XIV's time is confirmed by the main cities' number of inhabitants. In 1700 Paris, including the 17 000 people living in the town of Versailles, had 540 000 inhabitants. The next city in size was Lyon with 97 000 inhabitants and only four more cities, Marseille, Rouan, Lille and Orleans had over 50 000 inhabitants. 25)

Louis XIV's absolutism explored every way of design to confirm itself. In the palace's interior we can find design techniques that helped making Versailles the centre of power. As such, the vista, created by the *enfilade rooms* in the *Grands Appartements du Roi*, exercised a feeling of being under observation among the people present there. The painting that adorned the ceiling of the *Hall of Mirrors* was one huge imagery of the excellence of the king's reign. Furniture was designed in a sumptuous style, combining materials such exotic woods, bronze, silver, mother of pearl, or glossy varnish, to stun visitors.

Palace and garden together formed a unit that had sufficient potential to centralize court and government and made them follow the will of three successive kings.

The physical environment of Versailles was intensified with an iconography that we encounter in many aspects of the complex of palace and garden, and which promoted the idea that Louis XIV was the *Sun King*. At a relatively early age, he started his reign at the age of 22, Louis XIV decided that the symbol of the sun could help him in his resolution to rule as an absolute monarch. It wasn't a bad choice. As Louis XIV thought in terms of centralization to pursue this goal, a comparison with the sun, thanks to Galileo Galilei's investigations recently accepted as the centre of our planetary system, seemed obvious. Apart from that, sun symbolism is an item that is lodged deep in the subconscious of humanity. The cardinal importance of the sunlight for all life forms is recognized by many cultures since prehistoric times. In those cultures the sun often takes a central place in religion. Louis XIV's intend to give himself a godlike status was a step more towards unchallenged absolutism.

In the Egyptian civilization the sun meant creation and was worshipped as *Ra*. This god made a daily journey around the earth in two sun boats, a morning boat in which he brought light and warmth by daytime, and an evening boat in which he sailed by night through the underworld to be reborn at dawn. In Hinduism the sun is the visible god, to behold in the sky by everyone during the day. Here too, the god travels through the firmament, this time in a chariot drawn by seven horses that symbolize the seven colors of the sunlight. The idea of using vehicles for sun gods goes back, as far as we know, to Neolithic times. Clay models of sun ships have been found in several early civilizations.

Greek mythology, on which Louis XIV based his particular iconography, first personified the sun as one of the Titans, called Helios, who wore a splendid crown and

drove a chariot through the sky to change the night into day. His absence would mean eternal darkness. In time, however, the sun grew to be associated with Apollo, and it became him who brought us the light of the day thanks to his daily journey through the heavens. Apollo is one of the more complex gods, and is, apart from being the god of light, the god of truth, of prophecy, of healing power, but also of the most terrible of plagues, and finally of music and poetry.

Some of this symbolism was lend and used to its full effect by Louis XIV in his self-creation as the *Sun King*. In a picture, whose author remained anonymous, we see the king, a young man still, dressed as Apollo in a gold colored ballet costume. His feathered headwear is encircled with a wreath of golden rays. The same rays adorn the various embroidered medallions on his knees and feet, and slide of his shoulders, collar and cuffs. On his breast is an over-obvious image of the sun. Louis XIV was a gifted dancer who performed in more than forty ballets. According to Ira Diana Marconi, the ballet in which he wore this specific costume was called *the Ballet of the Night*. 26) We can easily imagine the *Sun King*, dressed in his splendid outfit, clearing the chaos of the night.

Using ballet for promotional objectives was not a completely new idea. As Blas Matamoros writes:

“The “political ballets”, so-called because of their evident theatrical qualities and their purpose of propaganda, were modeled after a libretto by the great Ronsard (famous French Renaissance poet, also called “the Prince of Poets”), which he wrote on the occasion of the becoming of age of Charles IX. The ballet took place in Bar-le-Duc in 1566. It represented the four elements, several pagan gods and the Sun, and created an allegory of the planetary order which associates the starry kingdom with the earthly realm of the young monarch.” 27)

Dance had an important place in Versailles. One could argue that this was because *dance movement*, as opposed to *real movement*, did not lead anywhere, and conclude that Louis XIV substituted the progressive motion of society for the pseudo motion of art and spectacle. And although this was bad for France, it made dance regain its old position as a serious art.

Dance had been a profession in ancient cultures such as the Egyptian, Greek or Roman. With the fall of the Roman Empire this profession disappeared, together with the refined, cultured classes that enjoyed them. In Europe, dance became the expression of the common man. In general the Christian church condemned this practice as pagan, but it was incapable of eradicating such a fundamental human necessity. Dance flourished as amusement. People did not watch professionals perform; they danced themselves. To do so one hardly needs material things and this condition turned dance into a truly common cultural manifestation. In some cases the church allowed dance at special occasions such as Carnival, or tried to incorporate it in their own rituals.

Many of the popular dances were circular in shape. Originally circular dance took place around an object such as an altar, or a tribe's shaman. Its meaning was to invoke magic. Later circular dance came to signify community, or was simply a way to celebrate as a group. The Catalonian *Sardanas* are a good example. Clement of Alexandria argued that this type of dance was respectable because the angels danced around Him who has no beginning and no end.

In late medieval times the professional dancer slowly reappeared. Courts employed them in special occasions. At the courts and rich merchant's houses of the Italian city-states, dance was seen as a superior form of amusement. The dancers thus employed started to form troupes, which eventually turned into the *Comedia dell'Arte*.

In 1489 the marriage between Gian Galeazzo, the duke of Milan, and Isabella of Aragon took place. Gian Galeazzo was the son of Lodovico Sforza; ruler of Milan and

employer of Leonardo da Vinci. A part of the celebration was made up by dance acts in which the dancers dressed as Greek mythological figures. Leonardo created the scenography:

“In one of the halls of the castle he constructed a large mountain with a cleft covered by a curtain. When opened, it revealed a vista of the heavens containing the twelve signs of the zodiac and personifications of the planets; as musicians played, the three Graces and the seven Virtues appeared to praise the bride.” 28)

At the French courts, the loose-shaped, improvised dances of the farmers were imitated, but checked by rules and embellished by formality. Specialization was introduced. One had to learn these dances, such as the *minuet*, to be able to participate.

The start of ballet is often placed in 1581. That year a large-scale dance representation took place in Paris at the occasion of the betrothal of the duke of Joyeuse and Marguerite de Lorraine. It was created by the Italian violinist Baldassarino Belgiojoso, with the help of many others, and called *Ballet Comique de la Reine*. The ballet represented a part of Homer's *Ulysses*, there where the hero is captured by, and later escapes from, Circe the witch. This first ballet was very different from what we know now. It took place in a large hall, which held both dancers and public. Props were placed around in the same hall or hung from the ceiling. Special illumination was created by covering the hall's chandeliers with tinted glass.

According to Elizabeth Cooper the *Ballet Comique de la Reine* was based on Pythagorean and Platonic concepts of universal harmony. 29) In *Timeaus* Plato tried to reduce reality to geometrical principals. He states that everything is composed of earth, water, air and fire, and that nothing exists outside these four elements. He imagines these four elements as triangles, which he combines into different solids. Leonardo drew these shapes as illustrations for Luca Pacioli's book *De divina proporcione*. These same triangles form the basic spatial elements of this ballet.

“The nymphs (Naiades) moved dancing up to the King and the Queen Mother, in the following pattern. At the first passage of the entrée there were six abreast in one line across the hall and three in front in a broad triangle, of which the Queen marked the apex, and three others behind her did the same. Then, as the music changed, they also moved in and out among each other, now in one direction, now in another, and then returned to their first position” 30)

When the ballet was finished, the dancers invited the spectators to join in, giving them an opportunity to take part in the spectacle. In 1636 Cardinal Richelieu, chief minister of Louis XIII, created the first French theatre, with which the aspect of participation disappeared. This process continued when in 1642 Richelieu's successor, Cardinal Mazarin, an Italian by birth and chief minister before Louis XIV ruled personally, introduced Italian Opera to the French public. At first people were bored with these developments.

“The show continued for more than six hours. At first it was wonderful to see, the changes of scenery were surprising, but the spectacle tired us with its length, although no one dared to express their boredom, even those who did not understand Italian acted as if they amused themselves.” 31)

These two developments created important changes. Artist and public were separated into two different spaces; stage and theater. The performance took place on an elevated stage. A proscenium arc and artificial illumination further separated spectacle from public. The proscenium arc framed the act and made it look like a

picture. The spectacle was directed towards the public, the actors facing it. All of this turned into art what was once an event in which every one could participate. Once more, movement turned in arrest.

In 1661, Louis XIV created the *L'Academie Royale de la Danse*. Dance fitted perfectly in the Sun King's program to maintain absolute power. Not only was it a powerful new form of art, which kept the nobles at Versailles entertained, but also, at a deeper level, it expressed the hopelessness of any form of insurgency. Its repetitive and controlled movements spoke of a structure in which variation had no place. Initially the royal ballet practiced in an accommodated space in the Louvre but according to Arnold L. Haskell, the dancers preferred the intimacy of a tavern in the Rue de L'Épée de Bois, in the eight arrondissement. ³²⁾ It was here that the precise rules of ballet, based on the five positions were established.

Classical ballet starts and finishes with a position, with a moment of immobility. The ballet's movement is wedged between two moments of arrest, which separates it from random movement of everyday life before and after the ballet. These are moments of perfect balance and still form the foundation of classical ballet.

The idea is somewhat similar to Newton's concept of space. He divided space into absolute and relative space.

“According to Newton absolute space cannot be perceived by our senses: it becomes measurable by relative space. Absolute space is homogeneous and infinite: relative space is the coordinate system, the measure of absolute space.”
³³⁾

Translated to ballet movement we could say that the random, in this case heterogeneous, motion of reality acquires significance in the controlled and limited motion of the ballet.

Louis XIV's interest in ballet was not entirely political though. He performed in forty different ballets, something that equals a professional career. At a young age he danced a ballet together with the Italian composer Jean-Baptiste Lully. When Louis came to power, Lully was appointed court composer and choreographer. The last one transformed the court dances into ballets by introducing a story element. Together with Molière he created a new genre called the *Comédie-ballet*, which combined theater, ballet and music. Elizabeth Cooper sees here an attempt to recreate the Greek Tragedy.

Louis XIV's influence on the development of ballet was significant and could not have been accomplished without a genuine interest in the art itself.

We can find the Apollo theme throughout Versailles. The earlier on mentioned *Thétis* grotto was another component in the creation of the Sun King cult. The artificial cave, an oblong construction of classical design, had both a utilitarian and a symbolic function. It carried a water tank which elevated position provided the pressure necessary to operate several fountains. The cave's interior contained three niches in which sculpture groups were placed. The middle group represented Apollo, who, after his daily light-bringing voyage through the sky, has descended in the western seas, where he rests in a cave, and is tended by Thétis and her sisters. Thétis was the most noble of the Nereid, or the sea nymphs, one of the fifty daughters of Nereus and Doris. The Nereid were Poseidon's companions. In the sculpture group in the grotto we see them bringing food and wine to Apollo and washing his feet. In the niches left and right of the central group, Titans tend his horses.

The façade of this structure had three equally shaped entrances, barred with an iron latticework in the shape of sunrays that radiate from a cast-iron sun disc, high up in the central entrance. The effect, at least on the engraving of Jean le Pautre, is without doubt spectacular: as if a sun is glowing within the building. At the façade we find bas-

reliefs of Apollo, the Nereid and Titans. The building was later demolished to make way for an addition of the palace.

Another important element in Louis XIV's iconography was the *Apollo fountain*. Here we see the golden Apollo, standing in his chariot that is drawn by four fiery horses, rising from a haze of water. A highly powerful image, created between 1668 and 1675 by François Girardon.

Then there is the *Latona fountain*. Inspired by Ovid's *Metamorphosis*, the *Latona fountain* tells the story of Latona, the mother of the Apollo and Artemis twins. In this myth, Latona, after she had given birth to the twins, wanted to drink from a pool. The locals, peasants from Lycia, tried to stop her from doing so by stirring up the mud at the bottom of the pool. This angered Latona and in revenge she transformed the peasants in frogs. The fountain was thought to be a clear warning to everyone who thought of challenging the king's power.

The sun iconography was chiefly used in the first decades of Louis XIV's reign. The constant allusion of Apollo may seem ridiculous in our eyes but in earlier centuries symbolism still had a strong effect on people. Think, for example, of Keats' *Hymn to Apollo* in which he bows in shame for the god after identifying with him:

When like a blank idiot I put on thy wreath
Thy laurel, Thy glory,
The light of Thy story,
Or was I a worm – too low crawling, for death?
O Delphic Apollo!" 34)

After the identification was accepted by his subjects, Louis XIV changed to themes that went beyond mythological imagery. The ceiling of the *Hall of Mirrors*, painted by Le Brun, shows a survey of the King's feats of arms. Here we see, for example, Louis XIV figure in a painting called; *Résolution prise de faire la guerre aux Hollandais, 1671* 35), seated on a throne in company of Justice, Mars, Minerva and Victory. Apparently lesser allies wouldn't do to beat the Dutch. Contrary to the examples of self-identification mentioned above, these paintings lack in artistic quality and come across as mere propaganda.

The third element that Louis XIV used to create arrest was ritual and ceremony. This way of doing was mainly introduced after 1678, when the transfer from Paris to Versailles was completed. Now that the whole court was assembled in one place, the objective altered from preventing motion to maintaining arrest. Louis XIV created a series of rituals that regulated life at Versailles from minute to minute. The two most important rituals were the *Lever*, the *getting up*, and the *Coucher*, the *going to bed*, in concurrence with the two key moments of Apollo's journey through the skies. Just as with the meals, spectators were invited. These were the people who found themselves specially favored by the King; an often highly temporary state. At these moments the king was willing to listen to requests, and the members of court were always jockeying to get an invitation. The rest of the day was spent with an inflexible timetable of state affairs for the king and his ministers, and compulsory entertainment for the court.

One could regard ceremony as movement without progress.

This is then how we have to see Versailles; as a totality that was designed to suppress motion. Or as Lewis Mumford describes it:

"..., this phase of architecture creeps as a numbing frost over the more vital forms, either withering them in to black shrunken stems, or casting its own cold glaze over the once-animated form." 36)

Even its most instable element, water, was curtailed. It could spout from fountains in a short moment of freedom, but irrevocably fell back in the basin it came from. It was present as huge immobile surfaces that only served to reflect the splendor of the palace. The *Grand Canal*, however big, was in fact only an illusion and stretched no further than Versailles' boundaries. Leonardo da Vinci, in his design for a royal palace for François I, in Romorantin, precisely used the mobility of water, its most important characteristic, as a way to clean the public spaces of the complex. In Versailles, water was used, contrary to its nature, to create arrest. It's this kind of disgust with what is uncontrollable that marks rationalism.

The ever-growing amount of fountains and water surfaces the king ordered, was a constant worry for Versailles's designers. The demand for water was huge. At its zenith Versailles used three times as much water as the whole of Paris, a city with half a million inhabitants at the time. Ian Thompson describes the ongoing battle for bringing water to Versailles in detail.

The first fountains were fed with water from ponds in and around the park. In following extensions of the garden, tanks were created such as the one on the roof of the *Thétis* Grotto. More fountains were built, and the next relief for the problem was the construction of three reservoirs near the *Thétis* grotto. But in due time they too proved insufficient to supply for the ever growing demand, and other, more ambitious, plans had to be developed. In the following years we see a whole series of undertakings to ease the demand for water. A dam was created in the Bièvre river, and five windmills pumped the water to the park. A disadvantage of this plan was the dependence of the pumps on an unreliable, in the sense of not being constant, energy source as wind. Then engineers created the *Satory reservoir* in the hills above Versailles. The difference in height was sufficient to make the water flow by itself, through a system of tunnels, to the gardens. But in due time this supply too proved insufficient.

Then machines were introduced to solve the problem. Engineer Dennis Jolly designed a machine, a pump in fact, that was lodged in a tower, built by Le Veau, which pumped the water from the nearby-situated Clagny pond up to the tower's top level. This system proved to be a new and important factor in the supply of water and pressure. The pump mechanism was driven by horsepower and many of its parts were made of metal instead of wood. That was a novelty in engineering, its time far ahead.

The machine became one of the attractions of Versailles and visitors were invited to observe its actions. In a further phase its capacity was increased. But it only shifted the problem. Now the increasing supply of water threatened to dry up the Clagny pond. The next step was the creation of a large basin, called the *Pièce d'Eau des Suisses*, named after the Swiss soldiers who had dug it.

But there never seemed to be enough water to make all fountains work at the same time. It looked like every increase in the supply of water was followed by the construction of more fountains and waterworks. Louis XIV was insatiable in his wish to enlarge and embellish Versailles and he insisted that all fountains were in operation as he made his daily tours through the park. It was clear that a definite solution was necessary. Louis XIV thought of the river Seine that runs seven kilometers north of Versailles. But although the river meant a permanent water supply, the water had to overcome the difference in altitude between the river and the park, formed by the hills of Louveciennes that bordered the river. The difference was a good 100 meters and meant a serious obstacle. The king made a plea to all wise men of France to come up with a solution for the problem. The appeal reached a lawyer from Liege, Arnold de Ville. He knew of a carpenter, Rennequin Sualem, an inhabitant of the same area, who had built a hydraulic machine that was able to pump water up to a height of fifty meters. The machine was meant to keep dry a mine. Together they submitted a proposal for a machine on the Seine bank, founded on the same principles as the ones in use in the Liege mine area. The idea was based on using the current-rate of the river as propulsion force for the pumps that had to push the water up the Louveciennes hill. When it had arrived there, a slowly sloping aqueduct would make the water flow to

Versailles. The plan was approved in 1680, and in the same year the construction, of what was to be called the *Machine de Marly*, started.

The machine consisted of a gigantic frame that stood in the river. It was so big that it occupied half of the river's width, leaving only the other half open for navigation. The frame contained fourteen waterwheels, each with a twelve meters span, which, when prompted into turning by the river-current, put into action a battery of pumps. The river water was pumped to the top of the hill in three separate phases, by using two intermediated reservoirs and batteries of pumps. The phasing was necessary because the leaden pipes could only tolerate so much pressure, and would burst without an interruption by means of open reservoirs. The pumps that were placed on the hillside were equally driven by the power of the current, a power that reached them by means of lengthy axles, connected to the waterwheels. A total of two hundred and twenty one pumps were being used and one can imagine the complexity of the system of axles that propelled them.

The machine, the largest and most complex in history up to then, was a success despite the disappointing quantity of water it pumped; less than half of what had been estimated. Things went wrong continuously and often pumping had to be stopped. An axle broke, a transmission caught fire because of too much friction, an operator was wounded or killed by an unprotected moving part. Then there were the unavoidable leakages. And after some time the river started to create sandbanks because of the reduction in the force of her flow which diminished the quantity of water available to drive the waterwheels.

That the machine was still considered a success was due to its unique status. Here was an entirely new phenomenon, if only by its proportions. Technology on the scale of the *Machine de Marly* was unknown. The *Grande Pompe* from the Clagny pond was already considered a miracle that attracted people from far and near. The *Machine de Marly* was a wonder of the world that exerted a pull on men as Thomas Jefferson, Peter the Great from Russia, or the Danish king. It confirmed France's reputation as the most advanced nation of its time.

In Leonardo's sketchbooks we find drawings of machinery he made when he tried to develop a system of shaping iron by rolls. The drawings don't make the process really clear. However, they show sets of transmissions, toothed wheels and axel bars, that could have resembled those parts of the *Machine de Marly's* system that were used to pass on the motive power of the river-current to action the pumps. But all these ideas remained unnoticed in private collections, or were forgotten such as the folios on mechanics that were gathering dust in the royal library of Madrid and were only discovered four hundred years after they were drawn. The impulse that Leonardo's ideas could have given technology was lost. Devoid of his ingenuity, it had to develop at its own pace; a lot slower than would have been necessary. Only in the eighteenth century, and as the combined result of many engineers and designers that expressed itself in the invention and perfection of the steam engine, technology surpassed the level that Leonardo had brought it to.

A picture from Pierre Denis Martin, painted in 1724, shows the enormity of the Marly complex. In the front we can see the bulwark in the river Seine, so huge that it dwarfs the houses on the riverbank. From this open installation, water wheels and construction beams are painted against a background of village houses. Molds of earth slither up the hill to a second group of constructions, and from there up to a third. At the top of the hill the enormous aqueduct outlines against the sky and disappears in a blurry distance.

The *Machine de Marly* found itself between two eras. It still showed some characteristics of primitive mechanics, characteristics that go back on Villard de Honnecourt, such as the lack of an internal source of propulsion, an irregular pattern of performing due to its dependence on an uncontrollable source of power, and an open,

visible construction. On the other hand does the mere scale of the project and influence it had on its environment, the noise it made was audible over kilometers for example, remind us of modern machinery. Besides, it was not a vain machine, an idle contraption that was chiefly meant to astonish people such as Dondi's clockwork. Although the *Machine de Marly* served no greater goal than deliver water for a series of fountains that were only intended as amusement for a select few, the energy it produced could have been employed for other, more useful purposes.

Louis XIV created an arrest that continued during the reign of his successors Louis XV and Louis XVI. The more than a hundred yearlong halt on social change and development built itself up as river water behind a dam. Albert Seiboul:

One must find the reasons of what, because of its violence, turned out to be the most riotous episode in class struggle, a struggle that brought the bourgeoisie into power, in the specific characteristics of French society under the Ancien Régime. 37)

Chateaubriand says it in a different way:

The patricians started the revolution, the plebeians finished it. 38)

The force with which the French Revolution ended the Ancien Régime affected every part of French society and caused a complete transformation. It is enough to assert that change forms a natural component of society and that an obstruction of its free course invariable creates reaction. However, other factors too played a part. During the reign of Louis XV a certain decadence prevailed that expressed itself in his words: *Après moi la deluge*, or, *After me the deluge*. The ritual of Versailles, which had a regulating function in Louis XIV's days, turned in his successor's time, according to Antonia Fraser, into an instrument in a power struggle among the scheming aristocracy. 39) Then there was the Enlightenment with its aversion of the old structures that governed state and church. All these factors contributed in causing the *French Revolution*.

The Enlightenment could perhaps be described as a European cultural movement that questioned the right of monopolizing truth. It tried to undermine the authority from church and state. Some historians place its start with Descartes' *Discours*, others put it with Newton's *Principia*. It led to important changes during the seventeenth and eighteenth century in politics, science, economy, education, and the arts. It found its expression in individualization, emancipation and secularization, and was in short a very important cultural renewal in western society.

An important enlightened thinker in England was William Godwin, who lived from 1756 till 1836. He criticized in a radical way the political institutes of his time and the privileges of the aristocracy and is sometimes seen as a forerunner of anarchism. We will meet him later as the father of Mary Shelley.

The Empiricism of John Locke, and later from David Hume, a highly skeptical way of thinking that could be considered part of the Enlightenment, rejected Descartes' rationalism. The empirics state that all knowledge needs to be derived from our experiences, that is, from our sensorial observations and contemplation of those observations. Empiricism denies that it is possible to know the character of what exists by means of reason only. Concepts that are constructed merely by rationalizing should be rejected as meaningless. Only observation, and consideration of that what has been observed, produces knowledge. Locke saw the mind as empty, as a *tabula rasa*, which would fill itself with its experiences. Consequently, this kind of knowledge is limited. David Hume would go so far and doubt fundamental concepts of human thinking as space, time, or casual relationship as being constructions of the mind.

In 1677 John Locke visited Versailles, something that once more puts an accent on the central role that the court of Louis XIV played in Europe. According to Sturdy, Locke was invited to a *Lever 40*), an extraordinary encounter of different principles if you come to think of it.

Between 1750 and 1776 Denis Diderot created his *Encyclopédie*. This was a grand exposure of knowledge, aimed to be an instrument of progress, completely in accordance with the principal ideas of the Enlightenment. Among others, Rousseau and Voltaire contributed with articles. In 1759, Louis XV prohibited diffusion of the work because he feared that the innovative ideas could change into a threat to the influence the royal court and the church had on French society. Feared for his sharp pen, Voltaire was even, by order of Louis XV personally and without any form of trial, imprisoned in the Bastille. Voltaire dreaded prolonged incarceration and managed to convince the authorities to exile him to England. He spent a few years there and became captivated by the ideas of Isaac Newton on which he wrote a book called *Eléments de la philosophie de Newton*.

The Enlightenment saw men as good by nature and denied the concept of original sin. It concentrated on earthly life, not on the hereafter, and its rejecting of godly authority would finally conclude in the separation of church and state. But it was particularly science that bloomed under its influence and its most influential result was Isaac Newton's three laws of motion and the law of gravity from 1687. These laws suggested a completely mechanical explanation for all natural processes and had a huge influence on the philosophy of the eighteenth and nineteenth century.

Perhaps illustrative for the influence of the Enlightenment was the fact that in 1783 Versailles, the very center of conservatism, was the stage of a daring new experiment. In the presence of the young king Louis XVI, who was interested in technology, and the complete royal family, the brothers Montgolfier let up an air balloon. This balloon, the *Aerostat Réveillon*, so called after the rich wallpaper manufacturer Réveillon who financed the experiment, carried as passengers a sheep, a duck and a rooster. A manned flight had not been made yet, as the effects of how height would influence the organism were still unknown. The flight was a success and the animals returned safe to earth.

The new and turbulent ways of thinking that swept Europe also meant the end of the *formal French garden*. For a hundred years it had dominated European garden architecture. Now English garden architects as William Kent and Lancelot Brown created a new kind of garden. There is a great difference between the *formal French garden* and the *English landscape garden*. Just as absolutism created the strongest possible reaction in the shape of the French Revolution, the English garden meant a complete break with the cannons of the French model. The English poet William Blake seems to hit the point when he wrote:

“Expect poison from standing water.” 41)

The English landscape garden sought to charm the visitor instead of trying to impress him or her. Its designers were fascinated by lush and unrestrained growth such as happens in nature.

“Die Blickrichtung englischer gartenkünstler war anders ausgerichtet. Sie zielte auf den dynamischen Prozeß der Natur, den zu kultivieren, nicht aber zu organisieren und zu geometrisieren galt. 42)

They created continuous landscapes that were devoid of artificial separations. The gardens seem to form part of the surrounding English landscape and were accepted by it in an effortless way. The architects made use of the characteristic conditions of the terrain that they were dealing with and incorporated the existing water surfaces, slopes,

and groves as natural parts of their design. These elements were made part of the total composition by including them in a continuous and softly undulating grass surface. Contrasting decorative elements as temples or ruins were meant to draw the natural setting further together. In their design of the park of Stourhead the designers Henry Flitcroft and Henry Hoare borrowed part of their inspiration from a picture from Claude Lorraine, *Eneas in Delos*. The pantheon, that adorns the garden, is literally taken from the painting. It stands out against a screen of northern foliage, and this unusual combination seems to cause a faint vibration in the spectator's mind.

Geometry only played a symbolic part in the elaborate composition of natural and artificial elements. The landscape seems to flow, or roll on, and changes constantly. In short; it is in motion and every new position creates a new point of view. We speak of continuity. In this type of gardens the important issues are emotion, consciousness and the feeling of being included in the landscape.

The building, palace or manor, stood out in the garden. In the *formal French garden* the designers always sought to relate building and garden; the garden became an open-air continuation of the building. In the *English landscape garden* the building is seen as the opposition of the natural elements that surround it and stands detached from it. The relation between nature and architecture would be pushed further apart in Romanticism and obtain a symbolic relationship where the ruin represented the temporality of human creation against the eternity of nature. William Wordsworth, a precursor of English Romanticism expressed this as follows:

“(..).Relic of Kings! Wreck of forgotten ways,
To winds abandoned and prying stars,
Time "loves" thee! At his call the Seasons twine
Luxuriant wreaths around thy forehead hoar; (...)" 43)

Lancelot Brown, often called *Capability Brown*, apparently because of his ability to turn every kind of landscape into a garden, defined much of this new style in creating gardens. The approach was followed by designers all over Europe and would eventually influence the design of the nineteenth-century public parks. *Capability Brown* was looking for an ideal garden with the typical English countryside as a starting point. He compared garden architecture with composing poetry, or music.

“Here I put a comma, there, when it's necessary to cut a view, I put a parenthesis; there I end it with a period and start another theme.” 44)

In the end, even Versailles fell under the influence of the new current in garden architecture. The gardens started to change as a result of the decadence that characterized the regime of Louis XV, which showed in an evident negligence of the park.

“Immer seltener rückten die Gärtner mit ihren ungewöhnlich hohen Gerüstwagen den Bäumen zu leibe, so daß die Äste von Linden oder Ulmen über die vorgeschriebene Grenzen hinauswuchsen. Das Schema der vorherrschenden Geometrie löste sich nach und nach auf. 45)

We find, what could be called a new attitude towards nature, back in some of the pictures of Antoine Watteau. His *fêtes galantes* take place in idyllic natural settings, sometimes complemented with sculptural pieces or architecture, in which trees and shrubs are left to grow unattended.

The arrival of the Austrian born crown princess Marie-Antoinette, in 1770, spurred on these changes even further. Her husband, Louis XVI, gave her as a present the *Petit Trianon*, a delicate building that Louis XV had built as an amorous refuge for himself and Madame de Pompadour. The formal garden that surrounded the Petit Trianon was

partly replaced and further expanded with an English garden following the latest fashion, something that could be trusted to Marie-Antoinette. The wish for freedom and the urge to escape from the rules and protocol of the Ancien Régime probably drove her to the creation of her own world in which she could withdraw. There was an irregularly shaped lake with a belvedere and a grotto, a model village with a bogus farm, a pasture with free grazing cattle, and clusters of trees with paths winding through them, where Marie-Antoinette found the same freedom as the vegetation or the cattle.

This change took place in a corner of the immense terrain. Versailles itself, at least the *Petit Parc* was not or nearly touched, not even by the anger or drive for renewal the French Revolution brought. Although it underwent neglect at times, it stayed, up to today, a monument to immobility.

Notes:

1)

All factual information on Versailles is taken from Ian Thompson's book.
The Sun King's garden
Ian Thompson
Bloomsbury
London, 2006

2)

The basic concept is divided in three main areas. All three of them spring from the palace. From there the avenues run like the spokes of a wheel, as sun-rays in fact, through the areas where, time after time, they branch into new ones and keep forming new garden plots.
Gartenkunst in Europa, von der Antike bis zur Gegenwart, p 191
Ehrenfried Kluckert
Könemann Verlagsgesellschaft mbH
2000 Köln, Germany

3)

"Your Majesty knows that, apart from the action on the battlefield, nothing brings out the greatness of a sovereign more than edifices."
Gartenkunst in Europa, von der Antike bis zur Gegenwart, p 191
Ehrenfried Kluckert
Könemann Verlagsgesellschaft mbH
2000 Köln, Germany

4

The Sun King's garden, p 92
Ian Thompson
Bloomsbury
London, 2006

5)

Italian gardens, a cultural history
Hellena Attlee
Francis Lincoln

6)

Not only did Le Nôtre's avenues, squares and bosquets formally represent an organic architecture which fundamental principles remind us of an ideal city; in fact they were an expended place of residence.
Der Landschaftsgarten, p 105
Adrian von Buttlar
DuMont Buchverlag
Köln, 1989

7)

I believe that the artist prevailed in Louis XIV's personality. He was possessed with the true impatience of the artistic person who wants to create things,"
DuMont's Geschichte der Gartenbaukunst, p 133
Germain Bazin

DuMont Buchverlag
Köln, 1993

8)

"Try to get Vitellone which is in the library of Pavia and treats on mathematics."
The notebooks of Leonardo da Vinci, p 310
Selected and edited by Irma A. Richter
Oxford University Press
Oxford, 1998

9)

"Divide the treatise on birds into four books, of which the first deals with their flight by flapping their wings; the second of flight without flapping wings and with the help of the wind, the third of flight in general such as that of birds, bats, fishes, animals, insects; the last of the mechanism of motion."
The notebooks of Leonardo da Vinci, p 88
Selected and edited by Irma A. Richter
Oxford University Press
Oxford, 1998

10)

"De wereld stond voor hem open, zoals misschien voor geen enkel ander sterveling in die dagen, ..."
De cultuur der Renaissance in Italië, p 33
Jacob Burckhardt
Spectrum
Utrecht/Antwerpen, 1960

11)

The Sun King's garden, p 62
Ian Thompson
Bloomsbury
London, 2006

12)

"The pleasures of the enchanted island."
The Sun King's garden, p 62
Ian Thompson
Bloomsbury
London, 2006

13)

Clovis.
Louis XIV, p 2
David J. Sturdy
MacMillan Press LTD
London, 1998

14)

Louis XIV, p 9
David J. Sturdy
MacMillan Press LTD
London, 1998

15)

Dance, a very social history, p 12
Carol McD Wallace, and others
Exhibition Catalog
Costume Institute, Metropolitan Museum of Art,
New York, 1986

16)

Memoires of Louis XIV and his court and of the regency
Saint-Simon
Project Gutenberg

17)

Louis XIV, p 20
David J. Sturdy

MacMillan Press LTD
London, 1998

18)
Louis XIV, p XX
David J. Sturdy
MacMillan Press LTD
London, 1998

19)
Presentation at Versailles, hunting with the King, book IV, chapter 9
Memoirs of René Chateaubriand
Francois René Chateaubriand

20)
Louis XIV, p 35
David J. Sturdy
MacMillan Press LTD
London, 1998

21)
George Bataille may 1929 "Architecture",
Translated by Dominic Faccini for the Critical Dictionary

22)
Versailles not only had to serve as a place of distraction or pleasantries. At the same time it was a model of a new spatial system, as a significant carrier of a new system of government or even a new world order. Gartenkunst in Europa, von der Antike bis zur Gegenwart, p 192
Ehrenfried Kluckert
Könemann Verlagsgesellschaft mbH
2000 Köln, Germany

23
Dance, a very social history, p 12
Carol McD Wallace, and others
Exhibition Catalog
Costume Institute, Metropolitan Museum of Art,
New York, 1986

24)
On one hand this shows the expansion of the King, already considered by contemporaries as an attempt to blend the limits of the court with the limits of the state. On the other hand it shows the wish to underline the connection with the country and to present absolutism as an institution that was support by broad layers of the population.
Gartenkunst der Renaissance und das Barock. p 97
Wilfried Hansmann
DuMont Dokumente,
Köln, 1983

25)
Louis XIV, p 51
David J. Sturdy
MacMillan Press LTD
London, 1998

26)
50 Klasicker Gärten und Parks, p 62
Ira Diana Marconi
Gerstenberg Verlag

27)
"Por su evidente teatralidad y su función de propaganda, más característicos del barroco son los llamados ballets políticos, cuyo modelo se base en un libreto del gran Ronsard que se llevó a cabo en bar-le-Duc en 1566, con la mayoría de edad de Carlos IX. El argumento presenta a los quatro elementos, varios dioses paganos u el Sol, alegorizando el orden planetario que se rige el astro rey y el dominio terranal del joven monarca.
El Ballet, p 15

Blas Matamoro
Acento Editorial
Madrid, 1998

28
The world of Leonardo, p 56
Robert Wallace
Time Life books
New York, 1966

29
Le Balet Comique de la Reine, 1581: An Analysis
Elizabeth Cooper
Waybach Machine, 2011

30
Le Balet Comique de la Reine, 1581: An Analysis
Elizabeth Cooper
Waybach Machine, 2011

31
"Cette comedie dura plus de six heures. Ce fut d'abord magnifique à voir, tant les changements de décor étaient surprenants; mais le spectacle nous lassa par sa longueur, bien que personne n'osait manifester son ennui; même ceux qui ne comprenaient pas l'italien firent mine de s'en divertir."
La Danse, art éternel, p 64
Arnold L. Haskell
Editions R.S.T.
Rathbone Books Limited
London, 1960

32
La Danse, art éternel, p 66
Arnold L. Haskell
Editions R.S.T.
Rathbone Books Limited
London, 1960

33
Page 32
Space in architecture
Cornelis van de Ven
Van Gorcum en Comp, B.V.
Assen, The Netherlands, 1977

34)
Hymn to Apollo
John Keats
Lyric poems
Dover Thrift Editions, 1991

35)
"Decision to make war on the Dutch, 1671"

36
Mumford, Lewis
The Culture of Cities, p 131
Harcourt Brace Javanovich, Inc
New York, 1970

37)
La Revolución Francesa, p 15
Albert Soboul
Presses Universitaires de France, 1891

38)
La Revolución Francesa, p18
Albert Soboul

Presses Universitaires de France, 1891

39)

Marie Antoinette, p 74
Antonia Fraser
Anchor Books
New York, 2002

40)

Louis XIV, p 72
David J. Sturdy
MacMillan Press LTD
London, 1998

41)

Proverbs of Hell
William Blake
Blake's selected poems
Dover Thrift Editions

42)

The point of view from the designers of the English garden was different in character. This view was based on the dynamic processes in nature, and sought to cultivate, not to organize and geometrize her.
Gartenkunst in Europa, von der Antike bis zur Gegenwart, p 354
Ehrenfried Kluckert
Könemann Verlagsgesellschaft mbH
2000 Köln, Germany

43)

Composed among the ruins of a castle in North Wales
William Wordsworth
Collected poems
On line

44

Gran Atlas de la Arquitectura
Francesca Prina, Elena Demartini
Electa

44

Less and less the gardeners, with their high ladder-wagons, went for the trees. It made the branches of the linden or elms grow across their prescript boundaries and dissolved the garden's geometry step by step.
Gartenkunst in Europa, von der Antike bis zur Gegenwart. p 207
Ehrenfried Kluckert
Könemann Verlagsgesellschaft mbH
2000 Köln, Germany

Motion in Art, chapter 5

The airy flight of imagination

Mary Shelley was born in 1797 in London. Her mother, Mary Wollstonecraft, died ten days after giving birth. Her father, William Godwin, was left behind with two daughters; Mary, and Fanny; a daughter from an earlier marriage of his diseased wife. Mary Wollstonecraft was one of the earliest feminists. In 1791, when she was thirty-two, she wrote *A Vindication of the Rights of Women*, inspired by the French Revolution and the spirit of liberation that followed. It is said that this essay is compulsive literature for everyone who studies the emancipation of women.

William Godwin was a radical political thinker who had become famous with his book *Enquiry Concerning Political Justice*, from 1793; a rationalistic treatment on the principles of freedom, truth and justice. He proposes a system that distributes the available wealth according to everyone's needs. We shall see these ideas repeated in the twentieth century, in another form, in Constant Nieuwenhuys' project *New Babylon*.

Although Godwin, four years after the death of Mary Wollstonecraft, married a rather bourgeois woman, he maintained his circle of radical friends and his house was open to all kind of progressive thinkers and artists. It stimulated Mary Godwin, as she still was called then, to use her intellectual capacities. Muriel Spark tells how she and her half-sister hid behind a sofa to hear Samuel Taylor Coleridge recite his *Rhyme of the Ancient Mariner*, and how, after discovery, the great poet pleaded their cause.

The young poet Percy Shelley and his wife Harriet visited Godwin a good deal. Shelley was in his own volatile way a supporter of Godwin's theories and, as the future heir to a large fortune, welcome with Godwin who, in complete accord with his theories, was always on the lookout for financial support.

Mary was sixteen when she fell in love with Shelley who was only four years older. Feelings were mutual. After his quick divorce from Harriet, the poet and Mary fled to France to escape William Godwin's opposition. With that, a decade long series of wanderings through Europe started. Such a nomadic existence would be typical for many Romantics. With his book *Julie ou la nouvelle Héloïse* 1), from 1761, Jean-Jacques Rousseau had become one of the harbingers of Romanticism. He led a chaotic existence in which he relocated constantly, driven by necessity or restlessness, conflict or opportunity, friendship or love, exile or persecution, and, at the end of his life, by paranoia. This kind of motion seems to reflect the anxious frame of mind so characteristic for the Romantics. Empiric philosophers such as John Locke or David Hume traveled to widen their experiences and to gain knowledge. The Romantics seemed to travel to forget their experiences and to leave a world behind them. Mary would not be second to Rousseau. She and Shelley hardly ever had a plan for life, and in a letter to her sister, resigned with an unknown future, she says:

“where chance appeared to cast us.” 2)

And many years later, in Italy, she wrote in her diary:

“We now appear tranquil; yet who knows what wind ...” 3)

and did not finish the sentence.

She fled with Shelley, via Paris, to Switzerland and reached Luzerne. Lack of money made them, after a few days, return to England. They sailed down the Rhine to Rotterdam, where they boarded a ship to Gravesend. Back in London, Mary turned out to be pregnant. Her prematurely born child died after four days. In the following years Shelley and Mary went from address to address, both in and outside London, and were constantly pestered by money problems and harassed by creditors. In 1816, they left England once more and went to Geneva, bringing with them their second-born; William. Lord Byron offered them shelter in a house that belonged to the estate he owned at the lake. Another guest was Byron's personal physician John Polidori. On one of the nights they spend together, Byron suggested that each of them should write a horror story. The proposal was greeted with enthusiasm by the other three. It was Mary's impulse to write *Frankenstein*.

Mary and Shelley spend the summer in Geneva and returned in the fall to England, to Bath this time. Life was difficult. They had the care of Mary's other half-sister Claire, who had visited them in Geneva and was pregnant from Byron. They were bothered by Godwin, who took his own principles very serious and wanted money from Shelley. Then two drama's took place; the suicides of Mary's first half-sister Fanny and Shelley's ex-wife Harriet. In spite of these worries Mary kept on working doggedly on *Frankenstein*. She finished the novel in 1817 and went looking for a publisher.

They now lived in Marlow. Shelley had a great deal of trouble escaping his creditors and was literally on the run. In the England of that time, not paying your debts was

considered at a par with fraud and was punished with imprisonment. Mary was pregnant again and their daughter Clare was born.

In 1818 they crossed the Channel once more, this time on their way to Italy. They stayed in Milan, then in Leghorn and Bagna di Lucca. Meanwhile *Frankenstein* was published in England and Mary was excited about the reception of the novel. Although the story was criticized, it left no one indifferent. The Edinburgh Magazine voiced the general opinion:

“There was never a wilder story imagined...” 4)

Walter Scott wrote in the same paper:

“This is a novel, or more properly a romantic fiction, of a nature so peculiar...” 5)

Confused by the introduction that was initially written by Shelley, and maybe too by a lack of imagination, Scott attributes the novel to Percy Shelley instead of Mary. He ends his review with the words:

“... a novel which excites new reflections and untried sources of emotion.” 6)

While this was written, Mary and Shelley had moved on to Venice. It was there that their daughter Clara died. Both parents were deeply saddened and tried to distract their minds with traveling. Their destination was Rome, and later Naples. In Rome, not yet a year after Clara died, their son William would die from malaria.

“The misery of these hours is beyond calculation” 7)

Back in Leghorn, Mary wrote a second novel, *Mathilda*. In 1819 a fourth child was born; a son called Percy. In Florence, Mary started on her third novel *Valperga* and continued working on this story in Pisa where the small family had settled. They lived a couple of years in the Tuscan town and were fairly happy. As their circle of friends was growing more and more, they decided to look for a larger house.

Villa Magni was on the coast, near the village of San Terenzo, in the bay of La Spezia. It was here, in 1822, that Shelley drowned during a journey with his boat across the stormy bay. A couple of months later Mary would write in her diary:

“Well, then, now I am reduced to these white pages, which I am to blot with dark imagery...” 8)

Mary left San Terenzo and lived for a while with her son Percy and some friends in Genoa. In 1823 she returned to London. William Godwin assisted her in bringing out a new edition of *Frankenstein*. She started a new novel called *The last man*. She first lived in Kentish Town but returned to London in 1827. In 1828 she visited Paris and met, among others, Prosper Mérimée, the writer of *Carmen*, with whom she became friends. Mary earned her living with writing, and how serious the need for money sometimes was shows the diversity of possible subjects on the list she sent the publisher John Murray. *A work on Madame de Staël, Life of Mohamet, Conquests of Mexico and Peru, A History of Manners and Literature in England from Queen Anne to the French Revolution, Lives of Celebrated Women, A History of Chivalry* and even *A History of the Earth in its Earlier State*.

The curious list shows her many-sided interests, but none of these books would ever be written. Eventually Mary found work in writing contributions for Lardner's *Cabinet Cyclopaedia*. For this encyclopedia she wrote biographic articles on Italian, Spanish and French writers. As Muriel Spark explains, this kind of academic work suited her well and it provided her with a regular source of income. She moved to Harrow, where

Percy went to school, and started a new novel; *Lodore*. In 1836 William Godwin died and short before his death he requested Mary to finish his book *The Genius of Christianity Unveiled*, a text he regarded as his opus magnum. But Mary declined and the work remained unpublished until twenty years after her death. Mary's last novel, *Falkner*, was published in 1837. She revised Shelley's collective poems and added critical and biographical notes. The task was hard on her as we can read in her diary,

"I am torn to pieces by memory" 9) ,

but one she felt was her duty to accomplish. As usual in these cases, publication aroused a storm of protest from Shelley's admirers, a storm that almost destroyed her. In 1840 she traveled with Percy to Germany, Switzerland and Italy. A second Grand Tour followed when Percy completed his studies at Cambridge. It took them once more to Italy, to Florence this time. But Percy, more prosaic than his mother, returned earlier than expected to England. He wanted to see a model of an flying machine. In the nineteenth century flying was still man's greatest dream.

Mary wrote a book about these travels called; *Rambles in Germany and Italy in 1840, 1842 and 1843*. The last years of her life she lived with her son and daughter in law at Field Place, the family estate of the Shelley's.

Hence we observe a chaotic life, marked by high peaks of happiness and deep valleys of despair. The wild motions in Mary's circumstances are mirrored in a constant going from place to place, as well as in the turbulent emotional developments in her writing. These two kinds of movement are typical for the Romantic artist.

Romanticism was a mentality that arose in Europe in the late eighteenth century and is commonly seen as a reaction on the Enlightenment. We cannot clearly indicate where or when it started. In Germany, the *Sturm und Drang* movement is seen as an early form of Romanticism, while in England the poets William Blake and Samuel Taylor Coleridge are considered its precursors. A Frenchman might mention Jean-Jacques Rousseau. The term Romanticism was not used by these innovators and became only later in vogue. The Romantics, as we will despite of that call them, considered the objectives of the Enlightenment too grand and ambitious to be realized. They rebelled against the overvaluation of the rational side of men, a side that has the tendency to underrate its emotional counterpart. In their protest they only valued their emotions, which expressed itself in an abhorrence of technology, of science, and of the upcoming industry. As early as the turn of the eighteenth century, William Blake raised his voice against the factories that sprang up in parts of England:

"And was Jerusalem builded here,
Among these dark Satanic Mills?" 10)

The Romantics distrusted the city, the habitat of industry, and worshipped nature as unspoiled instead. They turned their backs on the kind of progress the Enlightenment proclaimed and denied a sacred scheme, godly or not, that would unfold itself beyond question. On the contrary, for them the future was unknown, insecure, and without finality. Precisely that thought offered them the possibility to use their imagination and intuition, and to discover the yet to come by themselves. The artist was the proper person, more than anyone else, to craft this new future. The Romantics were not artisans that toiled for a living. They were liberated souls and as such capable of reaching new and immense heights. Art had to be original and pure in their opinion, and no longer subject to style or fashion. They opposed the idealism and the inclusive concepts of the Enlightenment, and disputed the very broadly postulated principles that went beyond the individual being. As a reaction they sought for wild fantasies, for grand imagery, for exotic circumstances, and for an extremely personal way of expression. They looked inside instead of outside. They were conscious of their own

unique personality and precisely in that uniqueness they saw their genius. Sometimes this went so far, as in the case of William Blake for example, that they became incomprehensible for their fellow beings. Their complete individuality contrasted totally with the cool detachment of the enlightened thinkers. As such, it must have been a special moment when the Romantic Coleridge read his *Ancient Mariner* at the Godwin home, a bastion of enlightened thought. There one sees two contrasting attitudes slide over each other. Seen from our point of view two hundred years later, it is as if Mary, hidden behind a sofa, was called to perform great things. It would not take her very long to accomplish that.

In England, in 1712, only a few years after the laborious installation of the *Machine de Marly*, Thomas Newcomen was working on a rudimentary steam engine. The use of steam as a source of power had been investigated for some time in Europe.

There are sketches of Leonardo concerning a steam cannon. And as early as 1543, in the presence of the emperor Charles V, a demonstration took place in Barcelona. The *Trinidad*, a 200-ton vessel, navigated the harbor without the help of sails or oars. It was propelled by a very simple steam engine, invented by Blasco de Garay. As far as we know the engine consisted of a kettle of steaming water that brought six wheels, or paddles, into action. We are not sure because De Garay kept his invention secret. Although the emperor approved of the experiment, no money was freed for its development and the project died a silent death. 11)

There were scattered inventions in the seventeenth century where steam power was used, among others one for making fountains spurt water. But with Newcomen's experiments, steam was for the first time seriously considered as a substitute for human or animal labor. Newcomen based his invention on the pioneering labor of a Frenchman, Denis Papin, who, in 1690, experimented with the principles of a piston steam engine. Papin was a *Huguenot*, as the Protestants were called during the reign of Louis XIV. After the king, in 1685, had abolished the *Decree de Nantes*, a decree that, in 1598, had proclaimed freedom of religion in France, Papin had to take refuge in Hessen, in what now is Germany. He continued experimenting with steam power, but did not reach conclusive results. It is ironical to realize that if he could have worked in a more tolerant climate, the steam engine would have been invented in France instead of England. As it was, Papin's experiments failed because of his lack of means in exile. Eventually his ideas reached England where Newcomen made better use of them.

Perhaps Newcomen's machine could be called history's first real machine. It shows most of the typical characteristics such as an internal source of power, a mechanism that conducts and transforms motion, and an application. Until far in the nineteenth century it was used to pump water from mines. The machine worked as follows. Water was brought to ebullition in a closed kettle and the steam this produced was, by means of a tap, let into a cylinder that was connected to the kettle. The top of the cylinder was open to atmospheric pressure. The piston inside the cylinder was pushed up by the building pressure and a lever, connected to the piston, transmitted the upward movement to a pump. When the piston was pushed to its highest point, the tap was closed and another one opened which let cold water into the cylinder. This made the steam condense and created low-pressure under the piston. The combined weight of the atmospheric pressure and the lever pushed the piston down, and now the downward movement was transmitted to the pump. It had completed a circle and the process could be repeated. However, two men were permanently needed to make the machine function, one to keep the fire beneath the kettle going and one to operate the taps. With that the machine kept an important element of manual labor.

Only with James Watt's steam engine our doubt disappears and we speak of a real machine. Watt was a technician and received an assignment from the Glasgow University to repair a Newcomen steam engine. He introduced several specific improvements, and in 1765 came up with a design for a machine that was so practical that it would change the course of our society. Probably his most important

improvement was the *centrifugal governor*, a device that controlled the rotation of the mechanism, independent of human intervention. It worked as follows. When the rotation increases, the centrifugal force drives two so called *fly balls* outwards and upwards, which makes two connected levers arms gradually shut a valve that rules the amount of power provided to the mechanism. As a result rotation decreases and the process can start anew. The *centrifugal governor* keeps the rotation of the engine stable. This an example of *feedback*. It means in general that the information a process offers, also called the *output*, is send back to the information that started the process, also called *input*. The constant modification of the *input* by new information of the *output* guarantees the stability of the process. Leonardo da Vince, and why doesn't this surprise us anymore, had used the principle of *feedback* in his design for a roasting-spit. The hot air of the fire was used to make the spit turn by means of a set of paddles. When the fire under the roast became to hot, the paddles made the spit turn faster which prevented the meat from burning. In principle this is an early use of *feedback*. But it is unlikely that Watt knew about this.

The importance of the *centrifugal governor* not only recedes in its application. It had an important side effect. By the use of *feedback*, a procedure that is typical for living beings, the machine seemed to be living. It gave the impression it decided for itself and as such appeared to be at par with human beings. It had come alive.

Another important factor in the animation of the machine was its nudity. All its rhythmical moving parts were uncovered and visible for everyone. It fed our fantasy and created a myth around its appearance. Unconsciously we started to regard machines as living beings and ourselves as the masters of their creation.

The steam engine with its independent functioning and its naked appearance made a bigger impression than other moving apparatus, however ingenious they were. As a technical accomplishment, the three moving puppets which Pierre Jaquet-Droz, a Swiss watchmaker, created between 1768 and 1774, outstripped the steam engine by far. The three, one meter high, dummies were meant as publicity for his firm. One could write, one could draw, and the third played music. The drawing and music-playing dolls both consisted of two thousand separate parts. The letter-writing puppet however used an incredible six thousand parts. These automata are sometimes seen as the first computers. They were fed with a program that initiated the mechanism that controlled the movements of the limbs. Nevertheless, in spite of the admiration these marionettes reaped, they were not regarded as being alive.

With the application of the steam engine the Industrial Revolution started. As early as in 1776, Watt's invention was in use as a source of power in industrial complexes in England. From that moment on, its applications multiplied and steam power was used to pump water out of mines, hoisted coal up, blew air in the furnaces where iron was produced, grinded the clay for the production of crockery, and in general propelled all production mechanisms. It seemed as if the whole of society came into motion and the slow progress western society had made since the Renaissance suddenly seemed insignificant in comparison. It wasn't only a question of factories, invading their environment with their noise and smoking chimneys; every aspect of life was touched. The change was that big that historian Eric Hobsbawn speaks of an *outbreak* as if it concerned an epidemic disease. 13)

The mechanization of the process of labor had an enormous influence on man. The machine fired our imagination, and unconsciously we started to regard them as living creatures. A curious relationship started in which men somehow became subordinate to them. Men fed the machine with coal and water, and it awakened, and made its hot breath felt, it moaned and groaned, it spitted fire and smoke, it sweated and stank. Its repetitive movements insinuated sexual intercourse; some parts seemed male and others female. It was an industrious creature that threatened to replace men.

And indeed, in early revolts against their work circumstances, English textile laborers attacked their machines and destroyed them. They called themselves *Luddites* after Ned Ludd, a laborer who, in a fit of insanity, had destroyed a weaving loom. They literally accused the machine of their worsening conditions instead of the system that created and tolerated this situation. The machine originated motion which they were forced to move along with, just as any of its other parts. With only a single part missing, the machine wouldn't work. The laborer had become at the same moment essential and exchangeable, comparable to a screw or a spindle.

We revolted against the machine, but at the same time we identified with it. One can find examples of this identification in the use of our language. Expressions like *to blow of steam*, *to be under pressure*, *to run out of steam*, or *picking up steam*, seem to come straight from the steam engine. They show the influence the Industrial Revolution, fueled by straightforward rationalism, had on our society. In 1687, Isaac Newton had published his *Principia* in which he explained the three laws of motion and the law of gravity. 13) These laws would explain the universe for the next two hundred years as a completely mechanical affair, until Albert Einstein revolutionized physics. Their influence was huge and it paved the way for the complete take-over of society by mechanization. Newton regarded the universe as a clockwork, not only from a mathematical point of view, but also as the result of the typical wish from the Enlightenment to know everything rationally explained.

The extreme course society was taking as a result of these ideas provoked sharp protests. As early as 1790 William Blake reacted, as we saw above, and later the Romantics joined him in his objections. Wordsworth:

And must he too the ruthless change bemoan
Who scorns a false utilitarian lure
'mid his paternal fields at random thrown? 14)

Frankenstein can be considered a typical Romantic work. It opposes strongly, and in an imaginative way, the mechanization of society. The monster is presented as a direct result of rational course of action. But it too shows how the Romantic mind explored the possibilities of an exalted fantasy and enjoyed the shudders its excesses produced. In Mary's later written introduction to *Frankenstein* we read how, one evening after the company had discussed the theories of Erasmus Darwin, Lord Byron urged his guests to write a horror story. Erasmus Darwin, the grandfather of Charles Darwin, lived from 1731 till 1802 and was a typical representative of the Enlightenment. He was a physician, a physiologist, an inventor, and on top of that a poet. His ideas on galvanism, what in biology means the contraction of a muscle as a result of contact with static electricity, inspired the four artists present into all kind of ghastly fictions about the possibilities of this effect. The rumor went that Erasmus Darwin had succeeded in rousing to life inert matter and according to Mary's introduction, Byron and Percy Shelley were wildly imagining about the consequences.

Darwin was not the first to speculate about artificial life. As early as 1651, Thomas Hobbes mentions the possibility in the very first sentence of *Leviathan*.

Nature (the art whereby God hath made and governes the world) is by the art of man, as in many other things, so in this also imitated, that it can make an Artificial Animal. 15)

Another source of inspiration might have been *An account of the late experiments in galvanism*, a book published in London in 1802 by the Italian scientist Giovanni Aldini, in which he describes his experiments with galvanism. He introduces those experiments with the following words:

Though accustomed to a more tranquil kind of operations in my closet, and little acquainted with anatomical dissections, the love of truth, and a desire to throw some on the system of Galvanism, overcame all my repugnance, and I proceeded to the following experiments. 16)

We can almost hear Victor Frankenstein saying these words.

Then Aldini starts describing his gruesome experiments with recently executed convicts, applying electricity to the severed head of one of them, resulting in:

strong contradictions in all the muscles of the face, which were so contorted in so irregular a manner that they exhibited the appearance of the most horrid grimaces. 17)

He goes even further and his experiments take on theatrical aspects. Experiment number twenty-seven:

I placed the two heads in a straight line on a table, in such a manner that the sections of the neck were brought into communication merely by animal fluids. When thus arranged, I formed an arc from the pile to the right ear of one head, and to the left ear of the other, and saw with astonishment the two heads make horrid grimaces; so that the spectators, who had no suspicion of such a result, were actually frightened. 18)

We can well imagine the fright of his public. It would only grow with experiment thirty-two.

In consequence of this arrangement, the fore-arm was raised, to the great astonishment of the spectators. 19)

It is tempting to attribute Mary's inspiration to these experiments.

Probably it was John Polidori who introduced the subject of animation. His contribution to the contest would be *The Vampyre*, a story that would gain fame as one of the first ones with this theme. 20)

The interest the Enlightenment showed in mechanical movement changed with the Romantics in an interest in organic movement. Nature was generally admired as an uncontrollable force. It had its dark side too, and in Mary's novel we witness the consequences of going against nature. *Frankenstein* could in a way be regarded as a highly actual novel. Our experiments in genetics or molecular biology seem to generate the same uneasiness in some of today's novelists.

The novel's subtitle *the Modern Prometheus* is drawn from Greek mythology. Prometheus was the founding father of our civilization and a benefactor of humanity. He created us from Earth's *filthy lucre*. His name means as much as *he who foresees*. And sure enough, civilization is development, or a forward-movement. As a service to humankind he stole the fire, which Zeus withheld from us, from heaven. This angered Zeus and in his wrath he ordered Prometheus' brother Hephaestus, *he who thinks backwards*, to chain Prometheus to a rock. There, every day an eagle came and picked out his liver, which re-grew at night. This continued until Hercules freed Prometheus and reconciled him with Zeus. The punishment is an example of motion without progress or as Muriel Spark writes:

"The Prometheus myth is one of action but not of movement..." 21)

Why did Mary choose this subtitle? Does she want to compare Victor Frankenstein with Prometheus as a creator of life? Does she suggest a parallel between Prometheus life-bringing fire, which comforted a wet and cold humanity, with the seemingly life-giving electricity that sparks the process of galvanization?

Percy Shelly wrote his *Prometheus unbound* around the same time. There is no obvious relationship between this *closet-play*, a play that is not meant to be put on the stage but only to read, and Mary's novel. However, but they might have inspired each other with this theme.

Movement plays a vital part in *Frankenstein*.

First there is literal movement. The two main characters of this novel, the monster and its creator, are all the time on the move. This seems to be the outcome of the voyages Mary made when she fled England. In the novel she repeats some parts of the various routes she and Shelley had followed, for example the boat trips across the Lake of Geneva, or the trip down the Rhine.

Then there is emotional movement. As Mary writes:

“The different accidents of life are not so changeable as the feelings of human nature.” 22)

We meet both characters in moods that vary from highly excited till deeply sorrowed. We see pure innocence and extreme depravity. Noble behavior is coupled with treason, wisdom with insanity, courage with cowardice. The reader is swept through these moods and feels love and repulsion, mercy and disgust. The polarization of opposites, that is so typical for rationalism, has been done away with in this novel. We see the poles melt into each other. Attributes that are normally seen as separated from its opposite, such as wisdom and insanity liquefy and flow together in one character. At one moment he or she shows astuteness, the next one the same person is prone to madness. This kind of unstable mental motion is a familiar feature in Romanticism. Goethe's powerful expression of this volatility.

“Freudvoll
Und Leidvoll,
Gedankenvoll sein,
Hangen
Und bängen
In schwebender Pein,
Himmelhoch jauchzend,
zum Tode betrübt-
Glücklich allein
Ist die Seele, die liebt.” 23)

A third form of movement in this novel results from its telescopic construction. Somewhat analog to Benoit Mandelbrot's theory of Fractals 24), we zoom in on a situation where details, belonging to the same situation, are being enlarged and enlarged without significant changes to the overall story.

The novel starts with the explorer and ex-poet Robert Walton, who keeps his sister Margaret informed of his progress by writing her letters. We meet Walton, who comes from London, when he has just arrived in Saint Petersburg, and plans to travel on to the northern Russian port of Archangel. He is well off, and apparently resolved to spend his money discovering an open sea route that connects the Atlantic with the Pacific. Nowadays, due to the melting pool ice, this route is open the larger part of the

year. In Mary's time however such a route was unknown. In consequent letters Walton tells how he hires a ship in Archangel, recruits a crew, and pushes off north into unfamiliar regions. In one of his letters he refers to the *Ancient Mariner* and it won't be last time that Mary puts one of her literary inspirations on the stage.

During its voyage north, the ship gets stuck in the ice and Walton doubts if he can continue his expedition. One evening, staring over the ice, he sees far off the shade of a gigantic man who travels on a dog sledge and disappears between the crags of ice. The next morning crewmembers find another traveler who is stranded on the ice and in very bad shape. It takes a few days, and much attention from Walton's side, before the man is sufficiently recovered to tell his story. The rescued man is called Victor Frankenstein and it is he who continues the story. We zoom in and a new perspective opens.

Victor Frankenstein was born in Naples from Swiss parents. As a child he travels with his parents through France and Germany before the family settles in Geneva. Victor has two younger brothers and a sister; an adopted child a year younger than he is. The Frankenstein family lives in perfect harmony. When Victor is twenty it appears he is interested in *natural philosophy*. The outdated term refers to an unspecified area where biology, physics and philosophy mingle. By accident he stumbles on a book from the Renaissance alchemist Cornelius Agrippa, probably the *Occulta Philisophia*, a work from 1533 that deals with all kind of obscure knowledge.

Although his father condemns the work as *sad trash*, Victor is enthralled with the book and continues his studies with other dubious works such as those of Paracelsus or Albertus Magnus. Naming these alchemists helps Mary introducing the shady theme of artificial creation of life. Victor carries on his studies at the university of Ingolstadt, in Bavaria, where his interest in alchemy changes in one for chemistry. Mary touches the subject of specialization when she makes a chemistry teacher say:

"I have not neglected the other branches of science. A man would make but a very sorry chemist if he attended to that department of human knowledge alone."
25)

In the lab we come across some machines although Mary doesn't enter into details. In fact, throughout the novel she gives the impression that she shuns from descriptions of cities, vehicles or machines. Neither does she tell us exactly when her story takes place. *The eighteenth century* is the nearest we come. But Mary herself must have witnessed the fast spreading industrialization and her refusal to mention the signs of her time fits in the Romantic ideal of an unspoiled world.

Victor's study absorbs him completely and leads him, after strenuous efforts, to discover a way to animate lifeless matter. His next step is to create a frame that can carry this invention. Desecration, the abattoir, and the dissection chamber of the local hospital, provide him with the necessary material and, in a frenzy, in the attic of his boardinghouse, he creates out of lumps of flesh the resemblance of a human being. Then, on a stormy November night, by the wavering light of a dying candle and with the help of his sparking instruments, he arouses the lifeless shape.

"I saw the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs." 26)

But what should have been a triumph turns straight away into a disaster. Between two sentences Mary changes the complete course of the narrative. Victor's infatuation leaves him completely the moment he realizes the monstrosity he has provoked. Horrified he flees his attic room. Here we can see how one opposition is lifted, how insanity and reason lodge together in the same mind. The clear and ordered world where everything has, and keeps, its place, as was suggested by the Enlightenment, is

left and we enter a world where things are in motion. Mary wrote in her diary after she has finished *Frankenstein*:

“Why is not life a continued moment where hours and days are not counted?”
27)

Here Mary tries to find a foundation for the continuous change of reality in which our artificial distinctions are fractured as soon as we create them.

Mary does not offer a description of the process of infusing life, nor of the necessary devices. In the various film adaptations of the book however, the machinery is shown extensively, not only to illustrate the complexity of the process Victor Frankenstein invented, but also to explain its inhumanity. We see sizeable scaffolding, full with equipment as tubes, spheres, vessels, and electrodes between which shafts of electricity spark. Once more we observe the nakedness of the machinery. Since the steam engine shaped our image of what machines are, we need to see them in this way if they want to come across as machines at all. Its potential can only be conveyed when we can perceive its moving parts. Later we will see how Marcel Duchamp attributes sexuality to a machine by showing its unclad parts.

In the most famous film adaptation, the one from 1931 directed by James Whale, which storyline differs a lot from that from the book by the way, we observe the distorted face of the actor who plays Victor Frankenstein. He is turning a big wheel to bring up the table that carries the body into position under the machinery. Then he pulls the handle which sends the current through the lifeless body and slowly, in a close-up, we see an arm starting to move.

In the 1994 version from Kenneth Branagh, called *Mary Shelley's Frankenstein*, we see Victor Frankenstein, played by Branagh himself, his chest bared, running as a madman through his lab and pulling chains here and there. For a moment we see a shot of a large book with the image of Leonardo's *Vitruvian Man*, and remember his nightly excursions in the dissection room of the Milanese hospital. A stretcher, the unanimated figure bound to it, sweeps through the laboratory space, bouncing against obstacles, and comes to a halt under the electrodes. There, under showers of sparks, Victor Frankenstein animates his creation. The scene is illuminated with flaming red light as if a huge fire was burning in a fireplace, something that heightens the drama of the moment. In both scenes science is shown as something evil and the implicated machinery is presented as the visual prove of this assumption.

Back in the book, Victor is overcome with a nervous breakdown when in the morning the creature leaves the improvised lab in the attic and visits Victor's bedroom one floor lower. As soon as Victor sets eyes on his creation, he flees his boardinghouse and wanders through the streets. As Mary makes Victor roam through Ingolstadt, she remembers Coleridge's sonorous words, heard some years before, hiding behind a sofa:

“Like one who, on a lonely road,
Doth walk in fear and dread,
And, having once turned round, walks on,
And turns no more his head;
Because he knows a frightful fiend
Doth close behind him tread.” 28)

In the next months Victor is taken care of by a friend. It takes a long time before he recovers from his breakdown and once better he stays in Ingolstadt for several years. He realizes he has created a monster and lives in constant fear of reencountering it, although the creature seems to have disappeared. He changes his studies of chemistry for oriental languages. That doesn't make much sense but Mary needs some time to

transform the escaped creature into a real monster. Not intentionally maybe, but completely according with the ideas of John Locke, in which the human mind is presented as a *tabula rasa*; as completely empty and waiting to be filled with experiences, she allows the creature time to form itself.

When Victor has completely recovered and the experiment is almost forgotten, his zest for life returns. But then fate takes a turn. He receives a letter from his father which tells him that his youngest brother, still a child, has been murdered. He returns to Geneva and realizes, after he has seen the figure of a huge creature hiding in the woods where his brother has been murdered, that his own creation is taking revenge on him. A servant is wrongly accused of the murder and executed. Victor despairs but takes no action. Mary plays pages long with mingled emotions.

To find relief from his tormented feelings, Victor makes a journey, first by mule, then on foot, through the Mont Blanc mountain ranges. Mary now treats us on superb descriptions, full of movement, of the Alp landscape. It rises and falls, ravines open, stones roll, winds whisper, domes tower, waterfalls dash, avalanches fall, and eagles soar. Victor is being transported by the magnificent landscape and feels happy again. It is here, under the *magnificent Mont Blanc* that Mary makes Victor meet his creation. With completely reasonable arguments the monster convinces Victor to follow him to an abandoned hut to listen to his tale. Now, a third perspective opens as the monster takes over the narrative

After being aroused to life and in vain having asked for help from his creator, the creature flees Victor's lab. We now see that his mind is indeed completely blank. He doesn't know who or what he is, nor anything about his environment. This is typical for Empiric thought. John Locke and David Hume deny every kind of innate ideas, its presence on which Descartes based all of his concepts. The creature is neither good nor bad. Only that what it experiences determines if it will turn into a monster or not. To illustrate this, Mary makes him undergo a series of situations. Light blinds and disorientates him. Darkness takes him by surprise and he feels anxiety. Heat and cold make him suffer. Then he feels hunger and thirst. He tires and falls asleep. In one of those sweet moments when the writer's office is simply too hard on the eighteen-year-old girl, the creature finds an abandoned fire in the forest he roams. A few lines on he finds a warm cape between the trees. During this first time he is getting more skilled in collecting food and his experiences grow. He still is innocent. But this changes when he ventures into a village and, only because of his repulsive aspect, terrifies its inhabitants. They drive him from the village with a rain of stones, and on his blank mind the first impression of his fellowmen is made. Scared and wounded he come across an isolated farm. The house has a low barn attached to it, which doesn't seem in use. He crawls in and tells himself not to trust human beings. However, a crack in the wall between the barn and the house allows him to observe the family with inhabits the farm, a blind father and his children, a young man and a girl. They make a new impression on his mind. They are loving and caring, and by all means noble people, although they appear to live in poverty. They inspire the creature with the same kind of decency and at night, without revealing himself, he collects firewood for them and clears the snow from their yard. By intently listening through the crack he gains knowledge of the use of language. Not German, although we are still in the Bavarian woods, but French, because the father and his children are French refugees. After some complications he learns the story of the repudiated family and a fourth perspective opens in this novel. It is here, halfway through the story, that we remember, with some amazement, that we listen to Robert Walton, polar traveler and ex-poet, who is telling this story. How far away he seems.

But passed this point the various windows are shutting fast. Something worth mentioning are the books the creature comes in contact with. The family reads and comments Volnay's *Ruin of Empires*, a choice that becomes somewhat more understandable when we know that this essay contains a vision in which all religions join into one someday because of their single common bases. We can see the

attraction for a Romantic in which the clear opposites from Rationalism are brought into motion and dissolve midway. In the light of the novel, listening to the French visionary might have strengthened the creature's idea that he could count on the family's compassion when he would reveal himself. On one of his forays in the woods that surround the house, he finds three other books, left in a bag. They brace him in similar ways. Goethe's *Sorrows of Werther* presents him with an unknown world of feelings. Plutarch's *Lives* provides an insight in cruelty and the noble-mindedness that is necessary to overcome it. But it is Milton's *Paradise Lost* that really offers him a perspective of his own situation and will inspire him into a revolt against his creator. Such lines as;

"Did I request thee, maker, from my clay,
To mould me man? Did I solicit thee
From darkness to promote me? ... ,

The very lines that Percy Shelley quotes in his preface to the first edition of *Frankenstein*, may well have inspired the creature. 29) With the impression Satan leaves on his mind, which is rapidly becoming less and less blank, Mary eases the way for further development.

The novel now undergoes a sudden acceleration. This motion is typical. Extensive descriptions of moods or nature are being alternated with short, violent action. This abrupt rhythm may surprise us who, two hundred years later are used to a supple and guided narrative style. The creature reveals himself to the blind father and is received well until the other two family members return and lay their eyes on him. He is instantly and utterly rejected, and flees. His further experiences turn him irrevocably into a monster that only seeks to revenge himself on his creator. He reaches Geneva where, in an act of retribution, he kills Victor's younger brother. With this his story ends. Now, in his hut high in the Alps, he requests Victor to create him a female partner.

"My companion must be of the same species, and have the same defects.
This being you must create." 30)

Victor returns to Geneva, and for some time considers the implications of this request. Finally he goes to Strasbourg where he meets a friend and together they travel to England. In imitation of her first European journey, Mary makes them go down the Rhine and board a ship in Rotterdam. Victor continues to travel to Scotland where, on a remote island he starts his work on a female creature. But he lacks the ecstasy that spurred him during his first experiments and he is disgusted with his work. When he is almost done, but short of infusing life into his second creation, the Monster pays him a visit to check on his progress. It awakes such loathing and remorse in Victor that he destroys the female creature. The Monster erupts in anger and swears revenge. Now a series of most unlikely things occur that ends with the murder of Victor's bride on the very day of their wedding.

Then Victor decides to destroy the Monster. He leaves Geneva for good.

" ... my country, which, when I was happy and beloved, was dear to me, now, in my adversity, became hateful." 31)

And again we notice the blending of opposites. The hunt leads with a big sweep over the map of Europe from Geneva to the Black Sea, and then across Russia, in the direction of the North Pole until we reach the point where Victor is being saved by Robert Walton and his crew. After the scientist has told his story he dies from exhaustion, though not without first asking Walton to continue his quest of destroying the Monster. Then, in what Mary calls

“a wonderful catastrophe” 32),

the novel ends with the Monster’s visit to Victor’s bier. He declares to Walton that life has given him no other options than the ones that have lead him to this end full of contradictions, that his revenge is now complete, and that he will end his life. With his flight from the ship in

“darkness and distance”, 33)

the story ends.

In this novel we can see how movement is treated in a new way. The Romantic artist is affected by the same temporality of phenomena as thinkers and artists before, but his or her reaction is different. We saw how Leonardo tried to catch motion, to render it in drawings and to recreate it designing machines, how during the Ancien Régime it was suppressed and used to halt development, how during the Enlightenment Newton tackled it with pure reason and curbed it in a series of laws, and finally, how the Industrial Revolution exploited it for profit. The Romantic artist however undergoes movement as the temporality of things, and, longing for eternity, regards it as a torment. Percy Shelley:

“This various world with as inconstant wing
As summer winds that creep from flower to flower.” 34)

Enlightenment had created an ideal image of us in which we are restrained, composed, in command of our emotions. Control over the ever-changing phenomena started with control over one own’s feelings. Different than the Stoicism from Roman times, which was also about control over oneself and where one professes a kind of indifference with the ever-shifting circumstances, a mentality which was being imitated during the Renaissance, enlightened man tried to get a grip on change by means of reason. He or she tried to find laws that governed it. Or, if that wasn’t possible, then at least to work out why not. Emanuel Kant, of the most influential philosophers of the Enlightenment doubted if we could obtain knowledge on reality. He suggested that none of the faculties we possess to acquire understanding of reality are sufficiently equipped to take this further than the impressions our subjective experiences allow us. For example; he did not see Newton’s laws of motion explain a reality that goes beyond the way it appears to us. Kant upheld the rationalistic idea of a separation between our vision on reality and reality itself. It were such visions that fueled the Romantic revolt against rational thought.

Georg Wilhelm Hegel now suggested that our vision on reality and reality itself are one and the same thing and form an absolute spiritual unity that annihilates the dualism of subject and object. This meant that our way of thinking is valid as a means of investigation for the whole of reality, and not only for the impression it makes on us. Its structure and our way of seeing are from one and the same make. Hegel named this *Geist*, German for *spirit*. With this, knowledge and object of knowledge were no longer separated. The world of feeling was thrown open widely, and in transportations, in hyperbole, in oversensitivity, in contradiction, and in luxuriating, the Romantics reached summits and valleys of sensation that had never been explored before. It is said that Percy Shelley fainted when he read line twenty of Coleridge *Christabel* for the first time:

“Beneath the lamp the lady bowed,
And slowly rolled her eyes about;
Then drawing in her breath aloud,
Like one that shuddered, she unbound

The cincture from beneath her breast:
Her silken robe, and inner vest,
Dropt to her feet, and in full view,
Behold! Her bosom and half her side - - -
A sight to dream of, not to tell!
O shield her! Shield sweet Christabel!" 35)

We may well shrug our shoulders reading these lines, but the striptease with its slow progress of erotic tension, and then the abrupt pause after *Behold! Her bosom and half her side - - -*, as if our breathing stops, as if the universe stops, hurls with a mighty sweep the conjured image to the opposite site of our imagination. A sweep so powerful that it made Shelley collapse.

Frankenstein is at the same time a masterpiece and a hopeless book. It is highly original but at the same time terrible dilettante, the result from Mary Shelley's talent as well as her inexperience as a writer. She herself wasn't conscious of the importance of this novel and so were few at her time. But circumstances developed and today we regard it as the first novel that broaches a highly actual subject as *the origins of life*. In her later years Mary distanced herself from her first novel. She called it, as if she was Victor Frankenstein,

"her hideous progeny" 36),

and wondered, in the introduction of the novel, how she had been able to produce such a story.

Notes:

1

"Julie ou la nouvelle Héloïse"
St. Jean Jacques Rousseau
J.H. Huizinga
Heureka
Nieuwkoop, Holland, 1976

2

Mary Shelley, p.80
Muriel Spark
Constable, London, 1988

3

Mary Shelley, p.83
Muriel Spark
Constable, London, 1988

4

The Edinburgh Magazine, March 1818

5

Remarks on Frankenstein, or the modern Prometheus, a novel.
Walter Scott
The Edinburgh Magazine, March 1818

6

Remarks on Frankenstein, or the modern Prometheus, a novel.
Walter Scott
The Edinburgh Magazine, March 1818

7

Mary Shelley, p. 68

Muriel Spark
Constable, London, 1988

8
Mary Shelley, p. 102
Muriel Spark
Constable, London, 1988

9
Mary Shelley, p. 131
Muriel Spark
Constable, London, 1988

10
And did those feet in ancient time
William Blake
Blake's selected poems
Dover Thrift Editions
New York, 1995

11
Primera prueba española de propulsión a vapor
mgar.net

12
The Age of Revolution, 1789 – 1848, p. 45
E.J Hobsbawm
Minor books, 1962
Hathi Trust digital library

13
Philosophia Naturalis Principia Mathematica
Isaac Newton, 1687

14
On the project of the Kendal and Windermere railway, Oct 1844
William Wordsworth
Bartleby.com

15
Hobbes, Thomas
Leviathan
Gutenberg Project

16
An account of the late experiments in galvanism, p 68
Aldani, Giovanni
London, 1802
public domain review. Org

17
Ibid, p 68

18
Ibid, p 70

19
ibid, p 73

20
The Vampyre
John Polidori, 1819

21
Mary Shelley, p. 162
Muriel Spark
Constable, London, 1988

22

Frankenstein, p 48
Mary Shelley
Arcturus Publishing Limited
London, 2010

23

Being mindful,
Full of misery
And joy,
To endure
And to incur
In hovering pain,
Exclaim high as heaven,
be sadder as death-
Happy alone
Is the soul who loves.
Egmont, third act, scene II
Johann Wolfgang van Goethe

24

"Striking spirals and delicate arabesques, without difference between figuration and figure, where an object can approach or distance itself limitless because that what is described possesses the same density in detail as in totality."
Caos y Orden, p. 90
Antonio Escotado
Espasa Fórum, 1999

25

Frankenstein, p 40
Mary Shelley
Arcturus Publishing Limited
London, 2010

26

Frankenstein, p 48
Mary Shelley
Arcturus Publishing Limited
London, 2010

27

Mary Shelley, p. 59
Muriel Spark
Constable, London, 1988

28

The Rhyme of the Ancient Mariner
Samuel Taylor Coleridge

29

Mary Shelley, p. 162
Muriel Spark
Constable, London, 1988

30

Frankenstein, p 130
Mary Shelley
Arcturus Publishing Limited
London, 2010

31

Frankenstein, p 186
Mary Shelley
Arcturus Publishing Limited
London, 2010

32

Frankenstein, p 200
Mary Shelley
Arcturus Publishing Limited
London, 2010

33

Frankenstein, p 205
Mary Shelley
Arcturus Publishing Limited
London, 2010

34

Hymn to Intellectual Beauty
Percy Shelley, 1817

35

Christabel
Samuel Taylor Coleridge

36

Mary Shelley, p. 155
Muriel Spark
Constable, London, 1988

Motion in Art, chapter 6

Il piccolo Leonardo

At the end of the nineteenth century, three hundred years after her times of glory as a European power, Venice had become a refuge for artists, as well as a meeting place for the affluent classes of the industrial Europe and America with their broad interest in culture. Venice's many faces exerted a large attraction on both groups. The city had been Byzantine, Romanesque, Gothic, Renaissance and Oriental. At the Vienna Congress of 1815, the city became part of the Austrian-Hungarian Empire, and underwent the influence of German culture. In 1848 she became part of Italy. It was as if this city had never been able to choose; not between land and water, isolation and cosmopolitanism, commerce and art, Europe and the Orient. Venice offered endless variation. With features such as the *Accademia*, the *Ca'd'Oro*, *La Fenice*, *Il Campanile*, *L'Arsenale*, en Palladio's *San Giorgio Maggiore*, she had been a longtime obligatory stopover on the *Grand Tour*, as the English called the educating journey along Europe's classical heritage. But at the end of the nineteenth century, in what later would be called the Belle Époque, the city became a destination in itself, a sanctuary for the sensitive, far from the stink, the smog and the repulsive poverty of the North European industrial centers. The nineteenth century, as well as Romanticism, took their time in dying there. While in more vital cities as Paris or New York the twentieth century started with loud manifests and shocking exhibitions, in Venice the spirit of former over-sensitivities remained, as alluring and troubled as the water of the Laguna.

The Belle Époque was the last convulsion of the nineteenth century. It was a time of prosperity and abundance in art that was fed by poets as Stephane Mallarme or Paul Valery, painters as Gustave Moreau or Odilon Redon. It was a period of sentiment, decadence, symbolism, and ambiguity, a period that would find her end in the urge for renovation in art that characterized the first decennia of the twentieth century, and in the harsh reality of the First World War. Marcel Proust, in part four of *La Recherche*, leaves an, indeed insuperable, description of the atmosphere of Venice to William Ruskin, one which we can find back in the opening pages of his well known treaty on art and architecture of the city:

“When first upon the traveler’s sight opened the long ranges of columned palaces, - each with its black boat moored at the portal, - each with its image cast down, beneath its feet, upon that green pavement which every breeze broke into new fantasies of rich tessellation ... Well might it seem that such a city had owed her existence rather to the rod of the enchanter, than the fear of the fugitive; that the waters which encircled her had been chosen for the mirror of her state, rather than the shelter of her nakedness; and that all which in nature was wild or merciless, - Time and Decay, as well as the waves and tempests, - had been won to adorn her instead of to destroy, and might still spare, for ages to come, that beauty which seemed to have fixed for its throne the sands of the hour-glass as well as the sea.”¹⁾

Proust wrote more about this city, and especially about one of its inhabitants, the designer Mariano Fortuny, whom he called *the magician of Venice* and in whose dresses he imagined Albertine with so much pleasure.

“Le robe de Fortuny que portait ce soir-là Albertine me semblait comme l’ombre tentatrice de cette invisible Venise.”²⁾

Mariano Fortuny Madrazo was an artist, a designer, an inventor, and entrepreneur who developed the majority of his work in his house and workshop in the Palazzo degli Orfei, at the Campo San Beneto, in Venice. Mariano bought the various parts of this building bit by bit, until, in 1931, he owned it completely. In the long years that he lived there, he altered the palazzo into a space that was as versatile as were his needs. It served as his home, workshop, design studio, lab, factory and showroom, and was a creation in itself.

In Mariano’s work we find influences as diverse as Carpaccio, Titian, William Morris, Richard Wagner, or his father; the painter Mariano Fortuny i Marsal. The universality of his abilities, and the mixture of different faculties that characterize his work, seem a reflection of the cosmopolitan atmosphere of the city that adopted him. Mariano Fortuny would never be interested in the twentieth century, and although his inventions and machinery designs were highly innovative for their time, he preferred manual skill to mechanical reproduction. He surprises us repeatedly with his turns of interest and the wealth of his resourcefulness. His elusiveness may be best described in William Blake’s words:

“The head Sublime, the heart Pathos, the genitals Beauty, the hands & feet Proportion.”³⁾

Mariano Fortuny Madrazo was born, in 1871, in Granada, Spain, as the son of the famous Spanish painter Mariano Fortuny i Marsal and Cecilia de Madrazo Garrete, collector of exceptional textiles, and descendent of a family of painters at the Spanish court. In 1874, when Fortuny i Marsals unexpectedly died in Rome, Cecilia decided to go with her children to Paris where her brother, Raimundo de Madrazo, lived. Raimundo would take care of the important heritage of his diseased brother in law.

Mariano grew up in Paris in a stimulating environment of writers, artists, and scientists. It is no wonder that at an early age he felt attracted to creative tasks and started to develop himself as a painter. Apart from painting, his studies included some aspects of physics such as optics and the application of electricity. In last decades of the nineteenth century, electricity was still a relatively new energy source. However, his interests were broad and other worlds drew him too. His uncle’s acquaintances took him to theater pieces and musical performances. The theater impressed him hugely, and out of pure enthusiasm he started to design stage scenery, complete with costumes and all. One of his uncle’s friends traveled to Bayreuth and attended Richard

Wagner's *Ring des Nibelungen*. Wagner's music was very popular at the time. The uncle's descriptions of the tetralogy inspired Mariano in a decisive way. The theater would fascinate Mariano throughout his life, and he much of his work would be dedicated to it.

In 1888, Cecilia decided to go to Italy with her children. She would live in Venice. The family moved into an apartment in the Palazzo Martinengo, at the Grand Canal. There Cecilia created her own circle of artists, musicians and writers, and among her guests we find the composer Isaac Albéniz, the architect Josep Maria Sert, the writer Paul Morand, as well as the still unknown Marcel Proust.

Mariano continued his painting studies and extended his abilities with the art of etching and with photography. When he was twenty-one he visited Bayreuth, accompanied by his family, and underwent Wagner's musical drama. He was very impressed.

"Sólo soñaba con Wagner."⁴⁾

Back in Venice, Mariano started on a series of paintings and etchings with Wagnerian themes. In 1896, his first success came when his painting *las muchachas flor*, or *the Flower girls*, an evocation of *Parsifal*, was accepted at an international art exhibition in Munich and won a prize. In the next years he exhibited in Florence, at the 1889 Biennale of Venice, and in the Spanish Pavilion at the Paris World Exhibition of 1900, each time with work inspired by Wagner's music dramas. In Paris he won another prize. Mariano's Venetian circle of friends expanded rapidly and he became acquainted with people such as Gabriele D'Annunzio and Hugo von Hofmannsthal.

In 1899, the baroness Albrizzi asked him to design the stage of her private theater in San Polo, for the operetta *the Mikado*. Mariano used traditional design techniques, such as the painted background which had to create an optical illusion of depth, but the commission aroused his interest in the renewal of stage design. He was discontented with the limits of the static background paintings and the poor quality of traditional gas illumination. His mind filled with Wagner's music, he set out to revolutionize stage design.

At the end of the nineteenth century, Richard Wagner's music was immensely popular. Its influence is difficult to over-estimate. Wagner's ideas had a simultaneous effect on various, more or less distinguishable, art forms such as poetry, acting, music, or stage design. His concept of the *Gesamtkunstwerk*, the *total work of art*, drew these art forms together, which resulted in a more powerful expression and an important artistic renewal.

Richard Wagner was born in 1813 in Leipzig, in what was then Prussia. In 1821, Carl Maria von Weber composed *Der Freischütz*, the first German romantic opera. German Romanticism was closely associated with the upcoming nationalism in the German speaking regions. Until then, the Italian opera played a leading part throughout Europe. But with Romanticism the musical preferences of the German composers and public changed. The frivolity of Rossini's love-stories was replaced for the weightiness of myths and legends, for the fantastic and the grotesque, as was found in E.T.A. Hoffman's stories or those of the Grimm brothers. As a matter of fact, one of Wagner's first jobs would be to prepare the choir of the Würzburg Theatre for its participation in the romantic opera *Der Vampyr*, or *The Vampire*. This opera was based on John Polidori's short story *The Vampire*; the result of that memorable evening, in June 1816 at the Lake Geneva, when Lord Byron suggested to his friends that each would write a ghost story, a suggestion that not only resulted in *The Vampire* but also in Mary Shelley's *Frankenstein*.

Young Richard Wagner unfolded himself as a romantic. In his biography one can find many remnants of the spirit of his time. In Wagner we find the same exalted youth as in Percy Shelley; he walked with a school friend from Dresden to Prague, an uncle

introduced him to Goethe's dramas, he adored Beethoven's music. Although in 1830 he was called to arms to defend the factories against the laborers who had risen in sympathy with a revolt in Paris, where King Charles X had been forced to abdicate, he abhorred industry. Wagner suffered the romantic unrest and went from place to place. He lived successively in Leipzig, Dresden, Prague, Vienna, Würzburg, Magdeburg, Berlin, Königsberg, Riga, London, Paris, Zurich, La Spezia, Venice, Karlsruhe, Mainz, at Lake Starnberg, Munich, Geneva, by the Lake of Luzerne, Bayreuth, and Naples.

In 1839 Wagner tried his luck in Paris but failed to attract attention with his compositions, in spite of the letters of recommendation from his fellow countryman, the famous composer Giacomo Meyerbeer. France went through a period of economical rise and musical taste was one for extravagant productions. Wagner's work was too restrained and serious to hope for success with the French public of those days. In 1840, he wrote a lighthearted opera in the Italian style, called *Rienzi*, but again he was unable to find people interested to stage it in the French capital. How much this type of opera went against his feelings, shows a remark from 1845 in which he dissociates himself from *Rienzi* and calls his opera a *monster*. It makes us think of Mary Shelley when she repudiated her first book.

Around that time Wagner rediscovered Beethoven's Ninth Symphony, with its combination of symphonic orchestration and song. It meant a return to German music for him. Still in Paris, he wrote *Der fliegende Holländer*, and in 1842 he turned his back on the French capital and set himself up in Dresden.

Wagner made debts throughout his life. Not only did he finance his own productions, often with disastrous economical results, but he also had an extravagant style of living. For example, in Dresden he owned an extensive library with classical and modern works. This collection of books served as a source of inspiration for his musical pieces as well as for the many essays he wrote. With words that make us think of William Godwin:

"One should not see me as man who seeks support for himself, but as an artist, an artistic movement which one wants to preserve for the future, without allowing its ruin,"⁵⁾

Or:

"I must be able to luxuriate in beauty, with splendor and light. The world is obliged to present me the means to cover my necessities. I cannot live the miserable life of the village organ-player as maestro Bach did."⁶⁾

And just as Godwin, or Percy Shelley who could not image something like working for a living either, Wagner believed that the world had the duty to support his creative work. Later in time we will reencounter something of this attitude with Marcel Duchamp.

In 1847, large parts of Europe suffered a bad harvest. This resulted in a general economical crises and, in the next year, in a popular revolt that started in Palermo, in the south of Italy, then leapt to Paris, and spread from there over de rest of Europe. It opposed the autocratic attitude of the European states and protested against the poverty that the rapid industrialization meant for many people. The French king Louis Philippe was forced to abdicate. When the revolt reached Vienna, the architect of the European order after the Napoleonic time, Metternich, was to step down as prime minister of the Austrian-Hungarian Empire. New ideas about the structure of society, from Charles Fournier or Pierre Proudhon for example, went round. The last one wrote a piece called: *Qu'est ce que le propriété?*, or *What is property?*, in which he equaled property with robbery.⁷⁾ Similar ideas we will meet in the chapter on Constant

Nieuwenhuys. And of course, 1848 was the year that Karl Marx's *Communist Manifest* was published.

Wagner, in Dresden, sympathized with the revolt. He met, on one of the remarkable crossroads of history, the anarchist Michael Bakunin, and became fascinated with the man's extreme visions such as the annihilation of all institutions, the arts included. Wagner's revolutionary sympathies resulted from his disgust with the conservative establishments, private or state, that refused to finance the performance of his work. In 1849, the spirit of renewal reached Dresden. A four-day uprising was stifled with much bloodshed by Prussian troops. Bakunin was arrested directly, and after some days a warrant for Wagner's arrest was issued. He fled Dresden and the next years he would spend in Zurich. In ten years between 1849 and 1859, he produced almost everything on which his fame, as well as his notoriety, is based. Apart from musical dramas, he wrote essays, including the infamous *Judentum und Musik*, or *Jewishness and music*, under the pseudonym *K. Freigedank*; German for *K. Free-thoughts*. In this essay *K. Freigedank* poses as an anti-Semite who proclaims racial theories. In much of the writing on Wagner these theories are treated in an unconnected and discrete section, as if this anti-Semitism was not really part of the man. Sometimes there are attempts to counter-balance it using the fact that he had Jewish friends, or it is interpreted as Wagner's jealousy of Giacomo Meyerbeer's success in Paris. Maybe so. But with this article, published in the *Neue Zeitschrift für Musik*, in August 1850, Wagner reinforced the underlying anti-Semitism in German thinking.

Wagner was constantly in debt and his arrogance, his prodigality, and his polemic articles added to his ever-worsening financial situation. In all fairness, his innovative musical ideas were systematically ignored by the reactionary attitude of the European society of his time; a society that seemed permanently anchored in the resolutions of Vienna 1815 congress.

In 1853, in the Hotel Bauer in Zurich, Wagner read to a select company of friends and admirers the complete libretto of *the Ring des Nibelungen*. In the next twenty years he would busy himself with composing the music for what would be his most important work.

Later in 1853, Wagner traveled to La Spezia, by the same bay where Percy Shelley lost his life thirty-one years before. Laying on a sofa in his hotel room. Half asleep, the first notion of the type of music for *the Ring* emerged. In his autobiography he says about this moment:

"After a night spent in fever and sleeplessness, I forced myself to take a long tramp the next day through the hilly country, which was covered with pine woods. It all looked dreary and desolate, and I could not think what I should do there. Returning in the afternoon, I stretched myself, dead tired, on a hard couch, awaiting the long-desired hour of sleep. It did not come; but I fell into a kind of somnolent state, in which I suddenly felt as though I were sinking in swiftly flowing water. The rushing sound formed itself in my brain into a musical sound, the chord of E flat major, which continually re-echoed in broken forms; these broken chords seemed to be melodic passages of increasing motion, yet the pure triad of E flat major never changed, but seemed by its continuance to impart infinite significance to the element in which I was sinking. I awoke in sudden terror from my doze, feeling as though the waves were rushing high above my head. I at once recognized that the orchestral overture to the Rheingold, which must long have lain latent within me, though it had been unable to find definite form, had at last been revealed to me. I then quickly realized my own nature; the stream of life was not to flow to me from without, but from within. I decided to return to Zurich immediately, and begin the composition of my great poem." 8)

It shows how much Wagner was aware of the crucial importance of movement. Just as Heraclitus and Leonardo da Vinci before him, he used water as the symbol of this type of ongoing movement. Heraclitus acknowledged the constant change of everything existing. Everything is in process, there is no being, only becoming. He gave the famous example where we cannot enter the same river twice because it is always flowing but that, in spite of this, we consider the river as one and the same. The being of the river is in its eternal becoming. The same kind of becoming is the basis of Wagner's concept of an unbroken, undulating stream of music.

Leonardo's had the same fascination for streaming water. He observed the changes in motion in the flow, which he created by placing wooden boards in it. The temporary turbulence that resulted around these obstacles is comparable with the modulations Wagner impressed on his continuous musical phrase.

Also Friedrich Nietzsche used the water-metaphor to describe Wagner's music.

“Die Absicht, welche die neuen Musik in den verfolgt, was jetzt, sehr stark, aber undeutlich, “unendliche Melodie” genannt wird, kann man sich dadurch klar machen, daß man ins Meer geht, allmählich der sicheren Schritt auf dem Grunde verliert und sich endlich dem Elemente auf Gnade und Ungnade übergibt: man soll *schwimmen*.”⁹⁾

In an article on Wagner, Susan Sontag points at the important part fluids play in his oeuvre. ¹⁰⁾ The *Ring* starts and ends with water and in most of the other opera's and musical dramas fluids are present in different forms; blood, healing balsam, magic potions. Wagner may have introduced these liquids into his works to emphasis their abstract qualities such as adapting, expanding or flowing, the same qualities he wished his music to have.

In this respect it is also important to remark that Wagner, who was an enthusiastic follower of Arthur Schopenhauer, had an interest in Buddhism. In 1856, he even wrote a libretto for a musical drama that was called *Der Sieger*, and was based upon a Buddhist legend. Buddhism regards that what we call reality as a continuous illusion in which no opposites exist and from which the only escape possible is through enlightenment. This endless prolongation is symbolized by the wheel.

The concept seems to connect with the one Wagner chose for his music: continuance, or *infinite melody*, as he named it. Buddhism strives after the liberation of the unbroken circle of illusive reality. It seeks, as Alan Watts says, to liberate itself out of a cycle of reincarnation, a cycle that is regarded as suffering.¹¹⁾ To interrupt it, we need a precise notion of what reality is. Buddhism acknowledges the same problems as Heraclitus indicates. Reality is in constant flux. But contrary to Heraclitus, the instability of our reality leads the Buddhist to the conclusion that there is no invariable essence, or *arche* as the Pre-Socratics called it, and that in consequence our wishes will never be completely fulfilled.¹²⁾ According to Buddhism there is no soul, no I, everything is empty, and no judgments are possible. To liberate oneself from what is regarded as agony, one has to follow a certain discipline, which is significantly described as a middle road without extremes. Again here we encounter a situation without dualism. Liberation also means obtaining insight into cause and effect. To reach redemption means to turn around the succession of cause and effect and eliminate effects by eliminating causes.

The repeated reciting of mantras is part of the liberating discipline. The most widely used mantra is *Om Mani Padma Hum*, a Sanskrit maxim that is said to be untranslatable, but can be described as the invocation of the Bodhisattva. The spinning of the prayer wheel is, in a remarkable mechanization of prayer, equal to the saying of a mantra. Buddhists do not frown upon this fusion of religious practice and primitive technology.

Prayer wheels are very old mechanisms. In countries with Buddhist religion we find pocket models as well as larger ones, mounted in series in the walls of a temple. People go along these last ones and bring them into motion by hand. A late twentieth century version of these prayer wheels is the so-called *chanting box*. This apparatus, not much bigger than a packet of cigarettes, is a further step in the mechanization of prayer. It is for sale in all kind of versions in China and other East-Asian countries and is seen as a compensation for the diminishing number of Buddhist priests. The *chanting box* repeats endlessly a series of mantras, each of them arranged in a loop, which is seen as a valid replacement of the priest's job. A couple of years ago, the half American, half Chinese duo *FM3* has put on the market a stylized version of the *chanting box*, the so-called *Buddha Machine*.¹³⁾ This apparatus is primarily meant as an instrument. It contains nine tracks, mounted in loops, and one plays this instrument by switching from track to track and creating modulation in the ongoing musical phrases. This concept is surprisingly similar to Wagner's way of composing and one wonders how much influence his reading of texts on Buddhism had on his work.

Richard Wagner's following years were filled with financial trouble. He traveled to London where he complained about the smog and where he felt *condemned to hell*. The rapid industrialization of Europe manifests itself in these words. In 1858 he went to Venice where he took rooms at the Palazzo Giustiniani, put working on the *Ring* aside, and started composing the music for *Tristan and Isolde*. It was there that he wrote the second act; a piece of work that he considered the highlight of his career. Venice *grand, beautiful, and decadent*, inspired him. He watched the lively traffic on the Canal Grande on which the balcony of his room gave. The water, always changing, always different, will have fed his fantasy. From Venice he went to Luzerne and lived in a room in the Schweizerhof Hotel. Again his room had a view over water, this time over the lake of Luzerne. It was there that he finished *Tristan and Isolde*.

His financial hardship took an end when he came under the protection of King Ludwig of Bavaria. He went and live in Munich, but returned to Luzerne after running into trouble with influential people at the court. In spite of this, king Ludwig continued his support. It enabled Wagner to live in comfort at the *Villa Tribschen*, at the lake, where he created a circle of collaborators. Their combined efforts would form the impulse that led to the *Bayreuther Festspielen*, the annual three-day festival in which the complete *Ring des Nibelungen* is performed. The most influential members of this group were, in the first place, Wagner's mistress Cosima; the daughter of his friend and mentor Franz List. Then there was the architect Gottfried Semper, who would produce the first sketches for a new, revolutionary theater, specially designed to host Wagner's colossal musical dramas. There was Wagner's assistant, and future conductor of the *Ring*, Hans Richter. Hans von Bulow, Cosima's husband who, in spite of his wife's infidelity, remained his whole life convinced that had to support Wagner, became Kapellmeister in Munich, a key position that secured Wagner's influence at the court. And finally, Friedrich Nietzsche was a welcome guest at *Tribschen*. He dedicated his *Geburt der Tragödie*, written in 1872, to his friend and mentor. In this essay he proclaimed the Wagnerian music drama the successor of the Greek tragedy. The disagreement between the two men only dates from 1876 when Nietzsche accused Wagner of a too Christian attitude in his last drama *Parsifal*.

In 1870, war interrupted Wagner's work on the *Ring*. As part of his strategy to unite all German states, the Prussian Prime Minister Bismarck provoked France into declaring war on Prussia. The hostilities brought the Germans before the gates of Paris after they had beaten the French in the battle of Sedan. France capitulated and to the French people's embarrassment, the *Second Empire* was pronounced in Versailles' Hall of Mirrors. Wilhelm I of Prussia was crowned its emperor. The French defeat unlashd Wagner's hate against the country and its capital, which had systematically ignored his work. He composed fitting music such as *Der Kaisermarsch* as well as an

essay on the superiority of serious German music over its lighthearted French counterpart.

In 1872 Wagner and his circle went and live in Bayreuth. The building of the *Festspielhaus* started. This theater was especially designed to host his musical dramas and was financed for the greater part by king Ludwig. It was finished in 1875 and one year later the first performance of the *Ring* could start. The painter Joseph Hoffmann designed the stage, Richard Fricke did the choreography, and Hans Richter conducted. Three complete performances took place and although they meant an artistic triumph for Wagner, the costs and the resulting debts were that high that the chances of a repetition of the project looked thin. The *Wagnervereine*, societies, made up of admirers of Wagner's music, which sponsored performances and are still in existence today, did not bring in sufficient money. Wagner reacted by accusing the German people lack of support. He too wrote a new series of anti-Semitic articles, this time published in a local newspaper; the *Bayreuther Blätter*, in which he accuses Jewish people of being responsible for the, in his vision, decadence and downfall of European civilization. He claims that the indifference of the Germans for his work is the result of Jewish influence. Nietzsche, although he turned away from Wagner after 1876, would elaborate on these accusations in a combination of beautiful poetry and mental depravation and create his theory of the *Umwertung aller Werte*, *the revaluation of all values*.

Wagner's racist thoughts also penetrated his last work, *Parsifal*, at which he worked in 1881 in Naples, and that had its first night in Bayreuth in 1882. It is difficult to match this characteristic with his work as a composer, work that gave rise to irrefutable renewals in the world of music. His contemporary, the French poet Stephane Mallarmé, tried to put it into words.

“Singulier défi qu’aux poètes dont il usurpe le devoir avec la plus candide et splendide bravoure, inflige Richard Wagner! ¹⁴⁾

Wagner never limited himself. He used the same versatility, which enabled him to imagine the *Gesamtkunstwerk*, to voice opinions on subjects as politics or society. Maybe it is here that the denial of specialization results into an absence of insight. Mallarmé rightly uses the word *usurpe*, French for *to appropriate*, to describe this trait of the composer's character.

After the performance of *Parsifal*, his last musical drama, Wagner returns to Venice where he dies in the winter of 1883.

What exactly makes Wagner such an important composer?

First there is the concept of the *Gesamtkunstwerk*; the *total work of art*. Wagner was under the impression that, only when one unites the work of the librettist and the composer in a single person, one could create an exceptional product. He wanted a form in which all theatric elements, not only libretto and music but also scenery, costumes, choreography and illumination, collaborated to create an all-encompassing effect. Such a piece is not called *opera* any longer, but *musical drama*. In Wagner's opinion the *Gesamtkunstwerk* could only come to its right if an especially equipped theater was built for it.

In a certain way we could compare the grandiose parties Louis XIV gave in Versailles to the *Gesamtkunstwerk*. These parties included tours along the latest additions to the garden, boat-trips along the Grand Canal, banquets and balls in specially erected pavilions, performances of *comédie-ballets*, written by Molière and Lully, in ad hoc theaters that could seat as many as twelve hundred spectators, and light spectacles that illuminated the sculptures in the gardens and the palace facade in sudden colorful bursts of light. Usually these parties ended with a display of fireworks which effect was

doubled by the many reflecting water-surfaces of the park. These were spectacles which the guests did not watch from a fixed point, with the exception of the *comédie-ballets*, but joined actively, and went from place to place to receive a many-sided impression of the things that were going on. Many of these parties had a theme and followed a scenario with a fixed order of events. We could say that these parties even went further than the Wagnerian total work of art, there where they did away with the barrier between artist and public.

Another of Wagner's renewals was the change in the structure of the traditional opera. Up till his time, opera was made up of many separate parts. Wagner replaced this mosaic construction for a fluid continuation that changes constantly, that fluctuates and varies, that draws out and shrinks along with the dramatic necessities of the story. This slow but constant prolongation of a theme lends cohesion to the story. In *Tannhauser* and *Lohengrin* we notice elements of this new concept, one that found its definite shape in the *Ring*. Music, just as ballet or storytelling, is bound to time and thus, to motion. Wagner acknowledges this characteristic and articulates it with a continuous melody line, a principle he calls *infinite melody*. Howard Gray describes this as follows:

“The musical motives of the *Ring* stretch like a network through the four opera's and are developed starting from a limited amount of initial motives which are constantly altered and modified and thus form a complete fabric; the *infinite melody*.”¹⁵⁾

Traditional opera was divided in disjointed parts such as the aria, the duet, the cavatina, the concertante, or the finale. In the musical dramas however, beginnings and endings of musical forms are solely decided by the dramatic situation. Wagner always first wrote the libretto and then composed the music. The different scenes are connected by the flow of the continuous melody-line. Wagner's main works; *the Ring des Nibelungen*, *Tristan und Isolde*, and *Parsifal*, were composed following these principles. He combined elements from Greek mythology, mainly from Aeschylus' *Orestes*, with pieces from German legends, and the fairy-tales from Jakob Grimm.

Then there is the *Leitmotiv*, the *guiding motive*. This essential structural component can be described as a melodic, rhythmic, or harmonic phrase that is connected with a certain dramatic aspect; a person, an object, an action, or even an attitude or a psychological state. It knows variations of rhythm, intensity, tonality, or timbre, but always keeps its form and appears and disappears along the dramatic necessities. The *Leitmotiv* is the main organizational factor in the totality of the musical drama. It creates a framework of relations and makes that the spectator can move through the drama's present, past and future without losing his or her way. It creates a second, more nervous, motion within the flowing motion of the infinite melody.

The use of the human voice underwent a change too. Wagner abolishes the *Bel Canto* in his work. This is the popular soprano's way of singing, full of agile technique and all kinds of ornaments such as vibrato, fast passages, jumps, and tremolo. Wagner's compositions employ above all the middle range of the voice, as is used in ordinary speech. He found that the artificial beauty of the *Bel Canto* distracted the listener from the poetry and storyline.

The musical drama, with its constant but varying movement, is an art-concept that expresses better than any previous work of art the internal cohesion of the phenomena of reality. The *Leitmotiv* connects structure with motion, and depicts reality as a non-linear process, as a field of tension in which cause and effect produce a single result

out of innumerable possibilities, a result that, in its turn, again possesses countless possibilities.

There is a noticeable discrepancy between the modern way in which Wagner tells his stories and their conservative content. We can find an explanation, both in the kind of person Wagner was and in the times he lived. Wagner was the kind of man that needed a grand mission to be able to realize himself while, at the same time, Germany's budding nationalism needed an artist who could inspire the country's population. They recognized each other, and Wagner applied all of his great artistic abilities to a cause that is hard to connect with art in our eyes.

The Ring des Nibelungen is made up of four parts, *Das Rheingold*, *Die Walküre*, *Siegfried* and *Der Götterdämmerung*, which we should regard as one story. Every year the *Ring* is performed in Bayreuth in a three-day festival. It tells the downfall of Wotan, the Teutonic upper god, who is thwarted in his pursuit of ruling the world by the dwarf Alberich. The last one forged a ring from gold, taken from the river Rhine, that lends him great power. Wotan slyly steals the ring but is being cursed by Alberich and has to hand it over to him. In his efforts to win it back he sacrifices his grandson, Siegfried. In the end he loses all when his daughter Brünhilde throws herself with the ring in the fire.

In Wagner's view, the scenography failed to meet the level of the music. Elements such as rainbows, a swan-drawn boat, fire, or an atmosphere as day or night could not be created convincingly with the means available in those days. Machinery was hardly used. In an engraving we see how the Rhine-daughters are supposed to give the impression of moving through the stream of the mighty river. Hidden behind a low barrier, that covers the complete front of the stage and is decorated with images of waves, three small vehicles move around in circles. Each cart is pushed by two stagehands while a third sits on the cart and steers it. On each of these vehicles a steel post is mounted that reaches up to a height of three meters and carries a Rhine-daughter. The long, semi transparent garments these river spirits wear conceal, in some degree, the steel posts that supports them at the waist. They can move their arms and legs freely which enables them to make swimming movements. On a photo, taken in 1876 of a Rheingold performance in Bayreuth, we see Lilli Lehman in her part as Woglinde, one of the Rhine-daughters, move among strips of translucent silk. It gives a rather feeble impression of a person swimming.

A drawing of the last scene of the same musical drama shows the difficulties the stage designers were up to. The scene asks for a rainbow which leads as a path to the Walhalla, the Teutonic heaven. According to Wagner's instructions the rainbow should appear suddenly, be light and translucent in character but, at the same time, strong enough to carry five grown men.

Illumination depended on gaslight, which was not very bright, not focused, and invariably placed at the front of the stage between public and scene. The illusion of space had to be suggested by background paintings.

Thanks to Mariano Fortuny these last two aspects would undergo an important renewal at the beginning of the twentieth century.

The success of Mariano's scenery design for the *Mikado* operetta, at the private theater of the baroness Albrizzi in San Pola, led to a new assignment. Giuseppe Giocosa, Pucini's librettist, asked him to design the scenery for the Italian premiere of Wagner's *Tristan and Isolde* at the Scala in Milan. In the end Mariano would not only design the scenery but also the costumes. It was with this piece of Wagner that he noticed the shortcomings of traditional scenery and started to experiment with different types of background and illumination. His genius consisted in finding a solution that solved both limitations at one stroke.

In *Tristan and Isolde* he tried out various effects of lighting. It delighted the audience and drew the attention of the press. The quality and diversity of his design sketches call to memory Leonardo's drawings. The positive reactions stimulated him to continue his investigations in theater lighting and led to a fortuitous discovery that took place in his studio at the top floor of the Palazzo degli Orfei. While working at something quite different, his eye fell upon a luminous effect caused by a sunray that fell through the open window on a white piece of paper on the floor. The reflection of the sunlight lighted up the low, shadowy ceiling. This was exactly the type of light what he needed; reflection instead of direct illumination.

In 1896 Mariano attended a performance of the American dancer Loie Fuller. Seeing her act might have spurred his experiments with theater lighting. 16)

Loie Fuller was an American dancer who made furor, first in New York, then in Paris, with her spectacular performances which were characterized by the constant motion of long draperies, accented by shifting stage lighting.

She was born in 1862 in Fullersburg, Illinois, a village founded by her forefathers, and started, at a very young age, acting in vaudeville theaters. She began as a so-called *skirt dancer*. *Skirt dancing* is a kind of act that reveals the body through the manipulation of layers of material. A first hint of her later career.

Loie was not a natural dancer, nor was she educated as one. But she wanted to dance. She ignored all established dancing conventions and created a personal way of doing so. She had come to this by accident. A twenty-year old actress in New York, she unexpectedly had to play the part of a hypnotized patient in a second rate play. As she did not have the right dress for the part, nor the time to buy one, she improvised a gown from a large piece of very thin, white silk. As her scene came, the lighting operator, at her request, doused the stage with an eerie green light to create the appropriate atmosphere. Loie started to follow the trance-inducing movements of the physician, as the part asked from her; movements that were intensified by the trailing fabric. Light and motion proved to be a very suggestive combination. The public was enthralled. Herself surprised by the effect of her performance on the spectators, she examined the effect of light and motion more closely at home.

“The mirror was placed just opposite the windows. The long yellow curtains were drawn and through them the sun shed into the room an amber light, which enveloped me completely and illuminated my gown, giving a translucent effect. Golden reflections played in the folds of the sparkling silk, and in this light my body was vaguely revealed in shadowy contour. This was a moment of intense emotion. Unconsciously I realized that I was in the presence of a great discovery, one that was destined to open the path which I have since followed. Gently, almost religiously, I set the silk in motion, and I saw that I had obtained undulations of a character heretofore unknown. I had created a new dance.” 17)

She continued to study effects of light and motion, not separating them but regarding them as connected in her aim to reach the expression she was looking for. She experimented with a relatively new medium as electric light, at a time when theater lighting still depended on gas.

“I studied each of my characteristic motions, and at last had twelve of them. I classed them as Dances No. 1, No. 2, and so on. The first was to be given under a blue light, the second under red light, the third under yellow light. For illumination of my dances I intended to have a lantern with coloured glass in front of the lens. I wanted to dance the last one in total darkness with single ray of yellow light crossing the stage.” 18)

After disappointing experiences with theater managers in New York, Loie Fuller opted for Paris in 1892. She obtained a contract for the Follies Bergère, a feat that is remembered by the now famous poster Henri Toulouse-Lautrec created. In Paris she kept on inventing light and movement effects.

“As a finale I intended to dance with illumination from beneath, the light coming through a square of glass over which I hovered, and this was to be the climax of my dances.” 19)

Sometimes these experiments found their origins in her fine sense of observation such as occurred in during a visit to the Notre Dame.

“But what enchanted me more than anything else was the marvellous glass of the lateral rose windows, and even more, perhaps, the rays of sunlight that vibrated in the church, in various directions, intensely coloured, as a result of having passed through these sumptuous windows. I quite forgot where I was, took my handkerchief from my pocket, a white handkerchief, and I waved it in the beams of coloured light, just as in the evening I waved my silken materials in the rays of my reflectors.” 20)

Loie started to experiment with her appearance too. Instead of showing her body, she concealed it. She extended her arms with bamboo or aluminum staves, clad with fabric, with which she was able to draw out and transform her body, and create unseen shapes and movements. Together with colored light and different angles of lightning this created an extraordinary effect. Oskar Schlemmer, the German artist and Bauhaus teacher would develop some of these aspects further in his *Triadisches Ballett*, or *Triadic Ballet*, from 1922, although the geometrical character of his choreographies is miles away from Loie’s emotional expression.

Loie danced in an empty space, against an empty background, depending on lightning and movement only. She started and ended her, normally short, performances on a dark stage, an equivalent of the position in classical ballet. It gave her dances the effect of an appearance, a sudden magical moment, an impression that was heightened by the display of color and motion. It is said that after such an appearance the public remained silent for some seconds, completely stunned, before it burst in applause. One must realize that this kind of effect, created before the cinema took over the magic role of the theater, was unknown.

During her career she kept innovating stagecraft, held many patents for stage lighting, including the first chemical mixes for gels and slides and the first use of luminescent salts to create lighting effects.

She once said:

“I wanted to create a new form of art, an art completely irrelevant to the usual theories, an art giving to the soul and the senses at the same complete delight, where reality and dream, light and sound, movement and rhythm form an exiting unity (...) 21)

Her performances may not be seen as pure dance, but they expanded the possibilities of the art beyond the imagination of her time and inspired stage designers as Alphonse Appia, Gordon Craig and, highly likely, Mariano Fortuny.

In 1899, Mariano was asked by the poet and writer Gabrielle D’Annunzio to do the scenography and lighting of his tragedy *Francesca da Rimini*. The project fell through, but it made Mariano develop his idea of indirect lighting into a fully-fledged theater lighting system, something that eventually would be known as the *Beleuchtung System*

Fortuny; the Lighting System Fortuny. The central element of this system was a huge white dome that enveloped the complete stage and acted as a reflection screen.

In 1900 he registered a first patent in Venice, and a year later, looking for international acknowledgement, he did the same in Berlin and Paris. For the similar reason he rented a studio in Paris, at the Boulevard Berthier, where he, together with a technician, started developing an example of his lighting system. He created a small-scale dome from plaster, which, although a model, had a five-meter span nonetheless. It was small enough to fit in his studio but big enough to test different light effects realistically. He received a stream of visitors among which were Friedrich Kranich; famous for his Wagnerian scenic designs, actress Sarah Bernhardt, and set designer Adolphe Appia. The last one would enter history as one of the great renewers of twentieth century stage design, a designation in which the influence of Mariano Fortuny is often forgotten. Appia based his scenographic designs on three-dimensional shapes instead of painted backgrounds. He was convinced that shadow played an equally important part as light on the stage and that both were essential in creating a connection between actor and theatrical scenery. Thanks to Mariano he discovered the practical possibilities of illumination, which led him to his successful designs. When Appia proposed a scenography for Wagner's *Walkure*, Cosima Wagner rejected his designs with the argument that Wagner himself had said everything there was to say about set design, an argument that shows she did not understand the first thing about Wagner's intentions. However, Adolphe Appia would have an important influence on Wagner's grandson, Wieland Wagner, who himself designed many sets and did not stand in the way of renovation.

The dome maximized the effect of indirect lighting. As the light spread uninterrupted over the concave white surface, it literally flooded the scenery. The dome replaced the painted background, with its optical suggestion of space, for a smooth, apparently unlimited space across which all kind of light-effects could play. The reflected light did not throw unnatural sharp shadows and approached the effect of daylight.

A second, complementary invention of Fortuny was the projection of colored light on the dome-shaped screen. Now he could create all kind of different effects such as sunrises, sunsets, afternoons, or moonlight; atmospheres that reinforced the expression of the theater piece. The originally colorless light was projected on colored strips of silk which reflection tinted the inside of the dome, which, in its turn, spread the light across the stage. The long strips of silk were dyed in all kind of hues and wound around two spools that were mounted on two steel bars. By turning the spool, one could put another color in front of the lamp, something that would change the hue of the reflection and, in consequence, the atmosphere on the stage. The spools were put into action by a silent electric engine that was operated from a position, another innovation, at the back of the theater.

A next step was the projection of moving images, such as skies full of rushing clouds, or a change in the position of the moon. In this case Mariano made use of mirrors and spheres. Small electric engines made them revolve and the reflected light-rays created highly suggestive images in motion.

As the source of illumination was no longer placed on the stage itself, but hung above it, a steel walking-gallery was mounted above the stage, which enabled the technicians to hang or change the lamps.

With these inventions Mariano integrated scenery and lighting and introduced an element of motion in stage design. The dome with its multiple light effects would produce a unity of atmosphere, reduced the use of suggestive props such as painted backgrounds, and heightened the illusion of reality. It would create an impression of sheer endless space, an illusion that was enhanced by the different light effects. A second advantage of the dome was the elimination of the traditional source of light, normally a line of gas lamps at the foot of the stage. This line acted as a barrier

between public and actors. With the *Lighting System Fortuny*, the actors acted closer to the public, something that again increased the sensation of realism.

Today, the geometric shape of the dome and its even, white surface bring to mind the modernistic architecture of two decennia later. A false trail because Fortuny was not interested in the language of the twentieth century. He used this purely functional shape to create an atmosphere that belonged to the nineteenth century.

With Mariano's system, the theater gained a couple of years in its rivalry with the upcoming cinematographic industry, but in the end the creation of illusion became the domain of the seventh art, and scenic design started to look for more abstract ways of expression.

In 1903 Mariano obtained two important commissions; costumes and lighting for a piece of Joseph Sâr Péledan, *Edipo y la Esfinge*, thought for the Roman theater of Orange, and the illumination of an exhibition room in Paris. But it was his following assignment that would make him famous as a stage designer. With Alphonse Appia as a go-between, he was asked to redesign the private theater of Martine de Béhague, the duchess of Béarn. She was impressed with his work and suggested he installed a dome in her theater. Together with an architect, a full-scale dome, with a span of ten, a height of fifteen and a depth of seventeen meters, was mounted. This first dome had an improvement over the studio model. Instead of erected in plaster, it was made from tensed material. To solve the problem of creases and wrinkles in the material, Mariano tensed it over a steel framework that was shaped as a dome, in such a way that it created an airtight chamber. A constantly working pump sucked out air, which made the material evenly stretch across the frame and eliminated irregularities of its surface. Being light and manageable, this was a fundamental improvement of the system. Mariano patented this invention in 1904.

The theater opened in 1906 with a ballet and it made Mariano Fortuny famous overnight. The German emperor Wilhelm II sent a theater specialist to Paris to study the Fortuny's lighting system, and Max Reinhardt, director of the Deutsches Theater in Berlin, introduced Mariano to Paul Jordan, president of the German company AEG.

This was one of the most progressive companies of Europe. In 1907 Jordan asked the architect Peter Behrens to design a new factory building in Berlin, a commission that resulted in the unadorned, rational construction that set a completely new tone in architecture. At the same time Behrens was responsible for the look of AEG's graphic design and created some remarkable catalogues. Mariano's lighting system fitted in the company's philosophy and Jordan came with a proposal to commercialize it. In 1906 this resulted in a joint venture between Mariano Fortuny and AEG, in the shape of a separate company, named the *Beleuchtung System Fortuny GmbH*. Requests for the installation of the system started almost at once.

Its success rather took him by surprise and soon he disengaged himself from actual business affairs and left the running of the company to AEG. The only installation of his system he followed closely was the one in the Opera Kroll, in Berlin. This was the same theater where Alphonse Appia created a highly abstract stage design for Wagner's *Der Fliegende Holländer*, which was wrecked by the critics. Only after the First World War he would personally supervise another installation, the one in the Scala of Milan.

While in Paris, Mariano met his future wife, Henriette Nigrin. She would be instrumental in his following projects.

Many things attracted Mariano's attention. In this he resembled Leonardo da Vinci. And although he was, contrary to Leonardo, unquestionably interested in the realization of his ideas, once they had proven their worth he left them be and started looking for new challenges. We shall encounter the same kind characteristic, one of active boredom, with Marcel Duchamp.

Mariano and Henriette returned to Venice. An idea was taking shape in his head and it would direct him into a new direction. At the renovation of the theater of the duchess of Béarn he had used velvet for the proscenium arc and curtain. He had decorated the velvet himself using a printing process. Back in Venice he improved this printing technique and started designing patterns and printing fabrics. He used his experience with theater costume in creating fashion. A first design, in which all emphasis was still on the different patterns and the printing process that produced them, was the *Knossos shawl*. It was his friend, the German poet Hugo von Hofmannsthal who, in 1907, presented the shawl in a highly original way to a female public gathered at the Hohenzollern Kunstgewerbehaus in Berlin.

“You are badly dressed because even Parisian fashion leaves your personality a minimum of liberty. A skirt has to have a certain drop, and no other, and a blouse must tighten a bust according to a relentlessly precise line. Now have a look at what the Venetians achieve with their shawls. With such harmony they drape these shawls around their shoulders and wavy hair, sometime heartrending, sometimes languishing, sometimes insinuating. The future belongs to the shawl because in the future women will dress in a personal manner. When she wraps the shawl around her, this garment will easily adapt itself to her shape and will follow her in her mood, be it frivolous or reticent. These shawls are designed by Mariano Fortuny.”²²⁾

Words in the same vein we will hear from Vivienne Westwood later on.

Mariano, assisted by Henriette, made fifteen variations in print of this silken shawl, all with ornamental patterns such as lotus-flowers, papyrus-leaves, spirals, stylized animals, or architectural motifs. His mother collected materials and her large collection might have inspired the multiplicity of motifs he used in his designs. He quickly developed deftness in printing processes, and experimented with all kind of material such as cotton, linen, silk or velvet. His attention now went out entirely to the manipulation of fabrics, although he did a couple of stage designs and lighting projects and, in 1908, participated with three models of scenic design for Wagner’s musical dramas, together with a model of his dome, in an exhibition on theater at the Louvre. His pattern designs express an immense wealth in deep hues and ornate motifs and are able to transform a simple piece of cotton in the richest brocade. In the seventies of the last century, Vivienne Westwood would achieve a similar transforming result with basic t-shirts and convert them in what are now considered museum pieces.

Bringing to mind the ancient alchemists, Mariano experimented with pigments based on organic materials and studied medieval sources on the preparation and application of color. He gained a reputation in professional circles, and painters such as Pierre Bonnard, Gustave Klimt or John Sargent Singer visited his studio and left inspired.

In 1909 he made a further breakthrough in this matter. In June of that year he patented a mechanical way of pleating silk and in October of the same year a polychrome printing process that was based on rotating, flexible moulds; a system that is still in use today. However, Mariano would hardly ever put up with mechanical production and often finished the material by hand, something that turned every product into a unicum.

In November 1909 he presented his now famous *Delphos* dress. This pleated, silken dress, created after an idea of Henriette, meant a revolution in fashion design. It was inspired on antic Greek garments, such as that of the *Charioteer of Delphi*, a bronze from 474 B.C., which is on exhibit in the Archeological Museum of Delphi. Mariano had a photo of the statue. The *Delphos* is a very sensual dress that was based on the woman’s natural shape. It represented her body exactly as it was and did not limit her in any way in her movements. The many pleats not only took care that this dress had a perfect fit, but created striking effects of light and shadow. The dress was hand-dyed in

as many different color baths as were needed to achieve its ever-changing appearance. Marcel Proust attributed almost magical qualities to Fortuny's clothes which were capable of bringing back Venice to him:

“Seulement mon esclavage à Paris m'étais rendu plus pesant par la vue de ces robes qui m'évoquent Venise.” 23)

The *Delphos* kept its reputation through the years, and inspired fashion designers as Krizia or Issey Miyake in working with pleated material. In 1977, Miyake created a unique piece called *Rhythm Pleats*, which is made up of a single piece of material, but allows its transformation into a three-dimensional garment without using any seams. Its based as much on the *Delphos* as it is on *origami* techniques.

In 1911, one could find Mariano Fortuny's printed fabrics and dresses at another exhibition in the Louvre; *la Exposition des Arts Décoratifs*.

Actresses as Eleonora Duse, Sarah Bernhardt, Gabrielle Rejane and dancer Isadora Duncan wore the *Delphos*. The Beau Monde too, as we can read in *La Recherche*, was won over and dressed in Fortuny. In later years personalities as Lady Churchill, the Baroness of Rothschildt or Peggy Guggenheim would follow suit.

Mariano's studio extended itself across all floors of the Palazzo degli Orfei and employed in those years a workforce from over a hundred. Among Mariano Fortuny's many talents one must count that of the entrepreneur. The volume of his production increased on such a scale that he found it necessary to create his own outlets. He opened two shops, one in Paris, in the Rue Marigan, and one in London, in Old Bond Street. In 1914 he exhibited his garments and fabrics in the Carroll Galleries in New York, and this exhibition too was a great success.

While Mariano Fortuny reached the top of his fame, many important new developments in art took place in Paris, as well as in Italy. In 1907, George Braque and Pablo Picasso started to develop *Cubism*, an approach that meant a revolution in the spatial possibilities of the image. Another important step in the evolution of art was made by the Futurists in 1910, a step that included various forms of expression such as poetry, painting, sculpture, architecture or urbanism.

Hundred and fifty years after the invention of the steam engine, man was used to the presence of machines in an industrial context. Now, more and more, machines became part of every day life. Listen to the Rilke, for example. From his Sonnets to Orpheus I, number 18:

“Lord, hear the new
rumbling and ringing?
Heralds come through,
its praises singing.

No hearings's much good
in the clanking stampede,
but still every cog would
recite you its creed.

See the machines:
how the clash and careen,
how they mangle and unnerve us.

If our power they have, then
at least, without passion,
they bustle and serve us. 24)

At the end of the nineteenth century the German engineer Karl Benz invented the internal combustion engine; a source of power that was easier to supply with fuel than the steam engine and permitted the creation of a new type of vehicle; the automobile. And with the invention of the internal combustion engine an old dream of humanity came true; it made flying possible.

Electricity too entered our lives. It not only substituted gas lighting, but enabled an even more compact source of energy. The apparatus appeared; a mechanism that was so compressed that it could be held in one hand or easily moved. Developments succeeded each other in a high pace and their influence on society grew with every novelty.

A clear reaction from the world of art on these new developments was the *Futurist Manifest* from the Italian poet Filippo Tommaso Marinetti. In this manifest, made public in Paris in 1909, he summoned his fellow artists to come into action.

“Noi canteremo le grandi folle agitate dal lavoro, dal piacere o dalla sommossa: canteremo le maree multicolori e polifoniche delle rivoluzioni nelle capitali moderne; canteremo il vibrante fervore notturno degli arsenali e dei cantieri, incendiati da violente lune elettriche; le stazioni ingorde, divoratrici di serpiche fumano; le officine appese alle nuvole per i contorti fili deiloro fumi; i ponti simili a ginnasti giganti che scavalcano i fiumi, balenanti al sole con un luccichio di coltelli; i piroscafi avventurosi che fiutano l'orizzonte, e le locomotive dall'ampio petto, che scalpitano sulle rotaie, come enormi cavalli d'acciaio imbrigliati di tubi, e il volo scivolante degli aeroplani, la cui elica garrisce al vento come una bandiera e sembra applaudire com una folla entusiasta.”²⁵⁾

Strong words no doubt. But too a mixture of ideas that suggested completely new possibilities in the world of art. Marinetti brought together a group of artists who were willing to join him in this new attitude of embracing modernism. Manifest after manifest followed. Giacomo Balla, Umberto Boccioni and Gino Severini were renowned members of this group. In rhetoric words they demanded the annihilation of imitative art and the creation of a new, dynamic form of expression. They glorified city-life with its mechanical progress, its noise and smoke, its opposing flows and tensions, and the drive of its masses. They saw motion as the most important characteristic of modern life. They were not so much interested in the machine itself, as in its effects. The machine was no more than the source of propulsion for the new dynamics they were seeking. Art was to be abolished, being no more than a commodity for wealthy people. Its successor had to be an expression of modern life in which every thing was temporary. The characteristics of modern living should not be rejected and substituted for eternal values, as was done in classical art, but embraced it all its banality.

We notice a complete dissociation from the world which Mariano Fortuny represented, whose work was based on a continuity that had been originated six centuries before with Giotto's murals. We also notice in the tone and urge of Marinetti's words the voice of rising fascism, and he would be one of Mussolini's earliest followers. Point 9 of the *Futuristic manifest* announces this aspect most clearly:

“Noi vogliamo glorificare la guerra - sola igiene del mondo – il militarismo, il patriottismo, il gesto distruttore dei libertari, le belle idee per cui si muore e il disprezzo della donna.”²⁶⁾

Horrifying words indeed.

The Futurists wanted to break free with the past, and it is no coincidence that such a movement originated in Italy. More than other artists, the Italian ones felt the past

heavily pressing on their shoulders, surrounded as they were with art. In the fast industrializing North of Italy the contrast between old and new must have more palpable than anywhere else in Europe and that might explain, without any attempt to justify their opinions, their vehement, sometimes outright aggressive reaction. They accepted the totally new circumstances in which twentieth-century man would live, and regarded the art forms of their time as anachronistic. The inflammatory language of the *Futuristic Manifest* started an important change in the role art played in society, and stood at the beginning of a series revolutionary art expressions, all with their own manifests, which would shape a good deal of twentieth-century art. However, the pace Marinetti had set with his manifest was hard to keep up for many other members of the group. At the start the painters did not advance beyond a language which stayed naturalistic, but used elements of Cubism and tried to transform their static simultaneity and spatiality into a suggestion of motion. In Gino Severini's picture *Dynamic hieroglyph of the Tabarin Ball from 1912*, one sees something of the confusion this incoherent syntax caused. Although we definitely undergo an impression of motion, if only from the twirling and swirling elements that shape the waltzing couple, the picture hosts all kind of additions such as a puppet that rides a pair of scissors, an Arab mounting a horse, or several strings of colored flags; ingredients that weaken the articulation of the main idea.

In the same year Giacomo Balla offered a sharper expression of the Futuristic thought with his drawing *Dynamism of a dog on a leash*, in which he depicts motion in an almost cinematographic manner. In leaving away color and every unnecessary detail, the drawing expresses purely motion. In 1913, Umberto Boccioni takes a step further. In his painting *Dynamism of a soccer player* he creates a multi-colored shape, made up from many planes, which has an unmistakable vitality. More important, in this picture Boccioni has given up the recognition of the subject in favor of rendering the qualities of action.

Boccioni also made sculpture. His *Development of a bottle in space* and *Unique shapes of continuity in space* show the possibilities of the depiction of motion in a three-dimensional situation. The bottle seems to propel itself upwards from its horizontally arranged basic material, and when one has the possibility of circling this small sculpture, it will present itself as a process of growth, as if it is pushing itself up in space. The other sculpture, a striding figure called *Unique shapes of continuity in space* is related to Balla's *Dynamism of a dog on a leash*. Both have progression through space as subject, but while Balla's dog trips along in a humorous stroboscopic way, Boccioni's figure thrusts itself forward and pushes through space with such a power that space itself seems to become tangible around it. Clinging to its limbs, remnants of space stay behind as the after-images of its progress, as if our eyes were to slow to follow it. Boccioni himself said:

"The locked-in sculpture must be abolished, the figure must be opened and incorporated in space ... in future compositions we will have planes from wood and metal, stationary of mechanically put into motion."²⁷⁾

Marcel Duchamp would prove this prediction accurate when he created his *Rotative plaques verre* in 1920.

Mercury passing before the sun as seen through a telescope, a picture from Balla made in 1914, would be completely abstract if not for the title. The influence of Cubism is still present, but now the various planes that shape the image are presented as the refraction of light falling through a lens and not as building parts in space. In this picture we see a fusion between object and subject. No longer is the first the carrier of the second, but both seem to meet halfway in this powerful expression of motion.

Another important contribution to the appreciation of Futurism was made by the Italian architect Antonio Sant'Elia, member of the movement from 1912 until 1914. He

developed ideas for the future city, which he gathered under the title *Citta Nuova*. These ideas would have an important influence on urbanism in later years. He emphasized the verticality of the future city and placed his high residential towers on horizontal platforms which distributed the various traffic flows. He saw the city as a huge mechanism, full of intersecting currents of motion and sought to separate as well as to visualize them. In *Citta Nuova* mechanical traffic moves unhindered across the lowest levels while pedestrians use the upper levels. Elevators, mounted on the outside of the high-rising buildings, take people up. Slender bridges connect the topmost floors of these buildings to avoid unnecessary vertical traffic flows. While all the city's functions are stacked vertically, the horizontal connections are used to create unity between them. The city is no longer a assemblage of loose parts jostled together but is seen as a throbbing, living organism that has a coherent structure and a heroic design.

Sant'Elia never realized a building and maybe this autonomous position made it possible for him to see so far in the future. We can find his ideas back in fictive cities in films such as *Metropolis* from Fritz Lang or *Blade Runner* from Ridley Scott. Through these films his architecture enters the twentieth-first century. But also in the twentieth century we can find traces of Sant'Elia's influence, for example in the *Van Nelle fabriek* van J.P. Oud, built between 1927 and 1930 in Rotterdam, where we find bridges and exterior placed elevators. And he had a profound influence on European urban design after the Second World War as is visible in projects such as *Marl Town Hall* from Van der Broek and Bakema or the *Berlin Hauptstadt Scheme* from Alison and Peter Smithson.

Antonio Sant'Elia was a fervent patriot and enlisted in the army when Italy entered the First World War. He fell in 1916 the battle of Isonzo.

Futurism died as a coherent art movement with the outbreak of the First World War but in the five years of its existence had an important influence on our later thinking.

The First World War also affected Mariano Fortuny. International trade diminished and this meant as serious set back of his commercial interests. Business in London and Paris seized and he had to reduce his production. After the war however, he resumed manufacturing printed fabrics, now in a factory on the Giudecca Island in the Venetian lagoon. He had designed the machinery for this factory himself. The printed cloth he produced was based on cotton only, and was especially meant for interiors. To draw attention to this new development he opened a shop on the Champs Elysées. Among his clients were personalities such as Consuelo Vanderbilt, the duchess of Marlborough, or the princess of Noailles, as well as businesses as the Excelsior Hotel in Venice, or institutions as Naples' Museo Nazionale and the Spanish Pavilion at the fourteenth Biennale of Venice.

Orders for the *Lighting System Fortuny* started to come in once more. A very special project was the one from the Milanese *Società Anonima Leonardo da Vinci* which commissioned him to install his system, with dome and all, in the Scala. Mariano was actively engaged in the installation and left much freedom by the *Società*. And typically enough, *Parsifal* was the first opera to use the new system.

1924 meant a renewed acquaintance with the country of his birth. Mariano did not only decorate the Spanish Pavilion during the fourteenth Biennale of Venice, he also exhibited some of his paintings. On top of that he was nominated commissioner, a task he would fulfill till the end of his life. In December of the same year, King Alfonso III appointed him Honoree Consul in Venice. The following year he made a trip through Spain and Morocco and visited his birthplace; Granada.

The years up till the outbreak of the Second World War were characterized by worldly successes. Together with Rembrandt and Vermeer, he was the only person to be named by his real name in Proust's *Recherche*. He took part in exhibitions in Venice, Florence and Barcelona, and plans were made to install his lighting system in

the *Opera*, the *Theatre des Champs Elysées*, both in Paris, and the *Teatre Real* in Madrid. He also designed scenery and costumes for Verdi's *Otello* and *La Vida Breve* from Manuel de Falla.

Carros de Tespis was a rather unusual project. In April 1929, the artistic director of the Scala created a concept for a mobile theater. Such a theatre would be responsible for bringing the scenic arts to the people. Italy was governed by Mussolini's fascist regime and populist ideas were a way of keeping in power. One of these was the *Dopolavoro*, Italian for *after work, or time off*, and it held the complete education of the Italian laborer, physical, moral, as well as cultural. Mussolini wrote about this subject:

"The "Dopolavoro" is a peaceful institution that strives after a splendid mission of brotherhood, love and civilization."²⁸⁾

Once more it was the *Società Anonima Leonardo da Vinci* which organized the creation of this mobile theater. Mariano was asked to do the design. The people who operated such a theater had to be able to erect it in the morning, arrange a performance in the late afternoon, take down the construction in the evening, and repeat the process the next day in another place. Mariano presented a design that was based on his dome. To be able to put it up and take it down rapidly, it was partly foldable, much like the hood of a pram. Across a dome-shaped frame a single layer of material was spanned which created a stage from nine meters wide and seven meters high and deep. An equally simple steel construction carried the proscenium arc and curtain.

The name *Carros de Tespis* had been taken from the legendary Greek actor Tespis, who is said to have renewed Greek theater by stepping from the chorus and act rather than recite. Tespis traveled around in a chariot, in imitation of the priests who, during the Dionysian rites, went from island to island in a *carro navale* or *sea wagon* to celebrate the *Dionysia*. Our word *carnival* derives from *carro navale*, and possibly the feast of carnival is as old as the Dionysian rites.

In June 1929, the first presentation of the mobile theater took place in Rome in the presence of Mussolini. *Blanco y Negro*, a Spanish magazine, wrote a laudable article on Mariano for the occasion.

Mariano Fortuny's real profession is magician, that is why his Venetian palace is so enchanting.²⁹⁾

1929 was also the year of the Great Depression. Mariano's enterprise, the *Société Anonyme Fortuny*, suffered and had to close under the pressure of its creditors. It was only with the financial help of his admirer Elsie McNeill, the wife of his American exclusive distributor, Arthur H. Lee, that Mariano could resume the production of his printed textiles.

In 1931 he patented a new invention; a type of photographic paper based on carbon pigment. Mariano used photography during the whole of his career, not only to document his work, but also as an autonomous art form. In 1895 he made a series of female nudes and in 1907 he produced a series of panoramic photos from Venice. Each of the photos of these last series shows a perfect continuity over approximately 180 degrees. In 1888 Eastman Kodak had developed flexible film and various panoramic cameras appeared on the market as a result. Although Mariano did not invent the technique, he brings panoramic photography to the level of art.

A new creation was his lamp with a diffuser, which produced an indirect illumination. A small metal shield screened the light bulb and reflected the light on the white interior of the lamp's hood, which returned in a wider angle and a softer quality. This type of

illumination was very convenient for exhibition rooms. A demonstration with the lamp, in 1931 in London, produced contacts with museums and exhibition rooms in Amsterdam, Brussels, Dublin, Florence, and Milan. In 1937, these lamps would illuminate the mayor Tintoretto exhibition in Venice.

And once more he designed the stage for a musical drama from Wagner, this time *Die Meistersinger von Nürnberg*, which had its first night in Rome in December 1931.

The strive for autarky of Italy's fascist regime meant a new setback in the production of printed fabrics. The importation of raw materials from the colonies of non-allied countries was no longer allowed. Some of these materials were essential for the *Société Anonyme Fortuny's* production process and the lack of these forced Mariano to important changes in quantity and quality. In spite of these troubles, the company was able to create the fabrics for the costumes of the eight hundred extras that acted in the celebration of the triumphs of the House of Savoy that took place in 1937 in Milan's castle of Sforza. Together with the scenic designers Nicola Benois and Mario Cito di Filomarino, Mariano designed the costumes.

In 1936 the Spanish Civil war had started. The Italian air force took actively part and bombed Spanish cities. In 1939 the Second World War began and in 1942 Italy joint Nazi-Germany and Japan. In the same year Mariano had to close down his factory, many of his other activities seized too.

He died in 1949 at the age of seventy-eight.

One wonders how Mariano Fortuny looked upon the times he lived. As far as we know he has never concerned himself with the important developments art underwent in the beginning of the twentieth century. Most of these developments, Futurism, Cubism, the first concepts of Marcel Duchamp, Surrealism, took place in Paris, a city frequented by Mariano. But no contact was established. Moreover, the Futuristic Movement was a largely Italian affair. Some form of contact would have seemed logical. Perhaps one of the reasons of Mariano's aloofness was that his early successes made him frequent other circles than modern artists such as Marinetti, Picasso or Braque. On the other hand, friends as Gabrielle d'Annunzio, Peggy Guggenheim, Isadora Duncan or Adolphe Appia did move in avant-garde circles. In 1914 his work was exhibited in the Carroll Galleries in New York. In the same year this gallery organized three exhibitions of French avant-garde art. Again, contact would have been the normal thing.

The only logical conclusion is that Mariano simply was not interested in developments in modern art. In spite of all his advanced ideas he remained a nineteenth century man. His highly original ideas such as the *Delphos* dress, the *Lighting system Fortuny*, or his ways of decorating fabrics, were not so much artistic as technical innovations. Besides, the silhouette of the *Delphos*, as well as the images that adorned his fabrics, call to mind the classical world rather than the twentieth century. His approach of Wagner's musical drama's remained classical too. Mariano remained loyal to the spirit of his youth, the *Belle Époque*, and while his designs helped modernizing his times, spiritually he lived in a time that had definitely disappeared with the outbreak of the First World War. The Palazzo degli Orfei became more and more a refuge within which walls Mariano perfected his own particular world. And then, Venice was a place where one could withdraw oneself from the commotion of the world. In these narrowing circumstances Mariano Fortuny created a singular universe that was governed by esthetic laws in which art, design and technology blended. In this respect he makes us think of both Leonardo da Vinci and Andy Warhol. Leonardo's life took place for a large part within the pages of his notebooks, while Warhol created his own emporium of fame within the walls of *the Factory*. An early sign of Mariano's small interest in mundane affairs was the cooperation with AEG, which, in an active way,

limited itself to two projects. The rest of the many installations of his dome he left to the technicians of the *Beleuchtung System Fortuny GmbH*.

Less sense makes the absence in his work of echoes of the large conflicts of his time, conflicts so large that they must have overridden a personal antipathy of politics. One may wonder what Mariano thought of Fascism that manifested itself not only in Italy but also in the country of his birth. Mariano has never expressed himself on politics, as far as we know, but he accepted a post as Honoree Consul of Spain, a position he left in 1934 but resumed again in 1939, the year in which the civil war ended with the fascist victory. Seen in this light, Mariano Fortuny's work may suddenly seem over-esthetic and one may feel inclined to balance it, for example, with work from Primo Levi or Antonio Machado. But no doubt this is unfair and we should put the circumstances of Mariano's last years against his advanced age and the habits of a full life.

The element of motion is omnipresent in Mariano Fortuny's work. He manifests himself as the reincarnation of the Renaissance man, the *Homo Universalis*. He covered a wide field with his abilities, crossed the artificial boundaries between different disciplines, and offered solutions to an ample variety of problems. His technical and aesthetical renovations had an important influence on the world of theater, fashion, and architecture.

Mariano Fortuny was nicknamed *il Piccolo Leonardo*, but the differences between the two artists are too important to see this as more than an expression of admiration. The difference in centuries limits a comparison to versatility. Mariano's imaginative capacities are no match for Leonardo's genius, while in his turn Mariano leaves Leonardo far behind in the real test of a design; its effective application.

Motion is not only present in Mariano's agile mind, but also in many of the mechanical aspects of his work. There is the suggestion of motion in his early Wagnerian pictures that turns into reality with the *Lighting System Fortuny*. The scenographic work continues early interests. Then there is the smooth movement of the panoramic camera, mounted on cogwheels, which guided the open shutter uninterrupted along its subject. Its result cannot be captured at a glance and asks for movement of the eyes.

The pleated fabric from the *Delphos* dress created an illusion of motion in its play of light and shadow. Apart from that the *Delphos* allowed complete liberty of movement. And then there is the mobile theater which, whatever we may think about its purpose, is a superior example of ephemeral architecture.

While the Futurists recognized motion as the characteristic element of the new century and tried to express it in all conceivable ways in their work, the same element weaves itself in a completely unobtrusive manner through Mariano Fortuny's work. Seen this way, his work is as much a representative of the new age as that of the Futurists.

Mariano's versatility made him trespass boundaries between different forms of art and design, something that led to a better understanding of the coherence between fields that had become more and more separated since the Renaissance.

Notes:

1

Treatise on Venetian art and architecture and a general history of the city
William Ruskin
Cambridge University Press, 2011

2

"The dress from Fortuny, which Albertine was wearing that night, seemed to me the seductive shadow of an invisible Venice."
À la recherche de temps perdu
La prisonnière, p 475

Marcel Proust
Gallimard
Paris, 1972

3
Proverbs of Hell
William Blake
Blake's Selected Poems
Dover Thrift Editions,
New York, 1995

4
"He thought of nothing else than Wagner."
El mago de los Orfei, p.189
Claudio Franzini
Mariano Fortuny Madrazo: una biografia
Fundació Caixa Catalunya
Barcelona, 2010

5
"Ellos no deben ver en mi a un hombre necesitado de ayuda para si mismo, sino a un artista, un movimiento artístico que desean preservar para el futuro, sin permitir que se hunde."
Wagner, p 73
Howard Gray
Translated by Imma Guàrdia
Ma Non Troppo
Barcelona, 2002

6
"Debo rodearme de belleza, esplendor y luz! El mundo me debe lo que necesito! No puedo vivir la miserable existencia de un organista de pueblo como su maestro Bach."
Wagner, p 134
Howard Gray
Translated by Imma Guàrdia

Ma Non Troppo, 2002

7
The general idea of Proudhom's revolution
Robert Graham
Anarchy Archives
dwardmac,pitzer.edu

8
Wagner, Richard
My Life, part III, 1850 – 1861
Project Gutenberg

9
"One can shed light on the meaning of the new music, which is vigorously, though not very clearly, called "eternal Melody", with the example of walking into the sea, gradually losing your sure footing, and finally giving yourself over to the mercy or malice of the elements: swim you shall.
Het geval Wagner,
Friedrich Nietzsche
Translation in Dutch: Nelleke van Maaren
Museumjournal 3,
Amsterdam, 1982

10
Sontag, Susan.
Cuestión de énfasis
Alfaguara
Barcelona, 2007

11
Chapter 2: The Origins of Buddhism
The way of Zen

Alan Watts
Vintage Spiritual Classics
New York, 1985

12

In fact, there is a discussion over the question if Heraclitus believed in an invariable essence. See, for example, Oswald Spengler's text on the philosopher.

Heraclitus
Oswald Spengler
Ediciones Espuela de Plata
Seville, Spain, 2013

13

FAME is made up from Christian Vibrant and Zhan Jean. They did not only develop and commercialize this apparatus, they play it also. Their compositions are published by the Berlin label "Staalplaat".

Vanguardia a pilas
Arnau Horta
La Vanguardia, Culturas 260
Barcelona

14

Richard Wagner imposes an extraordinary challenge on the poets, there where he appropriates their obligation with the most sincere and splendid bravura.

Richard Wagner
Rêverie de un poète Français
Poésies
Stephane Mallarme
Classiques Français
Paris, 1993

15

"A nivel estructural, los motivos en el Ring se extienden como una telaraña por el tejido completo de las cuatro óperas, todo desarrollado a partir de un reducido número de motivos iniciales, constantemente variados y modificados, por lo que todo está relacionado entre si, constituyendo una completa red de melodía infinita.

Wagner, p 97
Howard Gray
Ma Non Troppo
Barcelona, 2002

16

El mago de los Orfei, p 190
Mariano Fortuny Madrazo: una biografia
Claudio Franzini
Fundació Caixa Catalunya
Barcelona, 2010

17

page 10
Fifteen Years of a dancer's life:
With some account of her distinguished friends
Loie Fuller
Manyard Small
Boston 1913

18

page 11
Fifteen Years of a dancer's life:
With some account of her distinguished friends
Loie Fuller
Manyard Small
Boston 1913

19

page 21
Fifteen Years of a dancer's life:
With some account of her distinguished friends

Loie Fuller
Manyard Small
Boston 1913

20
page 22
Fifteen Years of a dancer's life:
With some account of her distinguished friends
Loie Fuller
Manyard Small
Boston 1913

21
Dance, musique, lumière, chez La Loie Fuller
Covielle
Éclair. May 5th, 1914
Cited from The Modernism Lab at Yale University
Carolyn Sinsky
modernism.research.yale.edu

22
“Sin embargo, señoras mías, están ustedes mal vestidos. Estáis mal vestidos porque incluso la moda parisina deja poco espacio a la personalidad, porque la falda tiene que tener una determinada caída y no otra, y la blusa debe ceñirse al pecho según una línea inexorablemente exacta. Mirad lo que consiguen las venecianas con sus chales, cuántas arminías, ahora tristes, ahora lánguidas, luego insinuantes, caben en su caída sobre los hombres y en su ondulación alrededor del cabello. El porvenir pertenece al chal, porque el porvenir es la personalidad en el vestir; chales tan sumisos al cuerpo que los lleva, tan dóciles a la hora de moldearse sobre el alma frívola o pensativa de una dama, como los que ha diseñado Mariano Fortuny.”
Hugo van Hoffmannsthal
El mago de los Orfeos
Mariano Fortuny Madrazo: una biografía
Claudio Franzini
Fundació Caixa Catalunya
Barcelona, 2010

23
Although my ties to Paris became heavier to bear by seeing these dresses that recalled Venice to me.
À la recherche de temps perdu
La prisonnière, p 446
Marcel Proust
Gallimard
Paris, 1972

24
Rainer Maria Rilke
Sonette an Orpheus I, 18

Hörst du das Neue, Herr,
dröhnen und beben?
Kommen Verkündiger,
die es erheben.

Zwar ist kein Hören heil
in dem Durchtobtsein,
doch der Maschinenteil
will jetzt gelobt sein.

Sieh, die Maschine:
wie sie sich waltz und rächt
und uns entstellt und schwächht.

Hat sie aus uns auch Kraft,
sie, ohne Leidenschaft,
treibe und diene.

www.polyamory.org

25

"We shall sing to the great masses, excited as they are by labor, pleasure, and uproar, sing the multicolored and polyphonic wave of revolution in the modern capitals, sing the nightly vibration of arsenals and workshops, illuminated by violent electric moons, the insatiable railway stations devouring smoking serpents, the factories that hang from the clouds on the thin trail of their smoke, and bridges which, as a gigantic athlete, jump across the flaming knife of rivers under the sun, and adventurous steamers that inhale the horizon, and the broad-shouldered locomotives which toil over the rails as enormous iron horses, bridled with bars, and the gliding flight of airplanes, its propellers flapping like a flag and sounding as an enthusiastic multitude."

Manifesto Futurista,
Marinetti,
it.wikisource.org

26

We want to glorify war – the world's sole hygiene – militarism, patriotism, the destructive gesture of the freedom fighter, the beautiful idea for which one is prepared to die, and contempt for women.

Manifesto Futurista,
Marinetti
it.wikisource.org

27

"Het ingesloten beeld moet worden afgeschaft, de figuur moet geopend worden en in de ruimte opgenomen ... in futuristische composities zullen wij vlakken hebben van hout en metaal, stationair of mechanisch bewegend."

Manifesto della Scultura futurista, 11 april 1912
Umberto Boccioni,
100 jaar moderne kunst
Sam Hunter en John Jacobus
(translation Simon Vinkenoog)
Amsterdam boek B.V.
Amsterdam, 1977

28

"El Dopolavore es una institución de paz, que persigue una sublima mision de fraternidad, de amor y de civilización."

La obra nacional "Dopolavora" en Italia
Benito Mussolini
Vertaling A.Dabini
U.S.I Salamanca
scribd.com

29

"La verdadera profesion de Mariano Fortuny es la magia y asi mucho de astro de hechicero tiene su palacio veneciano."

Blanco y Negro, January 12th 1930
Madrid

Motion in Art, chapter 7

I see America dancing

In the eighteen-fifties Walt Whitman embarked on a large poem, called *Leaves of Grass*, which first version was published privately in New York in 1855. During his life Whitman kept adding new parts to this poem. The writer turned it into a living thing, something that breathed and grew, that developed through time. A poem in motion.

Leaves of Grass seems the literal incarnation of Emerson's *Transcendentalism*. The poet created a sensual translation of Emerson's thoughts in a completely fresh and particular stance. Emerson appreciated it. From the letter the philosopher wrote after reading *Leaves of Grass*:

"I find incomparable things said incomparably well, as they must be" 1)

In *Leaves of Grass* Walt Whitman celebrates his own self, and in doing so is able to celebrate everyone else's. Right in the third line he says:

“For every atom belonging to me as good belongs to you.” 2)

In a huge and generous embrace he bundles all mankind; *the pure contralto, the carpenter, the married and unmarried children, the pilot, the mate, the duck-shooter, the deacons, the spinning-girl*, to repeat the first ones of a long list, and allows himself to take on cosmologic dimensions.

“I laugh at what you call dissolution,
And I know the amplitude of time.” 3)

But too, he lives in the here and now of nineteenth century America and is proud to do so:

“Endless unfolding of words of ages!
And mine a word of the modern a word en masse.” 4)

He goes to the bank by the wood, undresses himself and becomes:

“undisguised and naked” 5)

He enjoys his body and the body in general of which

“Not an inch nor a particle of an inch is vile, and none shall be less familiar than the rest.” 6)

He singles out the subject of the glory of the body in a further chapter of *Leaves of Grass* called *I sing the body electric*. Electricity! Again the strange new source of power is used as a prop to intensify an experience. In *Frankenstein* an electric current brought the inert compilation of body parts to life. Mary Shelley based the use of electricity on rumors of Giovanni Aldini's and Erasmus Darwin's experiments with galvanism, giving it a hint of scientific underpinning in this way. Whitman, some thirty years later, just adds the word as an extra to the title of his poem. The use of the notion was enough to elevate his praise of the human body into a more intensified, a more charged, atmosphere.

He starts this part of his poem boldly:

“The bodies of man and women engirth me, and I engirth them,
They will not let me off nor I them till I go with them and respond to them and love them.” 7)

It reminds us of Leonardo da Vinci who would follow an especially expressive character through the streets of Florence all day long in order to observe it so well that he would be able to draw it by heart at night. Whitman is enthralled by the human body and loves this condition. And he is going to show it in courageous statements that run right through the carefully erected boundaries of Victorian good taste.

“The expression of the body of man or woman balks account,
The male is perfect and that of the female is perfect.” 8)

He follows with a long list of examples of the excellence of the body in general, from the fullness of babies to the play of masculine muscle. And then he tells about his own reaction to these overpowering feelings.

“To pass among them ... to touch any one” 9)

But he touches lightly, and does not ask for more delight. In the following two parts of *I sing the body electric* he focuses, first on the female body, then on the male body, and ends daring everyone who denies him his fascination. He sums up his praise with the following lines:

“All is procession,
The universe is a procession with measured and beautiful motion.” 10)

Here he expresses himself about reality's structure and shows it as a continuation, not unlike Heraclitus' flow, but presenting it in the shape of a celebration in which the parts follow up in a determined and attractive way. Much as you would describe a dance.

The next part is about a slave auction. We are in 1855, slavery was not yet abolished in the United States. Whitman takes over the auction and starts convincing the buyers of the excellence of the people at auction. He first dwells on their bodies but ends with a passionate plea against slavery:

“Do you not see that these are exactly the same to all in all nations and times all over the earth?” 11)

Coming to the end of his chant on the body, he more or less repeats a phrase he started with in which he curses everyone who degrades or defiles the living human body.

If Emerson conceptualized the American spirit, and if Walt Whitman put it into words, then Isadora Duncan embodied it. She told in simple gracious motion of what the philosopher had conceived and the poet spoken of. She says:

“When I read this poem of Whitman's I, too, had a Vision – the Vision of America dancing a dance that would be the worthy expression of the song Walt heard when he heard America singing. This music would have a rhythm as great as the exhilaration, the swing or curves of the Rocky Mountains. It would have nothing to do with the sensual lilt of the jazz rhythm: it would be like the vibration of the American soul striving upward, through labour to harmonious life. Nor had this dance that I visioned any vestige of the *Fox Trot* or the *Charleston* – rather was it the living leap of the child springing towards the heights, towards its future accomplishment, towards a great new vision of life that would express America.” 12)

She connected this new American mentality with the Ancient Greeks rather than with industrial progress, and although she did not shrink from modern commodities such as ocean liners, automobiles and luxury hotels, she repeatedly tried to express the classical attitude in the pureness of her performances and even in her dress. Her *little Greek tunic* became a hallmark. She lost her life to an overlap of both worlds when her long scarf became entangled around one of the rear wheels of the open car she was in and strangled her.

Isadora seems to lock on to Whitman's tribute to the body when, at the end of her biography, she explains how she lived through her own:

"How mysterious is it to feel the life of the body, all through this weird journey on earth. First the timid, shrinking, slight body of the young girl that I was and the change to the hardy Amazon. Then the vine-wreathed Bacchante drenched with wine, falling soft and resistless under the leap of the Satyr, and growing, expanding; the swelling and increase of soft, voluptuous flesh, the breasts grown so sensitive to the slightest love emotion as to communicate a rush of pleasure through the whole nervous system; love now grown to a full blown rose whose fleshly petals close with violence on their prey. I live in my body like a spirit in a cloud – a cloud of rose fire and voluptuous response." 13)

Isadora did not separate art from life but, on the contrary, made them flow harmoniously together in the channel of dance. She danced at every occasion that inspired her and often these spontaneous expressions turned into repertoire pieces, such as her famous interpretation of the *Marseillaise*. Doing so she became the foremost inventor of modern dance

We could describe modern dance as a discipline of bodily movement that does not use pre-established rules, or as a discipline that starts from the natural possibilities of the body, or as one that explores all the possibilities of human movement, but these descriptions stem from an unconscious comparison with classical ballet, something that does not correspond with the way it originated. Modern dance did not evolve from classical ballet as, for example Cubism developed from Cezanne's post-impressionist investigations in pictorial space. It started as an almost completely disconnected endeavor.

Three American women undertook this adventure, each at a different time and place although their paths crossed one another several times during their careers. They were Loie Fuller, Isadora Duncan, and Ruth Saint-Denis. Each presents a separate pillar on which today's dancing rests. The necessary fourth one is the European ballet tradition.

It is no coincidence that this new way of approach emerged in the United States. Not only was classical ballet so firmly implanted in European culture that a certain distance was necessary to avoid its pressure. It too sprang from the unbound and enterprising mind of the American continent itself, a mentality that Waldo Emerson advocates and Walt Whitman powerfully synthesizes when addressing his fellow countrymen:

"What is there that you cannot give and take?" 14)

Loie Fuller says the same thing in a different way:

"I have motion. That means that all the elements of nature may be expressed." 15)

Isadora Duncan was born in 1877 in San Francisco and grew up in an artistic family. Her mother was a classical pianist and from childhood on Isadora and her two brothers and two sisters all busied themselves with music, dance and theatre. The Duncan family, the father being absent, embarked on an adventure, which was led by Isadora and which would bring her fame as an innovating dancer. They went from San Francisco to Chicago and on to New York, where Isadora found work as an actress and a dancer in a theatre company lead by Agustin Daily. She thought show business a miserable existence.

"I was extremely unhappy. My dreams. My ideals, my ambition: all seemed futile." 16)

After two years she left the traveling company and the whole family settled in New York City where they started a dancing school. It was there that Isadora seriously began to create dances. She started to perform, accompanied by the pianist Ethelbert Nevin. These free dances were quite a sensation and the pair was invited in different New York drawing rooms. But success among the upper classes was not what she was looking for. She did not feel that what she was doing was understood.

“These people seemed so enwrapped in snobbishness and the glory of being rich that they had no art sense whatever.” 17)

And:

“(…) in all my experience of New York I had found no intelligent sympathy or help for my ideas.” 18)

It seemed that America had given her an impulse that it did not recognize.

Isadora decided to go to London. But there she landed more or less in the same situation as in New York, and had to conform to dancing in drawing rooms of distinguished houses. She and her brother Raymond spend a lot of time in the British Museum and studied the postures of the figures on the Greek vases and bas-reliefs, nourishing a life-long interest in classical culture. Rather than using purely American cultural expressions such as jazz or the music from Charles Ives, she projects classical culture into her plans for the creation of an American way of being. She justifies this in the following way:

“I have discovered the dance. I have discovered the art which has been lost for two thousand years.” 19)

Things change after an invitation of Charles Hallé, the director of the *New Gallery*, an avant-garde institute that showed modern painting, to perform in the court. It brought Isadora recognition in art circles. Her relative success enabled her to rent a studio and further explore the new form of dance she was developing. This form stemmed from the body's innate grace rather than from its mechanical possibilities. It was natural, unaffected, spontaneous, intuitive, and rejected the artificial motions and poses of classical ballet. In her various schools, where she educated young children in the art of dance, one of the basic exercises was simply walking. She developed a way of movement that originated from the *solar plexus*.

“I spent long days and nights in the studio seeking that dance which might be the divine expression of the human spirit through the medium of the body's movement. For hours I would stand quite still, my two hands folded between my breasts, covering the solar plexus. My mother often became alarmed to see me remain for such long intervals quite motionless as if in a trance – but I was seeking and finally discovered the central spring of all movement, the crater of motor power, the unity from which all diversities of movements are born, the mirror of vision for the creation of dance – it was from this discovery that was born the theory on which I founded my school.” 20)

It seems that by putting the *solar plexus* between her breasts she placed it a little too high. The *solar plexus* is a dense network of nerves; a *plexus*, which has its place in what could be seen as the very center of our body, between the stomach and the spine. Vitruvius suggestion of the ideal proportions of the human figure takes the *solar*

plexus as its center. We too find this cardinal spot back in classical Indian philosophy with the concept of the *chakra*. The *chakras* are a series of points in the human body, running from the head to the abdomen, that are seen as nucleus of vital energy. One of them corresponds with the *solar plexus*. The name *chakra* derives from the Sanskrit word for “wheel”, or “turning”. These similarities might make us understand better Isadora’s idea of movement originating from the *solar plexus*. She sees it as a central place from which energy radiates to the extremities of arm and legs, a source from which all movement flows.

“the centrifugal force reflecting the spirit’s vision.” 21)

Isadora regarded dancing as a completely natural way of behaving which could be exercised in all kind of situations and was aroused spontaneously by certain circumstances, such as excitement.

“...and we used to get up at five o’clock in the morning, such was our excitement at being in Paris, and began the day by dancing in the gardens of the Luxembourg.” 22)

Or being in love.

“On Sundays we took a train and went into the country, to wander through the gardens of Versailles or the forest of Saint-Germain. I danced for him in the forest, and he made sketches of me.” 23)

Nature has a direct influence on her emotions, which she expressed in movement.

“The road we took from Karvasaras to Agrinion winds through mountains of savage, rugged grandeur. It was a beautiful morning, the air clear as crystal. We sped along on the light wings of youthful feet, often leaping and bounding before the carriage, accompanying our steps with shouts and songs of joy.” 24)

And she says, stretching this direct inspiration from nature;

“My first idea of movement, of the dance, certainly came from the rhythm of the waves.” 25)

This idea of continuation is, once more, equal to Heraclitus’ concept of flux, of eternal becoming as reality’s main characteristic. Isadora’s dances came forth out of a profoundly felt connection with the world around her, and thus, necessarily, took on the form of an uninterrupted flowing movement. She opted for an unaffectedness that expressed itself in dancing barefoot and dressed in a transparent tunic that revealed the motions of the body, in simple choreographies, in a simple scenery of blue curtains, and, ideally, in the absence of music. These two characteristics, flow and naturalness, created a whole new concept which would be an important factor in twentieth century dance. It challenged the foundations of academic ballet with its division in different parts, separated from each other by static moments.

Her own words shed some light on her *natural* way of working. When she visited Florence and saw Botticelli’s *Primavera* in the Uffizi museum, she became inspired and started creating a dance based on the different elements present in the painting.

“I sat for days before the *Primavera*, the famous painting of Botticelli. Inspired by this picture, I created a dance in which I endeavoured to release the soft and marvelous movements emanating from it; the soft undulation of the flower-covered earth, the circle of nymphs and the flight of the Zephyrs, all assembling

about the central figure, half Aphrodite, half Madonna, who indicates the procreation of spring in one significant gesture.” 26)

She prolonged the suggestion of motion that is indicated in the picture into three-dimensional space. She regarded it as a blueprint which contains the information how to execute the dance.

“I sat there until I actually saw the flowers growing, the naked feet dancing, the bodies swaying ...” 27)

In 1904, Isadora met Cosima Wagner who invited her to dance to the music of *Tannhäuser*. Richard Wagner thought classical ballet too limited a form to execute the dances he envisaged for his dramas. Cosima, after Wagner’s death in charge of the performances of his work and jealously guarding its origins, recognized Isadora’s potential. Just as Mariano Fortuny had, Isadora fell completely for Wagner’s musical dramas.

“At Bayreuth I was buffeted between Venusberg and the Grail. I was taken up, swept along, carried away in the floods of Wagner’s music ...” 28)

She too chose the metaphor of water to express her feelings. However, she interpreted Wagner in a completely original way.

“The closed grotto of the satyrs and the nymphs and Venus was the closed grotto of Wagner’s mind, exasperated by the continual longing for a sensual outlet which he could find only in his own imagination,” 29)

And the movements she envisaged accordingly are a highly personal expression of Wagner’s ideas.

“masses rushing like whirlwinds in rhythms caught up by mad waves of this music.” 30)

She did not seek the massive grandeur and the overwhelming substantiality of Wagnerian representation but, on the contrary, tried to express the composer’s vision with her usual economy of means:

“In order to realize these dreams, a single gesture of appeal will be able to evoke a thousand extended arms, a single head tossed back will represent a bacchantic tumult which is the expression of burning passion in the blood of *Tannhäuser*.” 31)

And sure of herself she declared that her vision would come true.

“You will see, before many years all your Bacchantes and flower maidens will dress as I do.” 32)

Although this prophecy was fulfilled, we can see this way of dressing in semi-transparent garments, as well as the natural flowing movements patented by Isadora, already in Fortuny’s painting *Las muchachas flor, The flower maidens*, from 1896, a good eight years earlier. Mariano admitted part of his inspiration for this picture derived from seeing Loie Fuller dance. It forms a remarkable triangle.

There might be another connection with Mariano Fortuny, there where Isadora describes attending a performance by Berthe Bady, a Belgian born actress, famous for her part as Hilda in Ibsen’s *The Master Builder*.

“How I admired her beauty! In those days, when women’s fashions were so unaesthetic, she always appeared clothed in some marvelous, clinging gown of chancing colors or glittering sequins.” 33)

The thought of Fortuny’s *Delphos* dress is inescapable.

Another Spanish artist, Josep Clarà, actually drew Isadora on various occasions, captured by her performances. 34)

In those years Isadora’s fully developed her own manner of dance, an approach on which the future of dance would rest. Classical ballet had become an obsolete expression towards the end of the 19th century. Or Susan Au puts it:

“Ballet seemed to have lost its creative momentum, and the public had ceased to regard it as a serious art form. It was no longer a mainstream art, as it had been in the 1830s and 1840s; it had lost touch with the times. Indeed, ballet bore all the symptoms of an art about to die of exhaustion.” 35)

Classical ballet had transformed from an art of motion into a performance of what really was a string of static moments, glued together by music. Loie Fuller was the first to deny this sort of dancing. Her completely fresh approach becomes clear from her own words:

“Our knowledge of motion is nearly as primitive as our notion of color. We say “prostrated by grief”, but, in reality, we pay attention only to the grief; “transported with joy”, but we observe only the joy; “weighted down by chagrin”, but we consider only the chagrin. Throughout we place no value on the movement that expresses the thought. We are not taught to do so, and we never think of it.

Who of us has not been pained by a movement of impatience, a lifting of the eyebrows, a shaking of the head, the sudden withdrawal of a hand?

We are far from knowing that there is as much harmony in motion as in music and color. We do not grasp the facts of motion.” 36)

It was precisely Loie Fuller who introduced Isadora to a German audience and prompted her career.

Isadora compares her way of dancing with classical ballet as follows:

“The ballet school taught the pupils that this spring was found in the centre of the back at the base of the spine. From this axis, says the ballet master, arms, legs and trunk must move freely, giving the result of an articulated puppet. This method produced an artificial mechanical movement not worthy of the soul. I on the contrary sought the source of the spiritual expression to flow into the channels of the body filling it with vibrating light – the centrifugal force reflecting the spirit’s vision. After many months, when I had learned to concentrate all my force to this one Centre I found that thereafter when I listened to music the rays and vibrations of the music streamed to this one fount of light within me – there they reflected themselves in Spiritual Vision not the brain’s mirror, but the soul’s, and from this vision I could express them in Dance (...)” 37)

It may be hard to follow what exactly she is talking about when she tries to explain what she feels when she creates a dance, but it is clear that her creations start with bodily motion itself and that she lets herself be roused by her own movements.

“I also then dreamed of finding a first movement from which would be born a series of movements without my volition, but as the unconscious reaction of the primary movement.” 38)

Isadora’s dancing was not a construction of different, separate movements but a continuation of motion inspired by a process of growing one with the subject she studied. The base of her creations was often a close, intense associating with a certain topic. Her subjects were wide-ranging and went from the waves on the Californian beach of her childhood to the uproar of the *Russian Revolution*.

“(…) every emotion had its corresponding movement.” 39)

Greek antiquity inspired her too. She relocated to Athens with her family for a year and tried to revive classic Greek dance.

“Ah, here was what I has always envisaged – the great heroic figure dancing.” 40)

It was from such different experiences that she developed here own unique way of movement, and with it modern dance.

“I have discovered the dance. I have discovered the art which has been lost for two thousand years.” 41)

Her success as an artist was perhaps fueled by more than only her exploration of bodily movement. She seemed to personify a new type of woman, throwing off her traditional role and creating her own life free from conventions. Both her way of dancing and her way of life were intertwined and followed a unique path that led her into unexplored areas. She expressed this complex position as follows:

“My art is just an effort to express the truth of my being in gesture and movement. It has taken me long years to find even one absolutely true movement.” 42)

She regarded herself as the center of a large universe.

“At night, I had only to shut my eyes and these figures danced through my brain in mighty array, calling on me to bring them to life. “We are here. You are the one at whose touch we might live!” 43)

It is here perhaps that she reflects best Walt Whitman’s ideas when he speaks about the universe as *a procession with measured and beautiful motion*.

She drew from many sources and even uses an unexpected mechanical metaphor to indicate her method. It shows the intrusion of the automobile in western society.

“Before I go out on the stage, I must place a motor in my soul. When that begins to work my legs and arms and my whole body will move independently of my will. But if I don’t get time to put that motor in my soul, I cannot dance.” 44)

Huge contradictions result from her all embracing attitude. Her disgust of classical ballet, and convention in general, did not prevent her from giving a huge party for the society of Paris at Versailles, the very cradle of classical ballet. Her description of the occasion reminds us of Louis XIV’s *fêtes*.

“The guests were invited to arrive at four o’clock in the afternoon at Versailles, and there, in the park, were marquees with every sort of refreshment, from caviar and champagne to tea and cakes. After this, on an open space where tents had been erected, the Colonne orchestra, under the direction of Pierné, gave us a programme of the works of Richard Wagner. I remember how wonderful was the Siegfried idyll under the shade of the great trees on that beautiful summer afternoon, and how solemn, just as the sun was setting, the tones of the Siegfried Funeral March.

After the concert, a magnificent banquet invited the guests to more material pleasures. This banquet, of varied and wonderful courses, lasted until midnight, when the grounds were illuminated, and to the strains of a Vienna orchestra, every one danced until the small hours.” 45)

In 1905 Isadora went to Saint Petersburg and met Serge Diaghilev during a supper at the home of the famous classical ballet dancer Ana Pavlova. She discusses with him the art of dance and argues against ballet. It is tempting to believe that this discussion spurred Diaghileff’s famous *Ballets Russes*, which started to perform in Paris in 1909, but there is no real proof of that.

Back from Russia, she started training children to dance in a school in Grünewald, Berlin. Some years later she would open a school in Paris. It was there, and at the very height of her career, that tragedy struck. She lost her two children in a car accident.

After the accident the joyfull content of her dances changed into a more somber one of which the *Marseillaise* and the *Marche Slave* are prominent examples.

Modern dance originated in the United States. Three women were responsible for this fact, Loie Fuller, Isadora Duncan and Ruth Saint-Denis. In the case of Loie Fuller and Isadora Duncan it was further developed in Europe. They rejected classical ballet and developed strategies of corporal movement that would reshape the art of dancing. Never the term *pioneer* seemed more adequate. They ventured into a space unknown, without the guidance of preset rules or the security of a safe return. They ignored everything that had been established since Louis XIV’s *Academie Royal*, each in her own, unrepeatabe way, and broke open a huge territory of new possibilities.

Notes:

1
Leaves of Grass, ix
Walt Whitman
Penguin Books USA
New York, 1986

2
Whitman, Song of Myself, line 3

3
Whitman, Song of Myself, line 420

4
Whitman, Song of Myself, line 482

5
Whitman, Song of Myself, line 11

6
Whitman, Song of Myself, line 50

7
Whitman, I Sing the Body Electric. Line 1

- 8
Whitman, I Sing the Body Electric. Line 5
- 9
Whitman, I Sing the Body Electric. Line 42
- 10
Whitman, I Sing the Body Electric. Line 78
- 11
Whitman, I Sing the Body Electric. Line 112
- 12
My life, page 162
Isadora Duncan
- 13
My life, page 170
- 14
Whitman, A Song for Occupations. Line 31
- 15
Fifteen years of a Dancer's Life, page 25
Loie Fuller
General Books
- 16
My life, page 22
- 17
My life, page 25
- 18
My life, page 25
- 19
My life, page 19
- 20
My life, page 39
- 21
My life, page 40
- 22
My life, page 35
- 23
My life, page 36
- 24)
My life, page 59
- 25
My life, page 9
- 26
My life, page 65
- 27
My life, page 65
- 28
My life, page 72

29
My life, page 56

30
My life, page 56

31
My life, page 56

32
My life, page 75

33
My life, page 44

34
El dibuix a Catalunya
Josep M. Cadena
Accat-Ecsa
Barcelona, 2004

35
Susan Au
Ballet and modern dance
Thames & Hudson World of art
London, 2012

36
Fifteen years of a Dancer's Life, page 24
Loie Fuller
General Books

37
My life, page 39

38
My life, page 40

39
My life, page 107

40
My life, page 45

41
My life, page 19

42
My life, page 6

43
My life, page 103

44
My life, page 80

45
My life, page 119

Motion in Art, chapter 8

Undressing the bride

One of the principles of *Transcendentalism*, the first purely American intellectual movement, conceived by Ralph Waldo Emerson, says that it is not necessarily through

God that we can experience truth, but that we can undergo it in a direct, intuitive way in nature. Or as Walt Whitman says:

“All truths wait in all things.” 1)

Why not Sneeze Rose Selavy?, a work from Marcel Duchamp from 1921, could be described as a white birth cage, filled with 152 small marble lumps, the size of sugar cubes. At one side of the cage the bone of a squid, and at the other side a thermometer, have been trusted between the bars. The title of this work is written in mirror writing across the bottom of the cage; a wink at Leonardo's way of notation. The work is signed at the base.

It was commissioned by the American art collector Katharine Dreier. She wanted to present her sister Dorothea with a work of art from Duchamp's hand. Duchamp accepted the commission provided that he was left free to do as he liked. The result still amazes us and keeps us looking for an explanation. Dorothea on the other hand found it so bizarre a thing that she refused to accept it.

Why not Sneeze Rose Selavy? lacks apparent logic. It does not explain itself in the way a portrait, or a landscape, explains itself. It enters a sphere in which one is forced to question the nature of art itself. Nowadays we may be used more to this way of doing, but in 1921 it was something uncommon.

It did not help either that Duchamp refused to give an explanation. He was famous for his *Mur de Silence*, his *Wall of Silence*, and hardly ever explained his work in his early period. He left that to his public. This posture resulted in a great many opinions from other people on his work, many of them contradictory. Duchamp accepted these opinions as equally valid. He did not make a choice and in doing so left everyone who cared about art with an uncomfortable feeling. And even today, we cannot simply stare at this strange object and then ignore it. It is constructed in such a way that we feel we have to react to it. Duchamp knew very well that in this way he forces us to take a view. Even Joseph Beuys, arguably, with Andy Warhol and Duchamp, the most significant artist of the twentieth century, felt addressed by this attitude of well-considered indifference and, during one of his performances, wrote on a piece of paper:

“Das Schweigen von Marcel Duchamp wird überwertet.” 2)

Duchamp's work has become an essential factor in thinking about art and almost every modern work of art is gauged with a body of theory that has developed from his work.

Why not Sneeze Rose Selavy? brings together different elements in a whole for which no single explanation is available because with his silence the artist makes it impossible for us to verify the accuracy of our clarifications. Even the title is chosen in such a way that it further amplifies the possibilities of interpretation instead of limiting them.

“The presence of a non-descriptive title appears here for the first time. In fact, from then on, I always gave an important role to the title, which I added, and treated as an invisible color.” 3)

There is a certain similarity in approach between Emerson and Duchamp. Both treat their subjects in a way that enables them to make a full use of all inherent possibilities. In his essay *Over-soul* Emerson heralds a non-systematic method to reach personal insights. He does not explain; he proclaims. He puts his thoughts about the soul before us without using logical arguments,

“After its own laws and not by arithmetic is the rate of its progress to be computed.” 4)

Both Emerson’s and Duchamp’s working methods illustrate the possibilities of relating phenomena which, within the excessive specialization of knowledge in our society, normally remain separated.

Ralph Waldo Emerson was born in 1803 in Boston and lived the largest part of his life in Concord, Massachusetts. He gave many lectures on a variety of subjects, an activity that took him all over the US, and which he elaborated into essays. One of his themes was that the independence of God in our dealings with reality leaves a large role for our ego. He expresses the same kind of independence when he deems that the state with all her institutions will finally corrupt the individual and that the last one is best off when he or she is left to act independently.

“We will work our own field, we will work with our own hands.” 5)

Walt Whitman, still largely unknown at the time but already admired by Emerson, expressed this independence in different way:

“Trippers and askers surround me,
People I meet the effect upon me of my early life of the ward and city I live
in of the nation,
The latest news discoveries, inventions, societies authors old and new,
My dinner, dress, associates, looks, business, compliments, dues,
The real or fancied indifference of some man or woman I love,
The sickness of one of my folks – or of myselfor ill-doingor loss or lack of
money or depressions or exaltations,
They come to me days and nights and go from me again,
But they are not Me myself. 6)

Marcel Duchamp’s work *Nu descendant un escalier*, *Nude descending a flight of stairs*, from 1912, was accepted at the *Salon des Indépendants*, an exhibition of non-academic artists in Paris, and provoked the indignation of the organization. Among them was the cubist painter Albert Gleizes who believed that this picture corrupted the cubist values. Marcel was asked to voluntarily withdraw his picture, something he did but not without drawing an important conclusion:

“Bon, puisque c’est comme ça, pas question d’entrer dans un groupe, il ne faudra compter que sur toi, être seul.” 7)

One year later, in 1913, the picture was the sensation at the *Armory Show*, an exhibition of modern art in New York. It made Marcel Duchamp at one stroke America’s most famous artist.

In 1833, after Emerson had been a schoolteacher and clergyman in Boston’s *Second Church*, and had given up both professions, he spent some time in Europe. He visited Venice among other places, and in England he met the Romantic poets Coleridge and Wordsworth. Transcendentalism, with its emphasis on intuition, would have traits of Romanticism which we might relate to this meeting.

In Paris he visited the Jardin des Plantes and was impressed with Jussieu’s system of classification. The system, that stresses the mutual relationships between species, was a revelation to Emerson. Antoine Laurent de Jussieu was a French botanist who

designed a classification system for plants that was based on taxonomy, and that would replace Linnaeus' system, based on morphological similarities. The fact that parts of a taxon do not necessarily have to resemble one another, can even be completely different in aspect, but nevertheless belong to one and the same group, impressed Emerson a good deal. It would shape his thinking and spur him to an interest in a great many, apparently unconnected things. Things that could be as distinct as the abolishment of slavery or the absolute presence of the circle in experiencing our environment. It inspired him into a vision in which all kind of relationships were possible, relationships that were based more on inkling than on scientific proof.

Another important influence in this respect was Indian philosophy which he started to study around 1845. He read the *Vedas*, the oldest Indian religious writings, which contain a collection of prayers, called mantras, together with instructions for religious rituals. Here Emerson's non-dualism and his critic on our western way of reasoning find their origins.

"We live in succession, in division, in parts, in particles." 8)

Emerson settled in Concord, Massachusetts. Later he would buy a large piece of wooded land a few miles from his house. It was there that the famous Walden Pond was situated where his friend and protégée, Henry Thoreau would carry out his experiment in simple living. Thoreau studied the *Vedas* too, and expresses in the record of the experiment, called *Walden*, his ability to relate different phenomena with a beautiful phrase:

"The pure Walden water is mingled with the sacred water of the Ganges." 9)

With Transcendentalism, Emerson created a frame of thinking in which freedom of thought was the first and foremost value. He shaped a typical American way of thinking in which a certain distance is created with overburdened European thought and in which new values are sought for, values that corresponded with the country's recent independence, the classlessness of its society and its passion for everything new.

Thoreau, phrased this kind of independence in *Walden* as follows:

"I did not wish to live what was not my life." 10)

After 1915, Marcel Duchamp would spend a lot of time in the United States and acquired the American nationality in 1951. He did not wish to think what were not his thoughts.

He was born in 1887, in Blainville, in the French region of Normandy, as the third child of a well-to-do family. His two elder brothers, Gaston and Raymond, were artists and lived in Paris. Marcel decided to dedicate his life to art also, and in 1904, when he was seventeen years old, encouraged by his father, he moved in with Gaston.

Paris was the center of everything new in art. Years, even months, are important here because the developments followed each other up fast, and in a timeframe of maybe six years an important part of the twentieth century was outlined. As a rule every advance originates from a process in which multiple causes play a part, and one can perhaps bring back the starting point of the modern movements of the twentieth century as far as Baudelaire's essay *La peintre de la vie moderne* from 1863. 11)

However, Braque's and Picasso's Cubism meant such a fundamental step forward that it has become something of a turning point. In 1908, both painters, in almost complete unison started on a process that would dismantle pictorial space as it was known up to then. Without altogether giving up representation, they started to simplify their subjects by dividing them up in rhythmically placed planes with sharp accented

boundaries. They changed the illusory three-dimensional space for a two-dimensional one in which the loss of spatial information was neutralized with the integration of those planes that in reality are not visible for the eye with its single point of vision. By showing all the different sides of an object at the same time, they recreated its three-dimensionality in a new way. Their way of picturing made it possible to see an object from all sides on a single flat surface. The fragmented construction of small, sharp planes facilitated the integration of fore- and background. This new way of working had an enormous influence and many followers.

In 1909, while Braque and Picasso were still deep into exploring the possibilities of their cubist view, Filippo Tommaso Marinetti published his *Futuristic Manifest*. It would be the first of a long list of futuristic manifests. Marinetti and his friends were a rowdy lot. However, it proved harder to put the originality of their words into images. In the first years of the Futuristic Movement, their pictorial language leaned heavily on Cubism. It gave the movement a revolutionary appearance, but it did not really match with their aims. The Cubist group was made up of artists that explored pictorial possibilities. Futurism was a revolutionary movement intent on changing the world. It searched for images that fitted the newborn twentieth century. They saw dynamism and motion as its principal characteristics and looked for ways to express these notions. In Umberto Boccioni's picture *The forces of a street*, from 1911, we can see the conflict that arises between the static cubist language and the wish to express dynamism. We see semi abstract, sharply cut fragments which represent apartment blocks and rays of streetlights mixed with more naturalistic painted figures and vehicles.

In 1912, the first Futuristic group exhibition took place in Paris. At the end of the same year Robert Delauney presented his *Disques, or Discs*, in Paris. Together with the work of Kandinsky, which was on show in Munich the same year, these were the first complete abstract pictures; pictures in which color and shape represented nothing but themselves.

From 1904 on Duchamp moved in the artistic circles of Paris and underwent a series of influences without making a choice. His first work of importance was *Moulin à café*, from 1911, although this is more so because of the role it would later play in Duchamp's work than for its own merits. His brother Raymond has asked each of his artist friends to make a picture for his kitchen. The small painting, that represents nothing more than a coffee grinder, was based on a sketch. This sketch, which is drawn over a grid, has something of a technical draft. *Moulin à café* would be Duchamp's first representation of a machine. The little arrow, that indicates the direction in which the wheel of the grinder turns, seems a sign that he was aware of this remarkable fact. After having experimented for a couple of years, this small picture gave his work a first direction. From *Moulin à café* on, his work started to show a certain coherence. Motion would play an important part in it.

Much of what Duchamp would make over the next years seems to go in the direction of what would be his masterwork *La mariée mise à nu par ses célibataires, même*, also known as the *Le Grand Verre; The Large Glass*, which he created between 1917 and 1923 in New York. This work, that could be described as the representation of a machine, or *une machine célibataire; an unmarried machine*, as Duchamp said, is the pivot of around which many of his ideas turn. Almost all of his work before 1917 we can regard as a preparation for *Le Grand Verre*, while most of his work after its completion can be seen as a commentary. With his later comments on, and replicas from, his earlier work, Duchamp himself played an important part in this search for consistency.

It is often said that after 1920 Duchamp mainly concentrated on playing chess, and hardly busied himself making art. It is probably better to say that his ideas on art grew in importance while his interest in material production diminished. The production of his

first ten years as an artist contained such a wealth of ideas that he needed many years to ponder on the consequences.

Motion is one of the important themes in *Le Grand Verre*. This theme announced itself for the first time in small picture he made for his brother's kitchen. Then, in December 1911, he painted a second picture with the theme: *Jeune homme triste dans un train*, or *Sad young man on a train*. In the foreground we observe a human figure, constructed from what look like separate parts. It gives us a vague impression of something mechanical. Planes, separated with straight lines, and a strongly reduced palette, betray the influence of Cubism. However, Duchamp repeats the same figure in further reduced hues, making it retreat into the background. It makes the figure waver from the left to the right and, in this way, creates an effect of movement. At the left side of the painting, the dark shades give the impression to move towards the central figure, while at the right side they seem to disappear from view due to the strong perspective they are submitted to. The title adds another element to the image, although no elements belonging to a train are visible in the picture.

It calls to mind a comparison that Bertrand Russell used in his book *ABC of Relativity* 12) in which he explained Albert Einstein's theories on relativity. Russell clarified the notion of relativity of time and place, notions that were seen as absolute by Newton in physics and by Kant in philosophy, with the example of a train that goes by a railway station at a very high speed. The passengers in the train would appear to the people waiting on the platform as deformed, as pressed together. And vice versa, to the people on the platform the train passengers would look distorted. However, the relationship between Duchamp's picture and Russell's comparison must be coincidental. *ABC of relativity* was written in 1925, long after *Jeune homme triste dans un train* was painted. All the same, later in his life Duchamp gave the following account of this work:

“C'était une décomposition formelle, c'est-à-dire en lamelles linéaires qui se suivent comme des parallèles et déformant l'objet. L'objet est complètement étendu, comme élasticé.” 13)

This description does call to mind Russell's metaphor of relativity theory.

Movement as a theme became more pronounced in a following painting, *Nu descend un escalier*, *Nude, going down a flight of stairs*, from 1912. This picture shows a human shape, once more almost mechanical in appearance. This shape is repeated several times, each shape a little lower than its predecessor, which gives the impression as if the figure is descending the flight of stairs it is pictured on. It enters the picture facing us, then turns to its left and starts going down. We can observe the separate movements of the body parts; movements that are indicated with thin lines such as are used in comics to suggest motion or speed. The hinging movement of the hip is pointed out with interrupted lines we find in user instructions. The picture truly expresses motion and, although its language still shows vestiges of Cubism, it is much closer to Futurism.

Nu descend un escalier seems to have been preceded by a sketch from 1908 of a female nude in a somewhat precarious position on a stepladder. The figure seems to take a first step in descending, a suggestion caused by the inclination of her head. A significant addition to this drawing is the word *machine*, written in the triangle the stepladder forms. It suggests an early connection in the artist's mind between the human body and the machine.

These four works of art are the first set-ups towards *Le Grand Verre*. They cleared the way towards the representation of human motives as mechanisms. The next step

in this process would be one of utmost importance. In 1913, Duchamp took a bicycle wheel, together with that part of the frame that normally connects to the mainframe, and mounted them up side down on a slender white stool. He called it *Roue de Bicyclette*, *Bicycle wheel*, and enjoyed to spin the wheel from time to time. With the indifference that annoyed Joseph Beuys so much, he declares that it was a completely incidental gesture, done without any intention to create art:

“J’aimais la regarder, tout comme j’aime regarder les flammes dansant dans la cheminée.” 14)

Yet the implications were considerable. Duchamp realized that, although his act had been free of any pretensions, and done for his pleasure only, the result automatically moved into the sphere of art. Apparently everything the artist does could be regarded as art. No longer did the skillfulness of the artist decide if the object was a work of art, a concept that had held ever since the early Renaissance, but the environment in which the work is conceived.

In the work they made in 1911 and 1912, Braque and Picasso had started to include real objects, pieces of rush or floor cloth, or snips of newspaper, in their two-dimensional compositions. Conscious or not, with *Roue de Bicyclette* Duchamp went one step further and reduced his creative act to assembling existent parts. Now it was no more than a small step to the *object trouvé*, or *ready made*.

With the *ready made* Duchamp would limit his involvement in the creating of art to simply selecting an object and declaring it a work of art. The first work of art created in this way was *Egouttoir*, or *Bottle holder*, from 1914. A long series of *ready makes* would follow. He would coin the term in 1916.

In the meantime, *Roue de Bicyclette* became the first work of art that could really be put into motion. This endless, inward directed, motion of the wheel would lead Duchamp to another important theme, namely; the impossibility of love. The protagonists of *Le Grand Verre*; the bachelors in their helpless state, will never be able to possess the bride and are doomed to endless suffering.

The rotating movement would keep returning in his work. In 1920 he produced the *Rotative plaques verre*, or *Spinning glass plates*. This was a real machine. There are two versions, one from 1920, and an improved one from 1925. Both follow the same principle. On a crude frame, made from wood and iron parts, an electromotor is mounted. The motor propels a meter long axle. The axle runs through the centre of five, circular glass plates, each with a distance of 15 centimeter between. The plates differ in diameter; the largest measures may be a meter across, the smallest 15 centimeters. The largest plate is fixed at the far end of the axle, the smallest up front. On their surfaces, circles have been drawn in fine white lines. Now when the electromotor is put into action, and the plates start to revolve, a curious effect occurs. When one places oneself before the contraption, and in line with the axle, one gets the impression that the fast turning discs find themselves on one and the same plane. Apparently the circular motion annihilates our perception of depth. This machine has something in common with *Roue de Bicyclette*. When one spins the bicycle wheel, the separate spokes transform into an impenetrable disc. In both cases optical change occurs.

Duchamp made *Rotative plaques verre* to amuse himself with its effect, and although it is now a museum piece, its relationship with art is unclear. Unlike *Roue de Bicyclette* it remains a machine. Its connection with art we only grasp when we see its effect as the reversal of a principle that played its part in western art since the Renaissance; namely the skill of suggesting three dimensions on a two dimensional plane. *Rotative plaques verre* tricks us in experiencing a three-dimensional situation as a two-dimensional one.

Anémic Cinéma is a mute, black and white, seven-minute film from 1925, made by Man Ray, Marc Allégat and Marcel Duchamp, in which they animated Duchamp's spiral drawings and in this way brought them into motion.

A last step taken in this occupation with movement were the *Rotoreliefs* from 1935. The *Rotoreliefs* were a series of six circular drawings, made on cardboard discs with a diameter of twenty centimeter. These drawings were designed with the idea to spin them on a gramophone. The design was conceived in such a way that looking at them while in motion created the sensation of optical depth. As such the *Rotoreliefs* are the counterpart of the *Rotative plaques verre*. In both projects Duchamp expressed the temporality of a fixed position and busied himself with neutralizing oppositions. While in *Rotative plaques verre* three dimensions changed into two, in the *Rotoreliefs* happened the opposite.

A second important aspect of *Le Grand Verre* is the internal logic of the work. Early on in his career Duchamp rejected a purely sensual approach of painting, a vision we saw reaching its peak in the work of Mariano Fortuny and other artists of the Belle Époque. Duchamp became acquainted with another way of thinking about reality when, in 1913, he accepted a job as librarian of the Parisian Bibliothèque Sainte-Geneviève.

The scientific world was in a state of ebullition because of Max Planck's and Albert Einstein's revolutionary theories on matter. The commotion was turning science into a popular subject. In the library, with nothing much to do, Duchamp started reading books on mathematics and physics. It gave his innate preference for logical conclusions something of a foundation. Far away from the art world he became absorbed in these works and adopted, not their content, but their approach. He applied this way of doing to his own intuitive ideas which enabled him to take them way beyond the traditional borders of the work of art.

An example of this highly consequent way of thinking would be a ready-made from 1919, called *Air de Paris*. The *ready made* is no more than a small ampoule with a content of fifty cubic centimeters. He took this small bottle, empty but corked, from Paris to New York and presented it to his benefactors, Walter and Louise Arensberg, as air from Paris. *Air de Paris* remains a work of art as long as the bottle is closed. Once declared a work of art in New York, the *ready made* could figure in exhibitions. However, when *Air de Paris* was exhibited in Paris, Duchamp removed the cork. While elsewhere the ampoule was full, in Paris it was empty. Only after being taken to New York, *Air de Paris* could be a work of art in Paris: a demonstration of utter logic.

Another example. Again in 1919, Duchamp drew a moustache and goatee on a reproduction of the *Mona Lisa*. Leonardo's painting may have had Duchamp's attention because a couple of years before, in 1911, it had been stolen from the Louvre by a certain Vincenzo Perruggia. The picture remained lost for two years, hidden in Perruggia's apartment in Paris in a suitcase under bed. It surfaced again in Florence when Perruggia tried to collect the reward that was put up for finding the picture. The robbery caused consternation in Paris, and during its absence the public flocked en masse to the Louvre to stare at the empty place where the *Mona Lisa* had hung. The inverting of attributes must have amused Duchamp and may have been the reason for his intervention some years later. Under the reproduction he wrote the letters L.H.O.O.Q, which, if one pronounces it as a word, would sound in French as *she has a hot ass*. Maybe somewhat childish at first sight but, many years later, in 1965, Duchamp made up for his boyish prank when he presented another reproduction of the *Mona Lisa*, this time without additions, and names it *Rasée; Shaven*. The same logic that triggers these two works of art we will find back in *Le Grand Verre*.

Trois Stoppages-étalon from 1914 is an early example of Duchamp's new found "scientific" approach. He made three pieces of copper wire, each a meter long, drop on the floor from one meter high. He fixated the accidental curves the pieces took as they

hit the floor by gluing them on three strips of blue velvet, mounted on three glass plates. He kept these three elements in a wooden box, together with three wooden rules, each of which reflected the curved length of one of the three pieces of copper wire. The rulers were later used as a unit of measurement in other work, such as *Réseaux de Stoppages* from 1914 or *Tu m'* from 1918.

In *Réseaux de Stoppages* we can see a network of curved lines, created with the rulers from *Trois Stoppages-étalon*, starting from a single point. Furthermore, the picture shows a vague image that calls to mind a picture from 1911, called *Jeune Homme et Jeune Fille dans le Printemps*. The obviousness of the retouch may have been Duchamp's way of illustrating the difference between his former more sensitive way of working and his new rational way. The same network of curved lines will return in *Le Grand Verre*.

A third aspect of *Le Grand Verre* is physical love. The start of the twentieth century was not only characterized by its mechanization; an equally important influence were Sigmund Freud's theories on sexuality.

At the start of his career, in the eighties of the nineteenth century, Freud realized that an idea can cause a mental illness and that speaking with the patient of such an illness could offer a certain amount of relieve. He discovered during such conversations, in which he took the patient back to his or her childhood, that often sexuality formed the cause of their neurosis, and that in those cases he could pin down the neurosis to sexual feelings towards the parents. Dream-analysis was instrumental in this process. It led him to the groundbreaking conclusion that all children have strong feelings of love and hate towards their parents.

When his father died, in 1900, Freud got troubled by feelings of guilt, something that spurred him to subject himself to psychoanalysis. He was the first person that was capable of overcoming the innate mental resistance and entered his own mind.

His idea that sexuality was the main motive behind all human behavior, made a huge impression at fairly all levels of western society, and breached the longstanding taboo on the subject. This breach manifested itself at first in art and literature.

Duchamp was one of the first artists that occupied himself emphatically with sexuality. However, his personal relationship with the subject was at the start of his career somewhat reserved. At a rather young age he gained the reputation of a confirmed bachelor, a reputation that may have been a shield for a timidity towards women. A picture from 1911, made on occasion of the wedding of his younger sister Suzanne, represents something of this reserve in its idealization of the union between man and woman. The picture seems to halt just before the sexual act and dwells on the desire. In *Le Gran Verre* we encounter the same situation but here fulfillment is no longer possible. Duchamp, now more experienced in matters of love, separates the dominions of man and woman. Here desire remains as the only possible relationship between man and woman, and the discontinuation of the opposition male-female falls short. The bond between the sexes is reduced to an undressing woman and a masturbating man, between the unattainable and idealized woman and the lonely lusts of a man.

The undressing of the bride is the symbolic stage between between two conditions, bachelor and married, between the opposition and her neutralization. We encounter the theme of undressing the beloved various times in Duchamp's work. In *Nu aux bas noirs*, from 1911, we see a woman sitting on a piano stool dressed in no more than black stockings. In 1911 too, Duchamp painted the image of a woman he only knew by face. He painted her in five different, overlapping phases of undressing. Although there is no direct relationship between this picture and *Le Gran Verre*, it nonetheless seems to announce it in its representation of the desires of the painter in love.

In 1912 Duchamp made a drawing in which he would use for the first time the title *La mariée mise à nu par ses célibataires, même*. The *même*, even in English, would be added later. This drawing shows two bachelors who are undressing a bride.

La mariée mise à nu par ses célibataires, même, also called *Le Gran Verre*, is Duchamp's opus magnum. He worked on it from 1913, the year when the first sketches appeared, until 1923 when he left it, according to his own words, unfinished.

Just as the different boxes with replicas and facsimiles he would produce later on in his career, or as the painting called *Tu m'*, *Le Gran Verre* is an encyclopedian enterprise. It concerns a compilation of different ideas which are being related by bringing them on one and the same plane. Duchamp would throughout his career feel the need to relate his different creations, and one might wonder if not a mayor part of his energy went into this venture.

Le Gran Verre is made up of two equal steel frames, each holding a plate of glass, placed one on top of the other so that they create a single object. This object, *object* by lack of a better word, measures 272 centimeters high and 175 centimeters wide. Painted images cover the glass surfaces.

The use of glass as a base for images is often explained as the expression of Duchamp's wish for a neutral background; a material without any references. It creates a suggestion of the images hovering in the air and suggests a slight three-dimensional quality. On the other hand does the transparency of the base engage the surroundings of the artwork into the picture and in this way includes reality into the picture. What is more, when the spectator is in motion the image, because of the change in background, seems in motion too. This evokes Heraclitus' idea of constant flux, of continuous change in reality.

The use of glass might have another, purely practical aspect. As many parts of *Le Gran Verre* were developed separately from each other, and had to be reproduced exactly, having glass as a base would be something very helpful. Duchamp could have corrected his sketches until they were perfect and then only had to stick them on the backside of the glass and copy the image.

The first thing that attracts the attention when one regards *Le Gran Verre* is its division in two parts. But although the imagery is divided over two halves, the work forms clearly a visual unity. The reduced color scheme helps a lot in creating harmony. The pattern of cracks, that runs across both halves, helps too in pulling all elements together. Both glass surfaces shattered during a transport in Brooklyn, in 1926. Duchamp took the trouble of reconstructing the windows, fragment-by-fragment, and accepted the pattern of cracks as part the work. Chance happenings fitted his nonchalant attitude towards art, an attitude in which a fixed significance was unimportant, undesired, and maybe even impossible.

The images on the two glass plates represent a machine. With *Le Gran Verre* the machine was introduced in art as a subject in itself. Although the Futurists were the first to except the machine as an important part of modern life, they were more interested in its effects than in the actual representation of machines. In the first decennia of the twentieth century the mechanization of almost every aspect of life became a fact. People were suddenly surrounded in the street by automobiles and electric tramways, they traveled on the subway, in the offices typewriters rattled, they spoke with each other through the telephone, buildings were erected with pre-produced steel parts, and a harsh electric light shone over all of this. The Futurists pictured all this. But Duchamp took this a step further and represents the unstoppable mechanization of life with the mechanization of sexual relationship.

The preparations for *Le Gran Verre* started in 1911 with a small painting *Moulin au café*, which he painted to adorn the kitchen of his brother's house. The simple mechanism of the coffee grinder put him on the track of the machine and its repetitive

movements as a subject for his paintings. 1912 would be a crucial year. Together with Francis Picabia, Gabrielle Buffet Picabia and the poet Apollinaire, he visited a performance of Raymond Roussel's theater piece *Impressions d'Afrique*, an experience that would influence his way of thinking and expressing himself. In his piece Roussel uses various contraptions and automata. On a poster that announces the piece we can see some of these artifacts. They make us somewhat think of the automata the Swiss watchmaker Pierre Jaquet-Droz made, although the charm of his creations has been replaced by cruelty and absurdity. It is not hard to find reflections of these images in *Le Gran Verre*.

In the same year, 1912, Duchamp made a drawing in which he first used the official title of his main work: *La mariée mise à nu par ses célibataires*. As said before, this drawing shows two bachelors undressing a bride. Although their human shape is still visible, Duchamp is turning them into machines. Limbs are turning into levers, muscles into protective plates, the senses into valves. The same kind of mechanical parts we find back in another sketch and two pictures from 1912. The first one is titled *Le Roi et la Reine traversés par des nus vites*, the second one: *Le Roi et la Reine traversés par des nus en vitesse*, and the third: *Le Roi et la Reine entourés par des nus vites*. In this series we can see the king and queen being separated by nudes in motion over and over again. This specific separation would play a major part in *Le Gran Verre*. The titles of these three work were meant to give offence. The nude in arrest, as posing for the painter, was an accepted feature in art. However, the nude in motion insinuates sexuality.

A next painting from the same year, *Le passage de la Vierge à la Mariée*, brings us yet again a step closer to *Le Gran Verre*. This time the recognizable human figure has yielded to a mechanism while the theme is now sexual intercourse. A last painting from 1912, *La Marie*, shows us the bride more or less as she would figure on the upper part of *Le Gran Verre*: as a mechanism of recipients, tubes, and all kinds of bars and connections.

In 1912 Duchamp stayed a couple of months in Munich where he saw the works of Lucas Cranach in the Alte Pinacothek, among them *Adam and Eve*, a painting of which the evident nakedness of the figures inspired him.

"I love these Cranachs. These big nudes, the character and substance of their nakedness inspired me in using the color of flesh." 15)

In 1913 and 1914 he made several sketches and notes which clearly show that the concept for *Le Gran Verre* had been formed. There are drawings on its construction, complete with measurements, sheets with hand and typewritten texts, designs for the group with their mutual positions, two studies in oil that depict the chocolate grinder, plus a first work on glass; a picture of the sledge and watermill which would be reproduced later on the *Le Gran Verre* literally.

In 1915, after fulfilling a year in the military and being excluded from further service, Duchamp immigrated to the United States, where he put up a studio in New York and started with the execution what would be his masterpiece.

The action seems to start in the lower left corner of the lower window. There nine bachelors, symbolized by the uniforms of nine exclusively male professions, are lusting after the bride who occupies the upper window. They ejaculate a gas that is being transported by means of thin lines, a reminder of the rulers of the *Trois Stoppages-étalon*, towards a series of seven sieves. The sieves are positioned in a half circle and their function is to transform the gas into liquid. In front of the arc of sieves, we find the chocolate grinder, which we recognize from earlier pictures. On its central axle a large pair of scissors is mounted while its supports one end of a horizontal shaft that leads towards a waterwheel. A waterfall, not included in the picture, puts the waterwheel into

action which, in its turn, makes the sledge go to and fro. All these endless repetitive movements are a reminder of the incessant masturbation of the bachelors.

The sledge is connected with two vertical rods to the pair of scissors in such a way that its movement opens and closes the scissors continuously. The liquid, on leaving the sieves, is cut by the scissors, and after it has been filtered by means of a series of lenses, it is changed, one could say, into a kind of chemical information, and ready to be read by the bride. This information reaches the upper glass by means of last lens or filter that is, according to Duchamp, hidden in the metal separation between the two panes, and named the *Wilson-Lincoln Prism*. This is the name for an effect of change of image. Duchamp wrote about it in his Green Box notes. The change of image occurs when we move along a vertically folded panel. On the folds turning to one side a portrait of Wilson, divided into strips, is attached, on the other side the same is done with a portrait of Lincoln. When we go along this object the image of one president will change into that of the other. With this imaginary element Duchamp wanted to stress the two sides present in *Le Gran Verre*. The point of view from the bachelors differs dramatically from the point of view of the bride. Their differences cannot be overcome.

By this prism the information reaches the upper window: the dominion of the bride. We met the image of the bride earlier in *La Marie*. She has not changed much, although Duchamp added a new shape to her appearance which he describes as *Voie lactée chair*. This element receives the chemical information and passes it to the bride. But, because of the Wilson-Lincoln effect, she interprets this information differently. She is flattered by the attention of the bachelors and starts undressing to maintain their interest.

A second addition to the bride is a longitudinal shape, which leaves her lower parts, and points in the direction of the bachelors. Duchamp describes it as the vanishing point, seen from the bachelors' perspective. With this element the action returns to the starting-point, the bachelors, and the circle closes.

With this work Duchamp creates a pessimistic image of the love between man and woman. Duchamp divides this love in two separate aspects; the hopeless longing of the bachelor and the inaccessibility of the bride. The bride is only interested in being desired. She does not care who desires her and allots her attractions over all her admirers equally. The bachelors are presented as victims who are doomed to endless craving for the female body. Apparently Duchamp regards this situation as hopeless and permanent, something that enables him to represent it as mechanical.

Le Gran Verre is what Duchamp calls a *machine celibataire*, an *unmarried machine*, or a *bachelor machine*. The term has been in use since for this kind of machines ever since. It would describe as a machine that serves no purpose but that of its own existence.

Le Gran Verre is not a picture of a machine in action. It looks more like a blueprint of a machine. We observe an exposé of interconnected parts but no suggestion of motion. It is as if the machine is waiting for the live-giving spark from a Victor Frankenstein. Duchamp's reason to not show the machine in action is hard to understand. It seems that the suggestion of motion, ongoing machinelike motion, would add to the hopelessness of the condition he portrays. But maybe, in the long process of realizing this work, his opinions changed. As the painting of the coffee grinder shows, in his early career depicting machines fascinated him. It was a brand new subject in art and may have entered *Le Gran Verre* as a consequence of this fascination. Later it could have lost its initial attraction, and with that the need to depict motion, while he concentrated on the condition he portrays. He himself explains it as follows:

“Je n'aimais pas réellement la machine, mais il valait mieux infliger ça à une machine qu'à un être humain, ou à moi-même.” 16)

Le Gran Verre is the centerpiece of Duchamp's oeuvre, but we can find the theme of sexual intercourse and its implications throughout Duchamp's work. In 1911 he made a painting called *Paradis* on which we can see Adam and Eve. Eva hardly tries to cover her nakedness but Adam keeps his hand chastely before his genitals, and while Eve seems to observe the body of her partner, Adam stares away. This is a reversal of the situation, but not of the theme of *Le Gran Verre*.

In *Jeune homme et jeune fille dans le printemps*, also from 1911, the possibility of union seems to come a lot closer. The boy and girl are acting in a similar way; both stretch out their arms at the same tree, maybe to reap its fruits. A black V-shaped line unites their genitals, something that points at the possibility of intercourse. But we have to take into account that he made this painting as a wedding present for his younger sister.

In 1921, Man Ray made a photo of Marcel Duchamp being embraced by an undressed woman. The photo is called *Cine-sketch: Adam and Eve*. We see Duchamp en face, from the woman we see only her back. Duchamp undergoes the embrace resigned, one hand in his side, that other hanging down, refusing the invitation.

On another photo from Man Ray, from 1924, we see Duchamp and Brogna Perlmutter-Clair pose naked. Brogna holds one hand before her genitals while the other hand makes an inviting gesture to her partner. Duchamp shields his genitals for our eyes holding with what could be a fig leaf. His other hand makes gesture of repulsion towards Brogna. Once more, contact seems to be impossible. Duchamp repeated the same scene in a drawing from 1968.

On what is a magnificent photo, the cover of the 1945 July issue of the American Vogue, we can see the lower part of *Le Gran Verre*, the picture taken from behind. We discern the bachelors' silhouettes, the arc of sieves, the pair of scissors, and the set of lenses. From the bride we see nothing. In a reversal of the original theme, a woman of flesh and blood, a photo model, has replaced her. She has left the upper window and entered the bachelors' domain. We observe her through the glass. She is tempting the bachelors with her gaze and supports her intention with the gesture of her hand and fan. The highest point of the arc of sieves, there where the gas is turning into liquid, is right in front of her genitals. She seems to push herself against the window in defiance of the bride, invisible above her.

Then there is a photo from Duchamp on which he plays chess with a naked woman in an exhibition room of the Pasadena Museum of Art, in California. And again it seems to dwell on the impossibility of the union of man and woman. The game, with all of its absorbing depth, has placed itself between them.

We saw Duchamp investigating this theme in various ways. He would do so in another manner when he created Rrose Sélavy. The name is a corruption of the phrase *Eros c'est la vie*. Duchamp used it for the first time as a caption beneath a photo which Man Ray took of him. In this photo Duchamp dresses as a woman. He had experimented earlier with changes of sex. A drawing of 1910, *Jeune Homme debout*, shows a young woman, the wife of a friend, in a man's suit. But the creation of Rrose Sélavy was, apart from the joke, an aspect of Duchamp's work that should not be taken lightly. It could be seen as a reversal of *Le Gran Verre*. With Rrose Sélavy Duchamp was capable of switching between male and female. He creates an androgynous personality that annihilates the dualism between male and female. He signed his later summarizing work *La Boîte en Valise* with:

"de ou par Marcel Duchamp ou Rrose Sélavy" 17)

In *The Symposium* Plato expresses the androgynous desire as follows:

“After that, with their natures hewn in two, each one missed the union with its other half. They threw their arms about each other and were woven with one another, desiring to grow together, ...” 18)

And somewhat further on:

“Each of us then is a symbol of humanity inasmuch as we are hewn like a flat fish – out of one, two. So they each seek their other symbol.” 19)

We did meet the androgynous aspect with Leonardo da Vinci and we will reencounter it when we examine Andy Warhol and Vivienne Westwood.

Duchamp made Rose Selavy responsible for various works of art, among others for *Fresh Window* from 1920, a window frame made at a 1 : 3 scale, of which the partitions are closed with leather panes, or for *Belle Haleine* from 1921, a bottle of perfume. *Anemic Cinema* is signed with Rose Selavy. Then there is *Why not sneeze, Rose Selavy*. Duchamp’s first mayor exhibition, in 1963 in the Pasadena Museum of Art, was called *By or of Marcel Duchamp or Rose Selavy*. One year later the name appears once more, this time as the title of an exhibition in New York, while, in 1964 in Paris, a homage of Rose Selavy would take place. It shows Duchamp’s occupation with the theme.

Rose Selavy was a creation that came up with the questions *Le Gran Verre* aroused. The work of art, at which occupied him for a decennium, created a circle of thought from which it was hard to escape. In one way it reminds us of the Buddhist idea of *Dukkha*, in which life is described as an endless cycle of suffering. Escape from this cycle of rebirth is only possible by understanding reality. With *Le Gran Verre* Duchamp had realized a closed circuit, a mental perpetuum mobile. Rose Selavy was a way out, a mental state that enabled him to escape this cycle. The androgynous being could ward off the damage that *Le Gran Verre* inflicted with its indecisiveness. Rose’s pose is tempting enough.

Another similarity with Buddhist thought is Duchamp’s wish, expressed in his latter years, to bring back his life to:

“silence, slowness and solitude” 20)

While Duchamp was working at *Le Gran Verre*, first in Paris and later in New York, the Irish writer James Joyce was occupied with a somewhat similar project. His novel *Ulysses* was written between 1915 and 1921 in Trieste, Zurich and Paris, and published in the last city in 1922. Both works originated before the two artists had the change of meeting each other or take note of each other’s work. It is not known if they ever met during Duchamp’s visits to Paris in the nineteenth twenties and thirties, but it seems unlikely.

However, while the differences between both works are more pronounced, it is interesting to explore possible similarities while both works are often claimed as the centuries’ highlights in their respective fields of art. For example, in these complex works both artists brought together elements that they used separately in earlier works. Joyce’s first ideas for *Ulysses* arise as early as 1906, while Duchamp’s first ideas for *Le Gran Verre* date back to 1911.

Both works depend on a dominating structure. Joyce took Homer’s *Odyssey* as a starting point, and divided his novel into parts that more or less correspond with the episodes of the Greek narrative. In *Ulysses* we follow the exploits of Stephen, Leopold and Molly, which follow a loose parallel with those of Telemachus, Odysseus and Penelope, though turned into profound antiheroes. But the analogy also inspires Joyce with a wealth of ideas, all of them crammed into the novel.

Le Gran Verre's structure rests on Duchamp's personal idea of an endless circuit in which all elements have their logic place. Here too the overall idea came first, the filling-in later, and this work hosts a wealth of different ideas as well.

Both artists use irony as a mask behind which their personalities remain hidden. Amazing artifacts are to hide the highly personal content of their work and prevent identification. Duchamp, in a rare moment of frankness, admitted as much when he said:

L'artiste s'exprime avec son âme, c'est l'âme qu'il faut l'assimiler. C'est ce qui compte." 21)

Joyce limited himself in stating that *Ulysses* was "self-explanatory".

The obvious resemblance however is a love for puns. Both played their whole life with the possibilities of language, something that their work excessively reflects.

Duchamp had been influenced by the language-art of Raymond Roussel. Later, in New York and giving French classes for a living, the entanglement of the French and the English sounds would draw his attention and inspired him to play with double meanings. A nice example of this is *Fontaine*, the urinal he submitted under the name of R. Mutt as his contribution to an exhibition of the *Society for Independent Artists* in New York. Not only refers Mutt to the, in those days, well known New York plumbers Mott Works, but the signature reads in German as *Armut, poverty*, a subtle example of self-irony.

A famous example of a pun from Joyce is his warning to a pupil in Paris that *Je t'adore* sounds to an Englishman as *shut the door*. This reminds us of an installation by Duchamp, made in 1927, in his Paris atelier in the Rue Larrey, where he had a carpenter install a door in such a way that this door either shut the bedroom but opened the connection between the bathroom and the studio, or shut the bathroom but opened the connection between the bedroom and the studio.

There is a resemblance in situation as well. In the last episode of *Ulysses*, Molly, in bed alone, conjures a parade of her lovers for her satisfaction, a scene that makes us think of the Duchamp's line-up of suitors. And in the brothel scene of the *Circe* episode we can read a piece that seems a description of Duchamp's mechanical bride:

"As they are now, so will you be, wigged, singed, perfumesprayed, ricepowdered, with smoothshaven armpits. Tape measurements will be taken next to your skin. You will be laced with cruel force into vivelike corsets of soft dove coutille, with whalebone busk, to the diamond trimmed pelvis, the absolute outside edge, while your figure, plumper than when at large, will be restrained in nettight frocks, pretty two ounce petticoats and fringes en things stamped, of course, with my houseflag, creations of lovely lingerie for Alice and nice scent for Alice. Alice will feel the pullpull. Martha and Mary will be a little chilly at first in such delicate thighcasing but the frilly flimsiness of lace round your bare knees will remind you ..." 22)

It is here that *Ulysses* and *Le Gran Verre* seem to melt together.

Joyce would use the idea of a cycle in his last work *Finnegan's Wake*. The last sentence of this book ends halfway, and is finished with the first words of the book. With this, begin and end are eliminated and one can start reading at any random point. Joyce worked on this book from 1922 until three years before his death in 1941. *Finnegan's Wake* was published in Paris in 1939. If the song and dance around *Ulysses* was big, this last book stunned the literary world and was so remote from what was considered a novel that the general public ignored it completely. The book tells the story of a Dublin innkeeper, a modern Everyman, and covers a period of twelve hours

in which everything seems to take place at the same time. The story is presented in a kind of dream language where many words have multiple meaning.

Again just like James Joyce, Duchamp would surprise the world with a last work of art. He called it *Etant Donnés: 1^o la chute d'eau, 2^o le gaz d'éclairage*, started working on it in 1946 and kept doing so the next twenty years. Just as *Le Gran Verre*, it is on exhibition in the Philadelphia Museum of Art. Duchamp kept this enterprise secret during the twenty years it took to complete. Only the sculptress Maria Martins, Duchamp's mistress between 1946 and 1951, who posed for the work, and, Teeny Sattler, Duchamp's later wife whom he married in 1954, were acquainted with *Etant Donnés* which developed slowly in his studio in Greenwich Village. Duchamp kept this work secret for two reasons. First of all, it was very controversial. But also the way in which this work developed, step by step and interrupted with many rectifications, made him reluctant to reveal it before he was sure the work was truly finished.

Note that the title indicates the two elements that are not realized in *Le Gran Verre*, the waterfall and the gas. This indicates a strong bond between the two works.

And if we use this possibility to compare, note too then that in *Le Gran Verre* we saw the interior of the bride, her workings, so to say, while here we see her exterior.

Etant Donnés is anticipated by a series of surprising erotic objects. One of them *Feuille de vigne femelle*, from 1950, is made of galvanized plaster and was obtained by taking a cast of the interior of a vagina. By presenting the invert of the female parts, and with it the inaccessibility of the female by the male, Duchamp emphasizes once more the impossibility of the union between man and woman.

When we walk through the narrow corridor that leads to *Etant Donnés*, we see nothing more than a large, wooden double door, framed in brick. Only the attentive visitor will observe the two peeping holes that pierce the wood at eyelevel. When we look through these eyeholes we see into a rather dark room, three feet deep. But it is not the room that gains our interest. The wall across from us shows a large hole behind which a brightly lit scene immediately draws our attention, and does so with a shock. We are looking straight into the crotch of an undressed woman who lays on her back, her legs spread, upon a bunch of branches, twigs and death leaves. Her face remains hidden from us behind the brick edges of the hole in the wall, only a strand of her blond hair is visible. The immediate impression is one of rape, and maybe murder, so abandoned the body seems. But when we keep looking we realize, again with a shock, that the woman is holding up a lamp. We also become conscious that her sex has been mutilated, reduced to a cleft, split open, no longer fit for intercourse. When we finally force our eyes to take in the rest, we see a landscape with a river and a waterfall that seems to shed real water; a scene that vaguely brings to mind the background of the *Mona Lisa*.

There are two photographs that serve to get an insight in the construction of what is no doubt a very ingenious installation. The first one shows a very straightforward cardboard model in which the three main parts of the installation are erected; the wall with the door, the wall with the hole and the wall that forms the background. Words indicate the essential elements: doors, briques, payage, and many more in crabbéd writing, mixing English with French. This photo shows how much of Duchamp's work took place inside his head and how much his artwork was the result of rational design.

A second photograph shows the installation of *Etant Donnés* as seen from behind. It was taken in Duchamp's studio. The contrast between this "kitchen" view and the one through the peeping holes is remarkable. From behind the refined artwork looks a highly improvised affair. Wooden slats and lengths of string, fixed to the ceiling, hold up the thin walls. The middle room is darkened with black material while the space with the woman's body is left open at both sides. There is no indication of how the piece was illuminated.

Duchamp did all the work on this installation himself. The image that forms the background is made up of a collage of photography's, taken during a holiday in Switzerland in 1946. Duchamp colored the original black and white photography's using oil paint and crayon. The impression of flowing water is obtained with the aid of a perforated, metal cylinder that is put into motion by means of an electro-motor hidden in a cookie-tin.

"We will work our own field, we will work with our own hands." 23)

Etant Donnés has been called an erotic work of art but one can doubt if this is the case as, once more though in a different way, Duchamp shuts off the possibility of sexual intercourse. The lamp, the woman holds up, underwrites the personal nature of this idea of the impossibility of sexual reunion. We see the lamp appear for the first time in a picture from 1911, called *A propos de jeune soeur*, in which the somewhat abstracted figure of a girl is painted sitting in a chair and holding with her right hand a *Bec Auer* type lamp. It is difficult to regard the position of the lamp, an elongated model, in relation to the sex of the girl, as unintentional. It seems the *Bec Auer* lamp works as a phallic symbol. Duchamp had a strong bond with his younger sister Suzanne, she would be an artist as well, and although we don't know which of Duchamp's two younger sisters is addressed in the painting, Suzanne is the more likely one. Duchamp's mind could have extended the taboo on a physical confirmation of their bond to all womanhood. The woman in *Etant Donnés*, who holds up the same lamp, spreads her light over the scene, over her obscene body. She is the *bringer of light*, from the Latin *lux*; *light*, and *ferre*; *to bring*, and thus associates with Lucifer; the fallen angel. Seen in this way, *Etant Donnés* not only repeats *A propos de jeune soeur*, but also various other images that deal with Paradise and Adam and Eve.

No doubt Duchamp wanted to scandalize society with this work. To be able to do so, he used a high level of realism in the execution of *Etant Donnés*. The woman's body was modeled from plaster. Then the shape was covered with skin-colored leather, something that gives a highly realistic effect of human skin. The harsh, direct illumination conceals nothing and seeks to transmit cruelty above eroticism. Even more than *Le Gran Verre*, *Etant Donnés* reminds us of Mary Shelley's first novel. The recreation of a body, the improvised technical environment, and the secrecy, are all elements we encounter in *Frankenstein*.

"How can I describe my emotions at this catastrophe, or how can I delineate the wretch whom with such infinite pains and care I had endeavored to form?" 24)

A second instrument in this provocation is our forced position in respect to the object. Duchamp has fixed our point of view by means of the peeping holes. We cannot vary the way we look at this work. Duchamp denies us the freedom to do so. As the title indicates, *Etant Donnés*, or *Given State*, one can see this work of art in only one way, Duchamp's way. This is completely contrary to the freedom *Le Gran Verre* offers us, where we can shift our position, even circle the work and, in doing so, multiply our impressions of the work. One could say that in regarding *Etant Donnés*, the factor time has been eliminated, and only the factor space remains. In fact, this means that *Etant Donnés* works as a picture does, only existing in 2 dimensions. Seen in this way, *Le Gran Verre* is a picture that has trespassed its own boundaries, while *Etant Donnés* is a spatial work, a sculpture or an installation, that limits itself.

Mariano Fortuny's study of a nude, a photograph from 1895, is somewhat comparable with *Etant Donnés*, although here the position of the model is inviting and willing, and Fortuny's attitude towards her is respectful. The full smile of the model

gives us an intimate idea of how much sex means to her and the gentle caressing light is highly erotic.

Gustave Courbet's picture *L'Origin du Monde*, from 1866, is often mentioned when *Etant Donnés* is being discussed. The comparison holds up where it considers the position of the model or her illumination, as harsh as Duchamp's. However, Courbet merely wants to replace the idealized female image of his time for a naturalistic one. The shock this image must have caused his contemporaries, welcome as it may have been in itself, was not his main intention.

One has the impression that, while during his career Duchamp always knew to frame his doubt about art and his latent misogyny with as much elegance as intelligence, here in *Etant Donnés* this ability forsakes him. Of course we have to take into account that we look upon this work differently than a spectator from year 1966. Since the sixties we have seen so much that, on one hand, our capacity to be amazed has worn but, on the other hand, our ability to distinguish has grown. Duchamp provokes us but maybe not in the way he was seeking. We accept *Etant Donnés* as one of the last works of an oeuvre that maintains as its center *Le Gran Verre*, a work from what we consider as the beginning of his career and which has turned him into one of the most influential artists of the twentieth century.

A strong reaction on *Le Gran Verre* and *Etant Donnés* came from the American feminist artist Hannah Wilke with her performance *Through the Great Glass*.

"To oppose Duchamp is to honor him" 25)

Throughout his life Duchamp was looking for unity in his oeuvre. His approach was highly cerebral. The majority of his work resulted from loose thoughts and, as such, lacks the organic unanimity of, for example, Mariano Fortuny's oeuvre shows. Duchamp's ideas stem from many sources and originate far apart from each other. This creates an image that can be seen, in our world where specialization is highly appreciated, as incoherent. His search for unity started as early as 1914 when he produced a series of facsimiles of loose notes and a drawing, which he presented in a cardboard box. In 1934, *La Boîte Verte* appeared, a collection of ninety-three facsimiles from photographs, drawings and notes, that deals with the *Le Gran Verre*.

Between 1936 and 1941, Duchamp worked at *La Boîte en Valise*, a cardboard box with replica's in miniature of his most important works, amongst other things, the *Le Gran Verre*, *Air de Paris*, and *Fontaine*. Besides that, the box contains reproductions of several pictures. And in 1967, he presented *La Boîte Blanche*, with the subtitle *A l'infinities*. This is a plexiglass box with seventy-nine, up till then unpublished, drawings from the period between 1914 and 1923, all dealing with the construction of the *Le Gran Verre*.

His picture *Tu m'* is, partly, an overview of earlier works. Together with new imaginary, we see reflections of *Roue de bicyclette*, *Trois Stoppages-Étalon*, and the ready-made *Porte-chapeau*.

The unity Duchamp seeks in these compilations seems somewhat artificial. Sometimes it is established forcibly, as in *La Boîte en Valise*, where the agreement is created by altering the size of each object and forcing them to cohabite. Sometimes he uses more subtle ways as in the titles of two drawings from 1968, *Morceaux choisis d'après Courbet* in which he associates *Etant Donnés* with *L'Origin du monde* and *Le Perroquet*, or *La Mariée mise à nu*, in which he recalls his masterwork once more with a drawing of a young, undressed woman, apparently in prayer this time. The many interviews he gave in his later years, as well as in the commentaries he wrote, are

often focused on highlighting the internal connections of his work. One is tempted to regard this pursuit of coherence as a creative act in itself.

It makes us think in a way of Leonardo da Vinci who for many years had the idea to assemble all of his notes and drawings into one, encyclopedia type, collection. Just as Leonardo, Duchamp was a person with exceptional talents and like him he created a diverse and far-reaching oeuvre. But the coherence in Leonardo's studies is the result of a single way of approach; his scientific method, and a specific way of expressing his findings; his drawing style. This coherence developed itself from the inside to the outside, process like, and was not constructed afterwards as in the case of Duchamp.

From 1923 on Duchamp busied himself mainly with playing chess, and had given up making art actively. Or so it appeared. Together with the intellectual challenge the game offered him, there might be another reason he was so attracted to chess. Contrary to reality with its endless flux, the chessboard with its forty-six fields, two players, and its large variety of choices how to develop the game, remains a limited whole. It is a world where, although in order to survive a lot of creativity and intelligence is needed, one has the impression to control one's destiny. Duchamp's interest in the game makes his wish to seek for unity in his work more understandable.

Duchamp's work and thoughts put the whole system of fixed regulations, that had ruled European art since the Renaissance, into motion. Did we think about works of art before him, after him we think of art itself. He introduced subjects that never had had a place in art before and accepted the consequences of these deeds. Significantly he signed *Fontaine* with R. Mutt. Well known is the story where he, at an exhibition on aeronautic technology in Paris in 1912, taxes a propeller above every existing work of art of his time.

“La peinture est mort. Qui pourra faire mieux cette hélice? Dis-moi, tu en serais capable, toi?” 26)

He found the space he needed for his innovations in the United States, a society free of prejudice and tradition.

“The word “ready-made” came to me at that moment (in 1915 in the United States), it seemed to be adequate for things that were not works of art, which were not sketches, which were not applicable to any of the accepted expressions of the artistic world.” 27)

In 1959, Duchamp made a work that could be considered his most definitive statement towards his art. *With my tongue in my cheek* is a two-dimensional self-portrait in profile, of which the cheek expands into the third dimension. Everything can be doubted, nothing is fixed.

Notes:

1
Leaves of Grass, line 648
Whitman, Walt
Penguin Books USA
New York, 1986

2
“The silence of Marcel Duchamp is overrated.”
Action from Joseph Beuys
ZDF-live Sendung; “Die Drehscheibe”, 11 Dec. 1964

3

(While discussing his picture "Le Buisson", 1910-1911)
Duchamp, Marcel
A Propos of Myself, 1964

4

The Over-soul, p 54
Self-Reliance and other essays
Emerson, Ralph Waldo
Dover Thrift Editions
New York, 1993

5

The American Scholar
Emerson, Ralph Waldo
Ralph Waldo Emerson-texts, online: emersoncentral.com

6

Leaves of Grass, line 60
Whitman, Walt
Penguin Books USA
New York, 1986

7

"Okay, when this is how things are, joining groups is out of the question. One can only count on oneself, and be alone."
Marcel Duchamp, L'art contre l'art, p. 27
Janis Mink
Taschen, 1994

8

The Over-soul, p 52
Self-Reliance and other essays
Emerson, Ralph Waldo
Dover Thrift Editions
New York, 1993

9

Henri Thoreau
Walden and Civil Disobedience
Penguin Classics

10

Henri Thoreau
Walden and Civil Disobedience
Penguin Classics

11

Le peintre de la vie moderne
Charles Baudelaire, 1863
collectionsliteratura.com

12

ABC of Relativity
Bertrand Russell
Routledge, 1997

13

It is a formal decomposition, which means, of linear planes, which follow each other in a parallel way and deform the object. The object becomes all stretched out, as an elastic band.
Marcel Duchamp, L'art contre l'art, p. 27
Janis Mink
Taschen, 1994

14

I liked to watch it, just as I like to watch the flames in the hearth.

Marcel Duchamp, L'art contre l'art, p. 49
Janis Mink
Taschen, 1994

15
Duchamp. p. 109
Calvin Tomkins
Editorial Anagrama

16
I did not really like the machine, but it seemed better to inflict this to a machine than to a human being, or to myself.
Marcel Duchamp, L'art contre l'art, p. 84
Janis Mink
Taschen, 1994

17
"from Marcel Duchamp or Rose Selavy"
Duchamp. p. 355
Calvin Tomkins
Editorial Anagrama

18
Aristophanes' speech from Plato's Symposium
Translated by Connell O'Donovan
Connellodonovan.com

19
ibid

20
"Silence, slowness, solitude"
Duchamp. p. 389
Calvin Tomkins
Editorial Anagrama

21
The artist expresses himself with his soul; it is the soul he must absorb. That is what counts.
Marcel Duchamp, L'art contre l'art, p. 73
Janis Mink
Taschen, 1994

22
Ulysses, p. 490
James Joyce
Penguin Modern Classics

23
The American Scholar
Ralph Waldo Emerson
Ralph Waldo Emerson-texts, online: emersoncentral.com

24
Frankenstein, p. 48
Mary Shelley
Arcturus Publishing Limited

25
Hannah Wilke Through the Large Glass
Performance at the Philadelphia Museum of Art, 1976

26
Painting is dead. Whoever could do better than this propeller? Tell me, could you?
Duchamp, p. 41
Janis Mink,
Taschen

Motion in Art, chapter 9

Machines will do the work

In 1966, after working for eleven years on a project called New Babylon, Constant Nieuwenhuys asked himself a question:

“What is New Babylon really? Is it a social utopia? An artistic vision? A cultural revolution? A technical conquest? A solution for the practical problems of the industrial society?” 1)

And he answered himself:

“Each of these questions touches an aspect of New Babylon” 2)

The first ideas for New Babylon were born in 1957, during Constant's stay in Alba, a village in Northern Italy. He had been invited by the Italian artist Pinot-Gallizio to study the social structure of a community of gypsies that passed the summer in the village. This study opened the way to the concept of New Babylon; an urban situation in which people are in a continuous state of creation. This state of creation is closely connected with change, or motion. The group of gypsies paid a yearly visit to Alba during which time Pinot-Gallizio represented their interests at the village's council. Constant made an architectonic model based on his study, called *Model for a Gypsy Camp*. In this work we can recognize some of the shapes that characterize New Babylon.

In the same year, together with Guy Debord, Constant founded the *Internationale Situationiste* and started to work on New Babylon, an undertaking that would occupy him for the next ten years.

However, the real start of this project that, to put it very broad, investigates the relationship between the city and machinery, lays back in history and takes us once more to the end of the nineteenth century and the beginning of the twentieth century.

Many important developments in philosophy, art, architecture, and science came up at that same moment and demanded attention. Almost every aspect of culture was affected, and much of what happened later in the century can be founded on those tumultuous years around nineteen hundred. One of the most important voices was that of Friedrich Nietzsche.

At the end of the nineteenth century, Nietzsche had put the whole of philosophy in doubt, and had exercised an important influence on many sectors of our reality. It is no exaggeration to say that this lonely, equally brilliant as ailing, man has been responsible for an important part of the development of the twentieth century. Nietzsche's interests went for the greater part to values and how one should live his life, according to these values. 3)

He investigated those subjects by means of a series of writings that are not only highly poetical, but did something that had never been done before; namely doubting the possibility of philosophy. Until his time, when confronted with questions, philosophy had busied itself with finding answers of universal value. With that, it was mindlessly assumed that such values existed. Nietzsche denied that this was the case. He declared that there are no universal, transcendental truths. Today we are accustomed to such a vision, but at end of the nineteenth century this was a surprising one. In doing so he went back to Heraclitus' idea of eternal flux.

Nietzsche states that we consider ideas as true when we can use them to ease our life. This deceit for practical reasons is useful in our efforts to survive. As such we are the prisoners of our visions. Instead of our visions are serving us, we depend on them. We call this common sense; Nietzsche spoke of herd-mentality. With the help of our common sense we organize our experiences and try to get a grip on our circumstances. But this grip is an illusion because it is impossible to speak in terms of truth or overview. Nietzsche did not oppose common sense itself, but our tendency to regard as true that what enables our existence.

With his passionate writings he brought everything down; knowledge, truth, morals, values in general. However, he did not pretend to replace the old convictions with new ones. He knew only too well that his vision could not claim truthfulness when truth was not possible. Therefore he states that that what he says can be of worth for the development of humanity and thus comes to the idea of the *Wille zur Macht*, the *Will to Power*. This is not a truth but an activity, and one that dominates our whole existence. We strive for power, and the world is in constant motion because of our strive. As there are no overall values, and there are no truths we have to comply, we are free to organize our life in the way that suits us best. We might not be able to shed what we call common sense, but maybe we can put it to our own use. When there is nothing more than a struggle for power, ideas should base themselves on their own power and subject lesser ideas. The *Übermensch*, the *Superman*, is the one who realizes that all visions are interpretations, who creates his own values and truths, and thus distinguishes himself from the herd. He possesses the will to power and his system of values only serves this will. Acquiring knowledge is no longer a free activity, but a means to obtain dominance. A first glimpse of these ideas we encounter with Emerson, in every aspect his equal as a poet:

“What is our life but an endless flight of winged facts or events! In splendid variety these changes come, all putting questions to the human spirit. These man who cannot answer by a superior wisdom these facts or questions of time, serve them. Facts encumber them, tyrannize over them, and make the men of routine the men of sense, in whom a literal obedience to facts has extinguished every spark of that light by which man is truly man. But if man is true to his better instincts or sentiments, and refuses the domination of facts, as one that comes of a higher race, remains fast by the soul and sees the principle, then the facts fall aptly and supple into their places, they know their master, and the meanest of them glorifies him.” 4)

Nietzsche used etymological arguments to associate the notion of good with noble and aristocratic, and the notion bad with vulgar and plebeian, suggesting that the judgment “good” did not derive from people who were favored by goodness, but was a predicate with which he who is noble distinguishes himself from he who is vulgar. He who is noble creates his own values and does so to create a distance between himself and the rest of the world. He creates values through action. The weak one, the not noble, feels himself powerless and tries to turn around the values. Vulgar changes in good, good in vulgar, and in this way the weak gets hold of power. Always according to Nietzsche, the Jewish people started this upheaval of slaves, and Christianity, with its message of universal love, completed this turnabout. Since then, the weak and the ill rule the world. Nietzsche believed that one cannot be what he is not. The weak will stay weak, the strong strong. However, the weak one thinks that this is possible.

He said that up to now the ill, the feeble, the jealous, determined what was good and bad, and suggested to change this situation by restore the original context of good and bad. He sought by a turnaround of values, the so-called *Umwertung aller Werte* to return to the strong their rightful position,

“Ich will die menschen den Sinn ihres Seins lehren: welche ist der Übermensch,

der Blitz aus der dunklen Wolke Mensch.” 5)

Nietzsche was no proto nazi, but it cannot be denied that his thoughts inspired the nazi doctrines.

We reencounter the influence of Nietzsche’s thoughts in the Futurist manifests on one hand, and on the other hand in Marcel Duchamp’s continuous corroding of fixed values in art, and his fierce independent position, away from the herd.

“Bon, puisque c’est comme ça, pas question d’entrer dans un groupe, il ne faudra compter que sur toi, être seul.” 6)

Another important development in the art world at the beginning of the twentieth century was the Dada movement. The boundless violence of the First World War drew together a group of artists of different nationalities. This took place in Zurich, in neutral Switzerland. They all opposed the war.

The ongoing mechanization of society had spread to warfare. Mustard gas, air bombardments, the uninterrupted torrent of bullets from the machine-gun, as well as the mechanized cavalry in the shape of tanks, had raised the amount of victims to unthinkable heights. The end of World War One left the Western World in confusion. Many contradictory initiatives sprang up and history could not be read anymore in a single way. We can recognize these feelings of confusion in the art of those days by its interest in absurdity, with Dada, Marcel Duchamp, Franz Kafka, and later the Surrealist movement as the main examples.

Particularly the Dada movement, founded in 1915, was deliberately irrational. Its members were looking for chaos, tried, with everything they had at their disposal, to cause scandals and gave birth to the term *anti-art*. With Nietzsche, they considered significance as something arbitrary and language something that could be manipulated. The Dadaists created with their protests a valuable artistic freedom, something they manifested in new formats such as the photo-collage, the sound-poem, the assemblage, or the manifestation. They denied all rules, all agreements, all insights and opened in this respect, and in a sense unintentional, a complete new array of possibilities. It gave art an almost complete freedom of movement, and, as is the case with the work of Marcel Duchamp, its influence is perceptible in today’s art. Constant is right when he states in an interview from 2005 that:

“de anti-kunst is kunst geworden”. 7)

Architecture scored low on Hegel’s list. For the romantic philosopher Georg Hegel *meaning* meant *Geist*, *Spirit*, and thus should be as immaterial as possible. Substance was an obstacle that had to be taken when one wanted to create meaning. It was a negative element that had to be reduced to the utmost in every branch of art to make way for the *Spirit* to fully manifest itself. In this way the opposition of form and content could be annihilated. Hegel saw architecture as the heaviest, most material, of all arts and placed it on the lowest spot in a hierarchy that favored poetry as the most immaterial of all arts. Until the end of the nineteenth century, architecture seemed to resign itself to this judgment and the emphasis of its creations was more on mass than on volume, on representing more than on accommodating. Hegel had an important influence on our thoughts on aesthetics and his idea of a difference in value between different branches of art held its own up to the twentieth century. Wagner’s idea of the *Gesamtkunstwerk* could be seen as a first denial of this doctrine.

Towards the end of the nineteenth century a change came in the way people thought about architecture. Aware of the ongoing mechanization of society and inspired by the functional design of the machine, by its naked beauty, architects started to disengage

themselves from the enduring repetition of historical styles and started to develop a new language for their buildings. In 1908, German architect Adolf Loos boldly called the ornament a crime. A year after Loos' statement, another German architect, Peter Behrens, the AEG's in-house architect, a well known Berlin factory for turbines, created a factory building that was completely free of historical influences and followed the functional form principles of the machine. With this design started a willingness in architecture to adept itself to the change of time. In 1914, Sant'Elia calls for revolution:

“Che l'architettura futurista è l'architettura del calcolo, dell'audacia temeraria e della semplicità; l'architettura del cemento armato, del ferro, del vetro, del cartone, della fibra tessile e di tutti quei surrogati del legnom della pietra et del mattone che permettone di ottenere il massimo della elasticità e della leggerrezza.” 8)

The new architecture was all about a rational language of form, one that could do without decorative elements, and which expression came to rest directly on that of the materials used. The most important exponents of the new style were Le Corbusier, Walter Gropius, and Mies van der Rohe. In their early years, each of them had been in contact with Peter Behrens. Another important representative of the new architecture was *De Stijl*, an art movement founded in 1917 in Holland, that, falling back on Plato, saw geometry as the universal language that was applicable in any situation. This geometric language, first developed in the *neo-plastic* way of painting from Piet Mondrian and Theo van Doesburg, because of its eradication of personal expression, quickly found its way to architecture.

Gerrit Rietveld is an important representative of this way of designing. His work did not limit itself to architecture, he designed furniture as well. It is here that Hegel's doctrines are swept away and make place for a boundary free area in which all arts move. With Rietveld's design for an urban villa, the so called *Rietveld Huis* in Utrecht, we get the feeling that space has been introduced in architecture, not as a result of the lack of mass, but as an element in itself. It is somewhat ironical that the emphasis on space in this new way of understanding architecture being completely immaterial, would place it at the very top of Hegel's list.

Walter Gropius was another key figure in this new way of thinking about architecture. In 1919 he founded the *Bauhaus*, an art school were the paths of many artists and designers from before the Second World War cross.

Mies van der Rohe applied a simplification of shape that reached extremes where the functionality of the buildings was endangered. He created such an absolute and aloof appearance that is was considered by some of his contemporaries as the end of architecture.

Le Corbusier said that one should design a building from the inside outwards. This way of thinking puts the element of space once more in the centre. Form changes into content, mass changes into space. In the fifties he would declare:

“The occupation of space is the first proof of existence.” 9)

With the acknowledgement of space as the main instrument of the architect an interest in motion starts. After all, space enables us to move. And because we move through space, space itself starts to move. Every new position we take in, results in a new vision of the space we are in. Architecture is no longer an obstacle, a border, a separation, but a liquid totality that moves along with us.

The complete mechanization of life became accepted by a great deal of artists, but without the exaltation of the Futurists; the first ones to point to this new phenomenon. The poet Paul Valery called a book a *machine to read*, the painter Ozenfant called a picture a *machine to move us*, Le Corbusier called a house a *machine to live in*, and

Duchamp, typically for him, rounded it up with the idea as a *machine to make art*. They all saw the presence of the machine as a *fait accompli* and were looking for ways to express the insight. The fascination for the machine was based upon its ability to bring the inert alive. Constant's contemporary and fellow countryman, the poet Gerrit Achterberg goes so far and associates halted machinery with the inability to bring back the diseased love.

Instrument

That night machines stood in the dark:
words toiled at unclaimed tongue
and images flowered masterly
among the unleashed sparks
that sizzled up from the soulful
fabricate, all that has gone:
Her name, her body agreed upon
A child, even before it was born,
Evaporated, all turned into
song – I remained bottomless and light
against the morning-light. 10)

The initial enthusiasm for the Russian Revolution inspired many Russian artists to come to a comparable acceptance of modern values. They came up with some groundbreaking suggestions. Vladimir Tatlin's *Monument for the Third International*, an idea for a tower-machine that would rise up four hundred meters. The tower contained three revolving glass volumes, a cube, a pyramid, and a cylinder, which would host the different party organizations of the Communist International. These volumes revolve around their axis at different speeds, symbolic for the different assembly schemes, daily, monthly, and yearly, their occupants hold. The dynamic uprising spiral structure, a symbol for rising new humanity, could be seen as a commentary on static capitalistic symbols such as the Eiffel tower or the American Skyscraper.

Tatlin's design never made it beyond its model and the Russian urge for renewal was quickly curtailed by the Communist regime. The buildings and designs that remain from those early days of optimism often show a form that is inspired on mechanization. Alexander, Leonid and Victor Vesnin's design from 1923 for the *Labor Palace* is a spectacular example. Basic shapes penetrate each other, neon signs adorn the outer walls, a network of antennas and tension cables, creating a gripping confrontation that reminds us of a machine rather than an office building.

In the Western world there existed too a less willingly, a more critical, attitude in relation to the machine and her effects. This attitude manifested itself especially among the Expressionists, a group that is sometimes related to the Romantics, precisely for that reason. In particular, the German Expressionists reacted to the inhuman situations in the cities of their time and portrayed the fear and nakedness of human existence. In their eyes, modern culture was at fault and the mechanization its most important culprit. In his short story *In der Strafkolonien*, Franz Kafka describes a device for torture in which, in a metaphorical way, the mechanism is presented as an important ally in our inhumanity. With Kafka's characteristic absurdity this machine is described as acting independent, something that makes the story even more terrifying.

“Bis jetzt war noch Händearbeit nötig, von jetzt aber arbeitet der Apparat ganz allein.” 11)

Another example of the confusion that the mechanization of society brought along, confusion that originated because one was at same time aware of the advantages as of the disadvantages of this new situation, was the film *Metropolis* from Fritz Lang. In this film, a silent movie shot in 1926 and playing in 2026, reality is presented as a huge city, called Metropolis. In the film there is no reference to places outside this city, such as the countryside or other cities, nor to the possibility to leave Metropolis. It seems that this urban structure encases the entire surface of the earth, an idea that makes us think of the overloaded collages with cityscapes from the Dutch Dada artist Paul Citroen, originated around the same time. In some scene of the film we see the faces of different ethnical groups brought together as another sign of the total merge the earth has apparently undergone. The name of the city itself also hints at a single structure. *Metropolis* means *Mother City*, metro comes from the Greek *meter*, *mother* and *polis* is the Greek for *city*. Constant's urban vision, New Babylon, has the same global starting point, as we will see further on.

Metropolis is made up of two parts, a surface and a subterranean city. Prosperous people inhabit the aboveground city, while slaves inhabit the subterranean city. This last group operates the machinery that produces the prosperity for the well-heeled community above the surface. This opposition shapes the conflict on which the film is based. A member of the slaves, a young woman called Maria, takes a group of children under her guardianship, illegally, into one of the gardens of the aboveground city. This rooftop garden happens to be the playground of a group of very rich youths. While the guards remove Maria and her group of children from the garden, one of the youths, a young man called Freder, is intrigued by the unusual occurrence. He follows Maria and finds himself in the subterranean city, a place he was not aware it existed. He ends up in an engine-room where he undergoes a shocking experience. It is here that Lang shows us his vision on the ongoing mechanization of our world. We see a colossal, vertical structure, placed in a cavernous vault, which, as a result of its arrangement of alcoves looks somewhat Romanic. A stairway, placed in the centre of the structure, between two steaming turbines, leads to a series of platforms. Laborers occupy these platforms, each for one of the alcoves. They are trying with synchronized movements to keep the machine under control, turning huge wheels to and fro. In a next shot, closer-by this time, we see one of the laborers, with movements that involve his complete body, continuously shift the hands of a large clock. These movements, just as those of the laborers in the alcoves, have a spellbound, almost ritual effect, which is enhanced by the fumes of steam that the machine discharges rhythmically from its various orifices. The machine is shown as a volcano at the point of eruption. In a next shot, half total this time, we see one laborer suddenly being hit by a jet of steam, coming from an outlet that is rather unfortunately placed direct next to his workplace. The man drops on the floor, apparently dead, and a new laborer quickly takes his place. The machine directs the rhythm of movements of her operators. It can be kept under control, but not without claiming victims, and it cannot be switched off. In this sense it makes us think of the *Machine de Marly*, the water-powered contraption that pumped up water from the Seine river for the gardens of Versailles. Lang also shows us a fear inspiring scene that displays the inside of the machine; a set of moving levers and rotating cogwheels that seems to want to crush us with their never ending rhythmic movements. These scenes are alternated with ones in which we see Freder's dismay. Just as Percy Shelley, who lost consciousness on reading Coleridge *Cristabel*, Freder almost faints when watching the machine exert its horror.

The machine is shown here as a huge monster. Later in the movie, Lang will intensify this idea with a dreamlike scene in which the structure has been replaced by the head of a Moloch. In this image, slaves, in ranks of four, climb up a stairway that leads directly into the flaming mouth of the Moloch where they are devoured.

Lang wants to warn us for the dehumanization of the future industrial society. His distrust in our future is underpinned with the creation of a robot. A scientist, called Rotwang, has created an artificial human in the shape of a beautiful woman.

Fredersen, the autocrat of Metropolis, incidentally Freder's father, and a personalization of Nietzsche's idea of the *Übermensch*, he who has *the will to power*, asks Rotwang if this robot could be useful in keeping in line the grumbling slaves. After Maria took the children to the upper city and she became aware of the appalling contrast between her world and the world of the rulers, something of a revolt has broken out among the workers, and Maria has become the soul of this revolution.

Rotwang now abducts Maria with the idea to transplant her features onto the robot and then plant the stooge among the workers to hamper their plans. The transformation scene seems directly taken from Mary Shelley's *Frankenstein*. In the foreground we see Maria lay in a tube-shaped construction while in the background the robot is sitting on what resembles a throne. A throng of cables connects tube and throne. A separate shot shows Rotwang behind a switchboard. He pulls a handle which results in the flashy zigzagging of an electric current between Maria and the robot. In a closer view of the robot we see circles of electric current ripple down her smooth metal body. Then the metal mask slowly gains the much softer features of Maria's face, followed by the complete transformation into a being of flesh and blood.

In a further similarity between *Metropolis* and *Frankenstein*, the robot, disguised as Maria, refuses to execute the orders of its creator. She heads for a nightclub in the upper city. In the next shot we see her rise from what could be described as a overlarge art-deco bonbon-box, resting on the backs of a circle of kneeling man, throwing of her veil and performing, half naked, an erotic dance that drives the male public of the nightclub crazy for lust, to the point that some even commit suicide. Then she continues to the subterranean city where she spurs the slaves into an open revolt directed at the machinery that surrounds them. This insurgence is completely within the spirit of the *Luddites* 12), but opposite to the intensions of Rotwang and Fredersen.

Lang uses this detour, not only to show that we are being enslaved by the mechanical work around us, but also to illustrate that machinery is unreliable in itself and can turn against us. It is a typical expressionist point of view. It touches upon our innate fear of trusting things we cannot fully understand. The disobedience of a creature to its creator might be brought back to *Genesis* where Adam and Eve ignored the wishes of their maker.

Points of view such as that of Fritz Lang or Franz Kafka changed our vision of the machine once more. With the revelation of its evil sides, the machine lost its magic. Veneration turned into respect, or sometimes even into disgust.

There was another reason for this loss of wonder. In the first years of the twentieth century, the machine left the factory and split in many smaller appliances such as the typewriter, the automobile, or the phonograph. With the rise of the apparatus, the machine became perceptible and tangible for everyone, and with that lost much of its mysterious qualities. It was no longer the domain of the specialist. Many people could operate these simpler machines.

As these smaller machines performed in public space, in the street, in offices, or at home, a certain protection against the mechanical processes that took place in its interior became necessary. This made that its fascinating, its moving, parts became less visible. The first machines operated naked. Comparable to dancers, they thrilled those who were watching them with their moving parts. Only when the makers wanted to surprises the public, as was the case with Heron's *Birds* or the automata from Pierre Jaquet-Droz, whose machines were dressed as people, the interior was concealed from view. However, most of the early machines were stark naked.

This started to change in the beginning of the twentieth century. More and more the mechanism was hidden from our eyes and the protection evolved into an independent element. The shield became the subject of a separate aesthetic and created a new specialization, that of the industrial designer. When we compare the *T-Ford* model, which was produced from 1908 until 1927 without any major changes, to the *Chrysler Airflow* from 1934, the first streamlined car on the American market, this fundamental

transformation becomes apparent. The *T-Ford* still looks like a machine. It appears to be assembled from highly visible, separate, heterogeneous parts. The *Chrysler Airflow* on the other hand, has a smooth, hardly articulated, shape and its appearance suggests forward movement. Its designer, Carl Breer, was curious how shape influenced progress. He started wondering about this subject when he saw a flight of wild geese flying in a V-shaped order and asked himself why. Together with Orville Wright, one of the Wright brothers who, in 1903, made the first mechanical human flight, he started studying which shapes were used in nature to reduce the resistance of the air on an object in motion. Streamlining not only made a vehicle or an aircraft move faster, it also contributed to the comfort of its passengers. Motion became less bumpy and noisy. It had an unexpected side effect as well. The aerodynamic shape, with its smooth surfaces and rounded corners, obtained the predicate *modern*. It became a sales argument and all kind of objects, from refrigerators to cigarette packets, were given a streamlined overhaul. At first it was a typical American phenomenon. In Europe the rigid, geometrical language from *De Stijl* or from Le Corbusier remained the summon of modern. Only after the Second World War this changed.

The even, polished language of the streamline denied the mechanism that put it into motion as much as possible. It succeeded in making us forget the oily, rattling, sparking, smoking aspects that are the essence of any mechanism.

In Metropolis the dangers of over-mechanization of society are associated with the big city. The metropolis is a relatively new phenomenon. Baudelaire was one of the first who raised the matter of the dehumanization of city life.

“Fourmillante cité, cité pleine de rêves,
Où le spectre en plein jour raccroche le passant!” 13)

The subject found its pinnacle in a few lines from T.S Eliot's *The Waste Land* from 1922.

“Unreal City
Under the brown fog of a winter dawn,
A crowd flowed over London Bridge, so many,
I had not thought death had undone so many.” 14)

At the start of the twentieth century, many artists saw the big city as a situation grown beyond human control. People were lost and lonely, devoured by its anonymous multitude. But, at the same time they felt free.

“Stadtsluft mach frei” 15)

Fritz Lang visited New York in 1924. We can see the influence this visit had on him in the architecture of Metropolis. In the images, the director allows us from the windows from Frederson's office, we see a city that has characteristics of the New York architecture from the early century; stony, monumental office buildings, as we can still find in Downtown Manhattan. This style is mixed with elements of Sant'Elias futuristic urban designs such as high-rise buildings with a pyramidal construction, connected with skyways. But these attributes are exaggerated into unbelievable proportions. Buildings rise up high, railways and highways traverse Metropolis at every level, sometimes passing right through the buildings, creating dizzying situations in which a ground level seemed to be nonexistent, an impression that is reinforced by the presence of airplanes and helicopters that don't fly above the buildings but between them.

Frederson's office itself is hosted in an enormous tower in the heart of the city, not unequal in shape to the *Tower of Babel* of Breughel's famous picture, but also reminding us of the expressionist, anthropomorphic architecture of Hans Scharoun or Bruno Taut. With its exceptional volume and height, this tower dominates the city and makes a fitting shell for Frederson, the autocratic ruler of Metropolis.

The upper city is built over the subterranean machine city that provides goods and energy by means of slave labor. We can find this platonic division in above and under, rulers and ruled, consumption and production, recreation and labor, in many urban designs, starting with Leonardo's description of a wholesome city, a design for a new Milan, capital of another autocrat; Ludovico Sforza.

"The high-level roads are six braccia higher than the low-level roads, and each road should be twenty braccia wide and have a fall of half a braccio from the edges to the centre. And in this centre at every braccio there should be an opening of the width of a finger one braccio long, through which rainwater may drain off into holes made on the lower-level roads. And on each side of this road there should be an arcade six braccia broad resting on columns. And if anyone wishes to go through the whole place by the high-level roads he will be able to use them for this purpose, and so also if anyone wishes to go to the low-level roads. The high-level roads are not to be used by wagons or like vehicles but are solely for the convenience of the gentlefolk. All carts and loads for the service and convenience of the common people should be confined to the low-level roads." 16)

The idea of segregation between *gentlefolk* and *common people* is strongly present in Metropolis. Not only are the inhabitants of the upper city and the subterranean city separated from each other, they are not aware of each other's existence. It is with this complete *apartheid* that Lang shows most clearly his reservations with the ongoing mechanization of life.

It is interesting to notice that in the sixties of the last century the term *underground* acquired a new meaning, particularly in the music and art world. Andy Warhol, The Velvet Underground, or The Mothers of Invention were called underground artists. Bob Collacello claims that the notion started because Warhol's notorious first films were shown in a cellar of a New York building. 17) Underground music distanced itself from mainstream music. It preferred artistic freedom to commercial success, and remained relatively unknown, i.e. underground. On a photo from 1965 we see Andy Warhol illustrating the notion, but at the same time pulling our leg. Together with the actors Edie Sedgwick and Chuck Wein, he crawls out of a drain in the middle of a New York street, film camera in hand.

Metropolis does not offer a satisfying solution for the social problems it foretells. The conflict between the oppressed and the ruling class ends with no more than the death of the scientist Rotwang and the reconciliation of Frederson and Grot, a representative of the slaves, with Freder as a go-between. With this, science is made into the culprit. This is basically a Romantic attitude, a movement that was very critical towards the rationalization of nature, and in which science was looked upon with contempt.

Between 1927 and 1940, the year of his suicide, Walter Benjamin worked at his *Passagen-Werk*. It was to be his opus magnum, but remained unfinished. Subject of this work was an investigation into the origins of mass culture. This study took place in Paris and concentrated on its *passages*; its glass covered shopping streets. It was compiled from many different text fragments and illustrations, using the collage and montage technique. With *collage* Benjamin meant the direct use of texts from other authors. In the *montage* these text fragments and images are combined in such a way that new significance is created. These techniques of manipulation of signification were developed in the Dada movement, and inspired Benjamin with a way of working that

we know nowadays as *intertextuality*. The large amount of material he managed made a conventional, linear way of working unpractical. He needed a way to forge the many different parts of his project into a single totality. The flexibility and the mobility of Benjamin's working method makes it possible to imagine the *Passagen-Werk* in spite of being hardly anything more than a large collection of fragments.

He said:

"I have nothing to say, only to show." 18)

Benjamin believed the roots of the furor, with the twentieth century started with, were to be found in the nineteenth century Paris with its revolutions, industrialization, powerful bourgeoisie, art movements, fashions and worldliness. The *passage* was the architectural shape that united these characteristics. Benjamin speaks of a *Geschichtsraum*, a *historical space*. These shielded shopping streets were a typical aspect of nineteenth century commercial architecture. They were developed to make buying as comfortable as possible and as such it can be seen as the completion of the industrial revolution. Not only did the passage protect the potential buyer against bad weather, it too bundled different shops in one space. Later Guy Debord would fulminate against this specialization of space. The passages found themselves between public and private space and as such were the forerunners of the contemporary shopping mall. The glass covering turned outside into inside. The space that formed the street, which at first had been nothing more than the end product of the architecture that created it, now became a space in itself; one along which the buildings aligned. As such the *passages* change our perception of the street, nowadays regarded as a single architectural element. The Hague has a replica of the Parisian model. In a poem called *Passage*, the Dutch poet Gerrit Achterberg expresses this feeling of architectural unity as follows:

Den Haag, you tap at it and it sings.
In the Passage the sound obtains a high
ring, and below a whispering
between the feet across the granite;
scarlet heart chamber, in an angle
with three mouths, the city benefits. 19)

According to Benjamin the *passages* created the culture of the *flâneur*, the *ambler*, a term that he took from Baudelaire and that stood for a type of person that, with no need to earn his living, gave himself over to strolling through the city as a means to undergo experiences.

"The street becomes a dwelling for the flâneur: he is as much at home among the facades of houses as a citizen is within his four walls." 20)

The *passages* with their glass canopies, with their cohesive space, and occupied by people who move around without a clear purpose, makes us irresistibly think of Constant's New Babylon.

The *Internationale Situationniste* was founded in 1957 in Cosio D'Arroscia, a village in North-Italy. The movement lasted until 1972. The most important members were Guy Debord, Constant Nieuwenhuys, Asgar Jorn, Michelle Bernstein and Pinot-Gallizio. To describe the I.S. as an art movement would have met with fierce resistance from its founders. To call it a revolutionary movement would have suited them better. Nevertheless, art was, if not a goal in itself, an important part of their revolutionary occupations. It was seen as a means for change. Art and life should merge into one. Slogans on the wall instead of pictures in art galleries. These changes had to take

place in the city chiefly. The city was at the same time their material and their exhibition space. Paris was their main field of action. Or in their own words:

“a new theater of cultural operations” 21)

The I.S. saw the metropolis as a situation where human life had a higher intensity. The city offered its inhabitants the possibility of fully-fledged development. Their goal was no less than to bring the whole of society into motion.

They objected the functionalistic ideas on urbanization, above all the separation of functions, an idea that had been widely accepted and introduced in the reconstruction of many cities that had been damaged in the course of the Second World War. Their wrath did not only concern the separation of different traffic flows, as Leonardo described or Sant’Elias drew, but every type of separation that was the result of urban design such as shopping centers, public gardens, thriving and poor neighborhoods, art galleries, city parks, metro tunnels, or parking lots. Debord and Constant designed the idea of Unitary *Urbanism*, an idea that could be described as a way of dealing with the city with disregard for the rules established by bourgeois consumer society. In their actions they explored those moments in which life was lived intense and conscious of itself.

In one of their many proclamations they say that they stand between two worlds, one they reject and another that does not yet exist. The actions they develop should be seen as a transition phase between those two worlds. They are not to be looked upon as designs for a future society, but as preparations for that society. These were the situations from which their name derived, a name, by the way, that they rejected as well. The I.S. was against any form of ideology and only believed in action.

“Action over representation”, 22)

as Debord said, an attitude in which we recognize the influence of Nietzsche. For the I.S. the city was situation of conflict. In his principle work, *Le Société du Spectacle*, Debord quoted Machiavelli where the last one declares that he who is makes himself the master of a city that is used to freedom, and does not annihilate that freedom, must expect to be annihilated in its turn. Cesare Borgia, il Principe, to whom Machiavelli directs these warning words, was accompanied on his campaigns of 1502 and 1503 by Leonardo da Vinci in the capacity of a military advisor. Traditional urban design with its divisions, limited freedom in their eyes and needed to be battled. Bakunin’s idea of destruction as a creative deed played its part too.

With the May Revolution of 1968 in Paris, many of the objectives of the I.S. turned into reality and, although the revolt did not evolve in a continuous change of society, they left their mark.

In the early fifties of the last century, the young Debord, he was born in 1931, lived among the outcasts in the poor neighborhoods on the Left Bank. He did not continue his studies, did not work, and as most of the people in his direct environment passed the time in cafés. He was an outcast, and content to be one, such as Rimbaud describes in *Le pauvre Songe*:

“Maybe an evening awaits me
Where I’ll be drinking quietly
In that old municipality,
And will die at ease:
So, patient I will be!” 23)

He did not live unlike the credo of Alfred Doolittle.

“The Lord above gave man an arm of iron
So he could do his job and never shirk
The Lord above gave man an arm of iron – but
With a little bit of luck,
With a little bit of luck,
Someone else´ll do the blinkin´work!” 24)

In the aimlessness of this life, he found the inspiration for his revolutionary ideas. In 1953 he wrote with paint on a wall of the Rue de la Seine, the same street that, in 1929, André Breton makes Nadja turn in:

“Ne travaillez jamais” 25)

He concluded that the people in his environment, however hopeless their fate was, lived more truly as all the others that lives according to the rules of society. It inspired him to certain ideas of dislocation, such as the *derive* or the *detournement*, which six years later would be the tools of the I.S.. The main difference between Debord and his fellow outcasts was his ability to translate the circumstances he underwent into a vision on society. He knew how to dislodge his experiences from the circumstances and take them to an abstract level where they could be used in comparison with other theories and ideas.

In 1951, Debord joined a group of young activists, the *Lettriste* formed around the poet Isidore Isou. This group practiced an experimental type of poetry, inspired by the ideas of Dada. Here too, Debord would collect ideas that would serve him later. One can find traces of this influence in the treatment of texts he would write for the I.S..

An example of dislodging an experience from his street life was the idea of the *derive*. In his early years, Debord and his marginal friends wandered aimlessly, sometimes for days on a stretch, through Paris. Time, talents, and youth were wasted on purpose as a means of protest against the system of bourgeois values. In itself, the idea of wandering, of letting yourself drift by the circumstances, was not entirely a new idea. Paris seemed to be the pre-eminent place for this activity with forerunners such as Baudelaire, Walter Benjamin or André Breton. Especially the surrealist must have inspired Debord. Breton suggested actions as pointlessly traveling on streetcars, endlessly seeing the same bad movie in a cinema, or walking through the city to disconnect the mind from useful occupations and in such a way open it to new and strange experiences and break down the barriers between dream and reality. An example from his novel *Nadja*:

“We turn into the Rue de Seine, because Nadja objects to continuing walking straight ahead.” 26)

Still, Debord came to new conclusions. During his wanderings he noticed how much one neighborhood differed from the other. The separations between different atmospheres seemed purposely, something that made Debord suspected that the capitalistic structure of society, if they had not created them in the first place, then at the very least kept these separations between neighborhoods alive to be able to influence in the behavior of its inhabitants. It was with this realization that he started to concentrate his thoughts on the city. He called this special field of consciousness *psychogeography*.

Here the comparison with Surrealism stops because, while Surrealism was delving into the unearthed possibilities of the unconscious in which the city is no more than a symbol, Debord centers on the reality of the city and its culture. The *derive* was no only a means to distinguish the different atmospheres between city parts. Due to its length,

sometimes several days, the method was used to connect different atmospheres into one total vision. The *psycho-geographic* street maps from 1957 aimed at a reconstruction of urban space. Here we see the city explained as a set of disconnected zones, so called “unites d’ambiance”. These zones are drawn separately from each other and then linked by arrows. The separation indicates the zone with its discontinuous function. The arrow designates the connection the movement of the *derive* which reestablishes the continuity between the different parts. The city is fragmented into different functions. The playful, nomadic action recreates the pure function of the city.

Not without irony, Debord called the first map of this kind *Discours sur les passions de l’amour*. It shows us, as Debord calls it, the city’s psycho-geographic relief. This relief has various properties which makes that the situations strongly vary. They attract or repel us. They accept or reject us. They are open or hidden. The arrows mean the possibility of the *derive*, or complete movement. This in contrast with the movements of the average inhabitant of the city who only used certain fixed itineraries.

The second street map of Paris was called *The Naked City*, and is based on the same thoughts. However, now that arrows are fatter and printed in bright red, something that puts the emphasis more on the connecting activity than on the separation in parts. One part of town, the *Hôpital Militaire du Val de Grâce* is being refused an arrow. Possibly Debord thought we could do without anything military.

In these two street maps the city is shown in an entirely new fashion. We are acquainted with maps of the subway system, of the layout of streets, of the distribution of historical buildings and museums, of the main thoroughfares, but these maps tell us about the network of different situations that make up the city. An ordinary map eliminates the majority of the available information and concentrates on a single function. Debord’s maps do the opposite; they try to unify what are separate functions in reality.

The names of these maps are chosen on effect. Naming a folded map *Discours sur les passions de l’amour* makes our expectation rise and compares the passion for investigation with the passion for a loved one. The adjective *naked* was a much-used term in the American literature of the fifties. One thinks of Norman Mailer’s *the Naked and the Dead*, of William Burroughs *Naked lunch*, Weegee’s *Naked Hollywood* and of the famous opening lines of Allen Ginsberg *Howl*:

“I saw the best minds of my generation destroyed by
madness, starving hysterical naked.” 27)

In this context *naked* no longer meant the undressed state, but being completely defenseless against the circumstances. The rawness of the term must have appealed to Debord.

Discours sur les passions de l’amour and *The Naked City* can be seen as theoretical blueprints of New Babylon, an urban concept in which loose pieces are joined and thus form a city. Debord created these maps, with the assistance of Asgar Jorn, in the same year that Constant built his first New Babylon models.

Guy Debord regards these maps as a first, provisional step towards the rectification of the fragmented character of the present-day city. He seeks the integration of its parts by destroying its capitalistic structure.

A second technique that Debord developed in his first years as an activist was the *détournement*. This is a way of handling an existing object in such a way that it gains a new significance. One more, the name *détournement* has not been chosen without irony. It is the French for *detour*, but beside that a euphemism for embezzling money.

Here too Debord tries to underpin the subversive character of the I.S.. Debord describes the *détournement* as *the integration of contemporary or past production on a higher level into a new environment*. In fact the *détournement* is not that different from

the Dadaistic collage or some of Duchamp's ready-mades. It is more the way in which Debord, and especially Asgar Jorn, applied the technique that grants the results significance. In 1957, they created together *Fin de Copenhague*, a collage of text and images in which the elements are distributed over several pages without an apparent order. The collage was then treated with paint spatters and *bavares*, lines formed by paint flowing downwards when the object is put vertical. These last lines call to mind an urban structure there where they cross each other. Their texts, freed from their context, obtain the nature of announcements. At one page we read: *something is wrong, outmoded philosophy, airscrew, a prophet to foresee the future, futurisme, and vive l'Algerie libre*. This technique shows in an efficient way the signals that are reaching us continuously and numb us. It had been shown before, but in a different way, in Döblin's *Berlin Alexanderplatz*. Significance pops up then disappears again in endless continuation. In vain we try to combine these signals and hold them. The idea of the *Derive* plays a part here too as our eyes wander across the pages without a goal. Debord called it the *liquid language of the anti-ideology* in which we can hear an echo of Heraclitus' idea of perpetual flux. After all, no element connects with another in a definite way.

A second quality of the "detournement" was its simplicity; everyone could practice this play of disorientation. The material was at hand everywhere. The idea was used in the May 68 revolt in Paris. Slogans appeared on the walls of buildings that had a fresh quality to them.

In 1967, Debord published *La Société du Spectacle*. The theme of this book is the observation that all that was once lived, is now represented. The spectacle of the title is seen as a separation. The image stands between real life and us. The image has become reality. In a collaboration of state, commerce and the media, this situation is artificially maintained, against the interest of the masses.

"Ce qui apparaît est bon, ce qui est bon apparaît" 28)

Taking this into account, Debord analyses the city one more. With his street maps from ten years before he demonstrated that the city is not a homogenous entity but is made up from different pockets, each with its own character and goal. Now, he has come to the conclusion that the situation is changing.

"La production capitaliste a unifié l'espace, qui n'est plus limité par des sociétés extérieures. Cette unification est en même temps un processus extensif et intensif de banalisation." 29)

And:

"C'est pour devenir toujours plus identique à lui-même, pour se rapprocher au mieux de la monotonie immobile, que l'espace libre de la marchandise est désormais à tout instant modifié et reconstruit." 30)

Or:

"L'urbanisme est cette prise de possession de l'environnement naturel et humain par le capitalisme qui, se développant logiquement en domination absolue, peut et doit maintenant refaire la totalité de l'espace comme son propre décor." 31)

The circumstances of 1957 have changed and the city has become less and less a place of freedom and experiment. Imitating Louis XIV's objective to turn Versailles into a place of arrest, modern capitalism tries to undo the city of its motion. Instead of the

political system it is now the economical one that requires a maximum of stability to maintain control.

Debord's proposal for the restoration of the space lost for the masses shows a lot of resemblance with Constant's New Babylon.

“Dans cette espace mouvant de jeu, l'autonomie du lieu peut se retrouver, sans réintroduire un attachement exclusif au sol, et par là ramener la réalité du voyage, et de la vie comprise comme un voyage ayant en lui-même tout son sens.” 32) !!!!!

The mechanisms that Debord analyses do not only appropriate urban space; they turn everything that is been produced into an asset of the system. They nullify the expressions of protest, not by battling, but by embracing them. *La Société du Spectacle* is a small and dense text, one that desperately tries not to yield to the larger processes that threaten to absorb it and render it innocent. But Debord knew he was fighting a lost battle.

In 1972, convinced of its influence, he dissolves the I.S.. Conscious of the danger of being absorb by banality, he leaves Paris and withdraws to the countryside. The Paris that been his setting for so many years was disappearing fast and left him without a place. He withdrew in himself. Baudelaire once more:

“Paris change! Mais rien dans ma mélancolie
N'a bougé! Palais neufs, échafaudages, blocs,
Vieux faubourgs, tout pour moi devient allégorie,
Et mes chers souvenirs sont plus lourds que des rocs.” 33)

In 1994, at the age of sixty-four, Debord committed suicide.

Asgar Jorn, as Constant an ex-member of CoBrA, applied a pictorial version of the *detournement*. His series of Modifications is made up of anonymous pictures of every genre, bought cheaply at the flea market, which are altered with different interventions. These interventions vary from simple additions to total changes. We see the childish adding of a moustache and beard to a portrait, a gesture that makes use irresistibly think of Duchamp's LHOOG, or redoing the background, and even daubing the image with angry texts. Debord's vivid graphic act

“Ne travaillez jamais” 25)

found its way back to art in this way.

These pictures were made in 1962, and as such ask to be weighted against Andy Warhol's work from that time. Both deal with the same subject matter and show a mixture of triviality and criticism. Warhol copies and multiplies the icons of the consumer society. Jorn uses its banal byproducts and intervenes in them. The one, as well as the other, reflect upon our overall role as consumers. But while Jorn's wild and angry gestures recall American action painting from the nineteen-fifties, Warhol's deliberate and controlled manner of creating opened a brand new perspective.

Pinot-Gallizio, one of the founders of the I.S., built in 1957 a painting machine. Gallizio was a chemist and entrepreneur who had turned painter. He had a large field of interests which included archeology, alchemy, and physics. His machine was not a representation such as Duchamp's *large Glass*, but an actual, functioning device, meant to produce pictures. The true subject here is machine produced art. This is an important shift in emphasis. Here the machine is regarded as completely responsible

for the production of goods, even art can be produced mechanically, and humanity frees itself of labor in any way. This last assumption is central to the concept of New Babylon.

Gallizio called this project *Pittura industriale*, and saw it mainly as a way to devalue art as a bourgeois luxury asset. This machine could produce yards and yards of art and clad whole cities with its produce. In his “Manifesto della pittura industriale” from 1959 he states:

“Noi useremo queste macchine per dipingere le autostrade, per fabbricare i più fantastici unici tessuti, che folle gioiose vestiranno con senso artistico per un solo minuto.” 34)

Its grandeur of vision reminds us of the Futurist manifestos. Later we will find something of these thoughts back with Andy Warhol, and in a different way, with Vivienne Westwood.

Gallizio said too that:

“Tanta sarà la produzione artistica che la macchine, docilmente piegate ai nostri voleri, produrranno, che non avemo nemmeno il tempo per fissarla nella memoria: la macchina ricorderanno per noi.” 35)

This is a remarkable radical thought for his time. He foresees the machine outgrowing its mechanical boundaries and taking over not only our physical but also our mental efforts.

During the exhibition *The cavern of Anti-matter*, in the Galerie René Drouin, in Paris in 1959, Gallizio shows 145 meter of *Pittura industriale*. On one photo we see how walls and ceiling are completely covered with lengths of painted canvas, while a hostess, wrapped the same material, takes a couple of truly amazed visitors through the exhibition, leading them by the hand. *The cavern of Anti-matter* further contained effects of light, sound, and smell. The title suggests an encompassing of the past as well as the future, thus showing the ever-changing state of all things.

Constant Nieuwenhuys was a CoBrA member from 1945 until 1949. He played an important role in the movement and followed a principle in which the working process prevails over the result. After his CoBrA days his attention went more and more to urban situations. This resulted in a series of pictures in which the mass of paint, step by step, took on the shape of urban structures. Slowly his interest changed from shape into construction. He lend books on architecture and urbanism from his friend, the architect Aldo van Eyck, and gained more inside in these disciplines. An essential step in this process is the moment when he tilted the canvass 90 degrees, turning the surface into a base. It was then that he took the step from painting to spatial modeling. His first model was called *Ambiance de jeu* and was made in 1956. A series of models followed, in which architectural considerations grow, and that would eventually lead him to the creation of New Babylon.

In 1957 Constant became a member of the I.S. and in conversations with Debord and other I.S. members, New Babylon started taking shape. As a name for this urban plan he had chosen *Dériville*, emphasizing the aspect of continuous movement that is an essential part of it. Debord however suggested New Babylon, with its subversive connotations the more arresting name. After all, the biblical Babylon was a source of evil, a power center of God’s adversaries. Babel comes from the Hebrew *balaal* which means to confuse. New Babylon was to be a city in which all old structures were abolished and in which confusion was regarded as a positive and creative state of things. Its labyrinth-like structure was deliberately meant to perplex its users in order to liberate their creative energy.

Intensive interaction with his fellow Situationists resulted in the following years generated an important quantity of sketches, plans and models on the subject.

In 1959, after a disagreement on the approach of a group exhibition in the Stedelijk Museum of Amsterdam, Constant left the I.S.. The Stedelijk was run by Willem Sandberg in those years. No other museum director in his right mind would have considered to exhibit the radical I.S., but Sandberg was an exceptional director, and as such, responsible for a good deal of the development of new artistic currents in Holland in the forties and the fifties of the last century. It is regrettable that this exhibition did not take place. It would have divided in two parts. On one hand a certain amount of museum rooms were to be changed into a full-scale labyrinth. It had to disorientate the visitor with a passage through a series of totally different spatial atmospheres. On the other hand a team of Situationists would effectuate a three-day *derive* through Amsterdam. Internal conflicts of how to proceed made the plan unworkable.

When the I.S. exhibition was blown off, Sandberg gave Pinot-Gallizio a solo show in the museum. Probably the most radical gesture still possible at the moment.

In 1966, in Amsterdam the Provo movement started. This was a revolutionary social initiative in which certain ideas, initially generated by the I.S, were realized to a much wider, although less know, extend than during the May Revolt, two years later in Paris. Provo was a movement of, as the name indicates, provocateurs. The movement expressed itself mainly through street actions, which were called happenings. One of its founders, Roel van Duijn, wrote in the Provo magazine that the consumer society had successfully won over the once revolutionary proletariat and that new revolutionary forces should be formed of every kind of anti-social elements, such as beatniks, artists, students, gang members. Their happenings were to be playful, based on the actions of Robert Jasper Grootveld. This Dutch artist had become famous for his anti-smoking actions. In 1961 he started to draw large K's, from the Dutch *kanker, cancer*, on cigarette posters, an act for which he was arrested and sentenced to prison. Later he organized the first anti-smoking happenings on the Spui, a central square in Amsterdam. This square is adorned with the statue of a young rascal, always looking for mischief but with a heart of gold. As it was financed by Hunter, a tobacco company, Grootveld centered his actions around it, dancing dressed up in weird costumes and performing in clouds of smoke. His actions claimed that the capitalistic society tried to keep people depended on their products. Roel van Duijn was greatly inspired by Grootveld playful approach and in 1966 until 1967 many lively actions took place. The movement had an important impact on the somewhat sleepy and complacent Dutch society, especially on Amsterdam, which with Provo initiated its transformation into one of the world's cultural capitals. Constant was considered as one of their mentors.

After the breach with the I.S., Constant worked until 1967 on New Babylon. The main body of this project finds itself in the Gemeentemuseum of The Hague. Once concluded, he returned to pictorial representation.

“What is New Babylon really? 1)

Constant asked himself in 1966.

New Babylon is a vision of the future of the city. At the very least it is a place where the many ideas mentioned above found a place. Physically it is made up of the coupling of many different large spatial structures, which almost invariably float above the surface, resting on slender pillars. Often the models show a basic construction of pillars connected with steel cabling. Volume is created by mounting horizontal and vertical panels on this structure. These constructions remind us sometimes of oilrigs, or sport stadiums, or of the pavilions of world exhibitions, or sometimes of airports. But Constant's designs surpass these examples by far in variation and playfulness.

New Babylon is the habitat of the *Homo Ludens*, the *playing man*. This person is exempt from labor, machines will do the work, and he or she fills his or her time with other occupations. From these occupations, play, in its most serious form, is the most important one.

Homo Ludens is the title of a book that was written by the Dutch historian Johan Huizinga and published in 1938. This book emphasizes the importance of the element of play from a culture or a society. Huizinga's theory asserts that play is a necessary condition for the creation of culture. Play does not automatically change into culture but without it the creation of culture is impossible. Play creates the freedom in which culture can thrive, but it also establishes the rules by which it can develop. In its first stadium, civilization is always being played.

It is not difficult to see why this idea attracted Debord, Constant and the rest of the I.S. members. Between their plans and the reality was a yawning gape. However, the I.S. never thought of itself as an utopists or theorists, or even as artists. They were activists for a new society. The gap between what they imagined and reality was bridged with Huizinga's idea of culture based on play. This idea liberated their actions from uncompromised condition in which uses to operate, so hated by Debord. It gave their actions a conceptual structure. Now their action would lay the foundations of a new culture in which man, freed from labor, could busy him or herself with playful self-realization in which the artificial boundaries would be broken down. New Babylon is not a literal design for a future city, but a sketch of an intermediate state in a process in which the course of the capitalistic society is altered for a completely social one.

The autonomously designed architectonical structures that built up New Babylon each have their own special character. They are interconnected which urges their users to move from one place to another, and undergo different sensations. The connected units take on the shape of long arms, reaching out in space. Initially the spread across the map of Holland, but later we can see fragments where they reach as far as Paris or Barcelona. They invariably float at some meters height over the landscape or the older urban agglomerations, supported by slender pillars. Constant maintains the functional separation between between mechanical transport, which is limited to ground level, and pedestrians, who move through the upper levels. They are the *Homini ludi*, the unbound species of the future.

New Babylon only replaces the old urban structure in the shape of an alternative; it does not remove or destroy its predecessor. The lean pillars are a minimal intervention in the original situation and the transparent construction hardly throw a shadow, and offer everywhere the possibility to leave or enter them. The architectonical concept Constant offers is no more than a shell in which the homo ludens has to realize his or her own existence. The fact that New Babylon, how radical in itself as a concept, respects the existing structure is an important aspect from Constant's plan. As such it distinguishes itself from the more aggressive expressions of some of the other I.S. members. Pinot-Gallizio's manifest speaks in unmistakable terms of violence, and Jorn's Modifications are, without any doubt, brutal interventions. Debord was much subtler. His sense for destruction was woven in poetic descriptions, which were directed as much as to himself as to society.

“such were little scandals indulged in sporadically by those whose way of life was permanently such a scandal.” 36)

Constant's choice for offering an alternative instead of a replacement may have found its origin in a visit he made, in 1951, with his still small son to the shambles of what once was Frankfurt am Main.

Constant trusts that people prefer New Babylon over their present curtailed situation. His idea might be seen as a response on the post-war situation of the western part of Holland which is turning into one large, regular, expressionless, urban field in which the

former nuclei form points of historical interest. Constant's concept creates a situation which is in incessant transformation, allowing every human expression and its continuous exchange.

A year after the May revolt of 1968, in which the I.S. members caught a glimpse of the *Homo ludens*, Constant painted *Ode a l'Odeon*. The Odeon theater was during those days one of the action centers. In this picture we see a spectacular construction of alternating, uneven levels, divided by transparent sheets mounted in a composition of scaffolding. The different levels are connected with ladders, and everywhere are people. This picture gives the impression of people leaving the Paris street level and climbing up to the higher levels of New Babylon. It suggests that Constant, with the May revolt, could suddenly see the people that would staff his brainchild. In this picture, that is more than an architectural rendering, we see a snapshot of the population of New Babylon in action. Constant describes that as follows:

"Homo ludens impinges on his environment: he interrupts, changes, intensifies; he follows paths and in passing, leaves traces of his presence everywhere." 37)

New Babylon has no center, and no outer boroughs. It has no hierarchy. Everything and everyone mixes and changes continuously in an illustration of the flux of reality as described by Heraclitus. The in all directions dispersing construction generates movement. Constant again:

"On the contrary, we believe that all static, unchanging elements must be avoided and that the variable or changing character of architectural elements is the precondition for a flexible relationship with the events that will take place within them." 38)

Profession, and with it, specialization, do no longer occupy people in this concept where machines take care of the production of the elementary necessities. New Babylon has a planned economy in which the means of production are under collective control. This society produces according to its needs, not out profit driven motives. A system in which no one goes short and everyone's rights are guaranteed. These ideas makes us think of those of William Godwin, Mary Shelley's father, who, in his book *Enquiry Concerning Political Justice* opts for a system that divides the available wealth according to the needs of each and everyone.

In these plans, the machine takes on a new role. Machinery is omnipresent, but literally out of sight. Constant does not reserve a place for it, does not occupy himself with fuel supply, nor with the distribution of its products. It is all taken for granted. In his opinion, the machine is an autonomous operating entity that does not need any intervention of man. Today, with our computer guides systems, such a concept is easier to imagine than in Constant's day, which just might be the reason that he did not offer a solution.

In New Babylon, man is not only politically free, he or she is also socially free. He or she does not labor, is not employed, and consequently is under no pressure of place or time. New Babylon is dynamic and variable. Its inhabitants are disorientated. The labyrinth-wise design confuses the dweller and is seen as a tool to stimulate the playful situations that are a condition for the creation of a new culture. Constant's concept of a labyrinth might be understood as the non-existence of a shortest route between A and B. Any route has the same value. Accordingly, the inhabitant of New Babylon does not choose for a route but roams through its structures from situation to situation. There is no center, there is no goal, there are no signposts, there are no detours. The urban space is not preconceived, or divided in zones meant for a single use, apart from the exclusion of mechanized traffic. It is an absolute open situation in which the temporary inhabitants alter the space to their needs. New Babylon is at the same time open en

closed, local and global, object and subject. It generates a dissolution of opposites which has been sought for, each in his own way, by artists such as Leonardo da Vinci, Richard Wagner or Marcel Duchamp.

Constant calls this environment in which every user creates his or her own manner of being, a *dynamic labyrinth*. It is rather touching when he writes that, as it does not exist yet, not much is known about such an environment.

There is a curious similarity between New Babylon and the seventeenth century Versailles. This correspondence almost disappears behind the differences that separate the two urban models, and only becomes apparent when one ignores the political character of both design and focuses on formal aspects. Both cover a large extension that is made up of interconnecting spaces, each very different from atmosphere. Both are laid out as labyrinths, and seek to disorientate their users, albeit for very different reasons. When we imagine the people that roam freely through these two structures, another parallel springs to mind. Both user groups have to employ their creativity to be able to sustain in these special circumstances. Versailles' couriers were supposed to spend a large part of their time doing absolutely nothing else as be present. As David J. Sturdy says:

“The royal court was truly like a mini-state in which various groups and individuals struggled to establish and preserve their interest. Courtiers learned to conduct themselves according to an elaborate etiquette (...) which defined their status and governed their relations with each other. The principal function of court etiquette, however, was to confirm the relationship with the king.” 39)

In the absolute democratic environment of New Babylon we can imagine that a lot of time of its inhabitants is spent in defining one's relationship with other people. Both activities have aspects of a game and as such ask for creativity.

Versailles as well as New Babylon turn their backs to nature and prefer artificiality. Constant comments on this aspect:

“Far from a return to nature, to the idea of living in a park as individual aristocrats once did, we see in such immense constructions the possibility of overcoming nature and of submitting the climate, light and sounds in these different spaces to our control.” 40)

Constant meant to undo the irregularities of nature, such as growth, changing weather conditions, the alternation of day and night. Louis XIV, with less technology at his service, tried to do the same. In Versailles nature was submitted to a strict human control and turned into architecture. Plants became walls, trees became screens, flowerbeds became pictures, and water was turned into spectacle.

The series of pictures Constant, painted after the completion of the New Babylon project, show a return to more or less classical themes. Refined by his experience as a radical, he now starts to investigate the classical themes of art. The titles may give an indication of his subjects: *The meeting of Ubu and Justine*, *Cyrano declares his love* or *Casanova associating with morality*. One title jumps to the eye; *The last Supper*, with which, seen from our perspective, Constant closes the wide circle that took us through European art.

Notes:

1
Constant
Linda Boersma

Bomb 91, spring 2005

2

Constant
Linda Boersma
Bomb 91, spring 2005

3

I leave out the female pronoun here, not by choice, but because Nietzsche hardly thought in these terms.

4

History, p.13
Self-reliance and other essays
Ralph Waldo Emerson
Dover Publications
New York, 1993

5

"I want to teach humanity the meaning of life: which one is the Superhuman, that bold of lightning from the human dark cloud."
Zarathustras Vorrede, chapter 8
Also sprach Zarathustra
Friedrich Nietzsche
Zeno.org

6

"Okay, when this is how things are, joining groups is out of the question. One can only count on oneself, and be alone."
Marcel Duchamp, L'art contre l'art, p. 27
Janis Mink
Taschen, 1994

7

"anti-art has become art".
Constant
Linda Boersma
Bomb 91, spring 2005

8

"That the architecture of the future becomes one of calculation, from reckless bravery and from simplicity; an architecture of reinforced concrete, from iron, glass, cardboard, textile fiber, and from all those surrogates from wood, stone and brick that allow us to obtain a maximum of flexibility and lightness."
Antonio Sant'Elia,
Futuristic Manifest, 1914

9

Vers une architecture.
Le Corbusier, 1924

10

"Instrument"
Gerrit Achterberg
Uit Osmose, 1941
Bert Bakker bloemlezing, 1981

11

"Until now manual labor had been necessary, however, from now on the apparatus worked all by itself."
In der Strafkolonie
Franz Kafka
Das Urteil und andere Erzählungen, p. 99
Fischer Taschenbuch Verlag

12

"Luddites"
See chapter 3, The airy flight of imagination, p. 6

13

"Swarming city, city full of dreams,
Where a phantom, in broad daylight, seizes the passer-by."
Tableaux Parisiens, Les sept vieillards, p. 109
Charles Baudelaire
Les Fleur du Mal et autres poèmes
Garnier-Flammarion

14
The Waste Land
T. S. Eliot
Selected Poems
Faber and Faber

15
German saying

16
The notebooks of Leonardo da Vinci, p. 213
Selected and edited by Irma A. Richter
Oxford World's Classics

17
Holy Terror, Andy Warhol close up, p.
Bob Coloacello
Harper Perrenial, 1991

18
Walter Benjamin, The Arcades Project, 1991
Susan Buck-Moss

19
"Passage"
Gerrit Achterberg
Uit Osmose, 1941
Bert Bakker bloemlezing, 1981

20
Walter Benjamin
Passagen-Werk
Other Voices
The (e)journal of Cultural Criticism

21
Introduction: the urban politics of the I.S.. p. 13
Liberio Andreotti
Situationistas, arte, politica, urbanismo
MACBA, Barcelona, 1996

22
Introduction: the urban politics of the I.S.. p. 12
Liberio Andreotti
Situationistas, arte, politica, urbanismo
MACBA, Barcelona, 1996

23
Arthur Rimbaud
Gedichten
Athenaeum-Polak & Van Gennep, 1998

24
My fair lady
Alan Jay Lerner
Penguin books, 1956

25
"Never work"
Graffiti, Rue de la Seine, Paris, 1953, by Guy Debord

From:
Guy Debord, p.23
Andy Merrifield
Critical Lives
Reaction Books, 2005

26
Nadja, p. 84
André Breton
Meulenhoffreeks, 1973

27
Howl
Allen Ginsberg
Colección Visor de Poesía, 1997

28
"What appears is good, what is good appears."
La Société du spectacle, 12
Guy Debord
Editions Gallimard, 1996

29
"Capitalistic production unified space, which is no longer limited by communities outside it. At the same time this unification is a powerful process of vulgarization."
La Société du spectacle, 165
Guy Debord
Editions Gallimard, 1996

30
It is to grow identical to itself and reaching an immobile monotony that the free space of merchandize is being changed and renewed constantly
La Société du spectacle, 166
Guy Debord
Editions Gallimard, 1996

31
"Urbanism is the conquest of the natural human environment that, following its logic of absolute domination, must and will change the totality of space into its own scenery."
La Société du spectacle, 169
Guy Debord
Editions Gallimard, 1996

32
"In this mobile space of play, the autonomy of place can be recovered without relapsing in exclusive claims on soil. We can restore the reality of the voyage, understand life as a voyage in oneself."
La Société du spectacle, 179
Guy Debord
Editions Gallimard, 1996

33
"Paris is changing! But nothing in my melancholy
Moves. New palaces, scaffolding, building blocs,
Old neighborhoods, for me all has become allegory,
And my dearest souvenirs are heavier than rocks."
Tableaux Parisiens, Le cygne, p. 107
Charles Baudelaire
Les Fleur du Mal et autres poèmes
Garnier-Flammarion

34
We shall use these machines to decorate highways and to produce absolutely fantastic and unique materials with which the cheering masses will dress themselves for a minute."
Manifesto della Pitture Industriale, 1959
Guiseppe Pinot-Gallizio
The Situationist International Text Library

35

"Artistic production will be submitted to our will and take on such a volume, that we will not have time to store her production in our minds. Machines will remember it for us."

Manifesto della Pitture Industriale, 1959

Giuseppe Pinot-Gallizio

The Situationist International Text Library

36

Guy Debord, p.54

Andy Merrifield

Critical Lives

Reaction Books, 2005

37

The principle of disorientation, p. 86

Constant

Situationistas, arte, politica, urbanismo

MACBA, Barcelona, 1996

38

Another city for another life

Constant

Internationale Situationniste 2, 1958

39

Louis XIV, p. 19

David J. Sturdy

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40

Another city for another life

Constant

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Motion in Art, chapter 10

Meanwhile in America

While West-European art, with Guy Debord and Constant Nieuwenhuys, reached its most profound intellectual depth, in the United States a totally different development took place. This development was so influential that its echoes can still be heard today. Its main, though not the first nor the only, representative was Andy Warhol.

Abstract Expressionism has been called the first autonomous American form of art. But although it undeniably was a revolutionary and innovative movement, it was still bound to traditional European art values in many ways. Warhol's work, on the contrary, seems a new beginning.

Abstract Expressionism initiated around 1940. Until then, the American artists wrestled with a mixture of European pictorial values. The development of European art at the start of the twentieth century had been spectacular and had left its traces in the United States. Exhibitions of modern European art, starting with the influential *Armory Show*, combined with the ideas and work of the many European artists that fled the old continent with the rise of Nazi terror, had an important, although confusing, effect on the American scene, less supported by tradition as it was. Out of this confusion a desire for a simpler, more direct way of working grew. American artists seemed to want to leave behind all European ballast, a weight that had lost its significance in the fresh American environment. They wanted to create something themselves.

The term *Abstract Expressionism* does not seem a bad choice at first sight. It was coined by art critic Robert Coates in 1946.¹) As the term indicates, *Abstract Expressionism* is a blend of two, rather opposed, directions in European art. The novelty is precisely in the combination of those opposites. The Abstract Expressionists shared with the European Expressionists a certain aversion for the unemotional, geometric form-language of Cézanne, the Cubists, and the later Neoplastic and Constructivist painters. On a deeper level, they may have rebelled against the socialistic idea of a collective society, in which the artist and his or her work were integrated, that underpinned the latter art-movements. With abstract painters, such as Kandinsky, they shared the will to undermine the recognizable image. However, the limitations of both ways of doing were exceeded in the combination. The American painters of this movement took their own feelings, their own temporal mood, the awareness of their own pure individuality, and their instinctive motives, as starting points for their way of working. Less and less they were using preconceived intentions, and gradually the way of working became important in itself, much more so than its results. In the fifties of the last century, this way of working had become so widespread that it ceased to fit in even such a broad notion as *Abstract Expressionism*. In 1952, the art critic Harold Rosenberg came up with the term *Action Painting*.²) From then on *Abstract Expressionism* and *Action Painting* were used indiscriminately.

However, an important change of stress becomes apparent with this new term. For the first time in the history of painting, the act of painting, instead of the outcome, converted into the protagonist. The result was merely the witness of the deed while the value of the picture resided in the energy that the act of painting conveyed.

Although Jackson Pollock is the most known representative of this way of painting, it was a German immigrant, the painter Hans Hoffmann, who had taken the lead in this new development. Hoffmann settled in the United States in 1932, and, as a teacher, played an important part in the education of the American avant-garde of the fifties. It was his picture *Springtime*, made in 1940, that opened the way to a new development in art. With this small painting, built up from spatters and drippings, began the renewal in American art. Hoffmann's interpretation of motion takes on a new shape, one in which it is not being recreated as in the machines of Leonardo, nor pictured as in the *Great Glass*, but expressed in the painter's way of doing. In *Action Painting* the motion of hand, arm, or even the complete body, was the main subject, while the traces of these movements that remained on the canvas, were the silent witnesses of these actions.

Hoffmann's *Springtime* is small, only 28 by 36 cm, and should sooner be regarded as a model of *Action Painting* than as the real thing. The large-scale paintings from Pollock, Willem de Kooning, or Franz Kline do the term justice. In the work of these painters we can see the reach of the arm, the strength of the brushstroke, or the pacing up and down before the canvas. Here the spatters and drippings are not placed

carefully on the canvas as in *Springtime*, but the result of the unrestrained act of painting, an act that is consciously brought out of the control of the painter. Consequently, the average *Abstract Expressionist* picture has to be big.

The enormous size of Pollock's pictures creates another effect of motion. The spectator can only take in the complete picture from a considerable distance. When we put ourselves in the place the painter occupied when he was creating the picture, we have to move our head from left to right to examine the painting. With that, the spectator comes into action too. The term *Action Painting* was not a bad choice.

Pollock, de Kooning, Motherwell, Kline, and the other action painters, used the whole of the canvas whereby every place received the same attention. The eye of the spectator lacks a resting point and is not, as for example in Leonardo's *Virgin of the Rocks* 3) guided through the painting so that a story may develop. In front of the painting we are left by ourselves and become lost in a sea of paint. Composition of elements with regard to the edges of the canvas, a principle that had remained intact since the Renaissance and was developed to separate the image from its environment, was annihilated. An anecdote concerning Marcel Duchamp dwells on this aspect. When, one day, Peggy Guggenheim asked him for advice on how to exhibit a too large Pollock in her hallway, he told her to simply saw off a piece. According to him, that did not matter much with that kind of painting. 4)

The action painters also ignored the so-called "closed form cannon", a term that indicates the presence of separate shapes. They allowed the paint to escape from the form. The closely outlined shape was left and disappeared in a mass of unarticulated paint. Sometimes shape returned but then it seemed as if it had risen out of matter and not been put down consciously by the painter. With the merging of all pictorial elements, *Action Painting* distances itself from rational language; the type of language in which the participating elements are placed in a mutual context to create significance. In *Action Painting*, reality is presented as a single mass of dissolving moments. It is represented as it is, not as we wish it to be, and it is here that American art found a singular form of expression. Robert Motherwell speaks of:

"reality as felt" 5)

There was no subject. The paint was applied and that process encompassed all significance. Observation hardly played a part. The painter painted until he or she became bored or physically exhausted. Pollock commented on this aspect.

"When I am in my painting, I'm not aware of what I'm doing. It is only after a sort of "get acquainted" period that I see what I have been about." 6)

Of course we can find all kind of variation here. De Kooning worked in a way in which form-will and figuration were sometimes strongly present and at other times almost absent. And Robert Motherwell could work his shapes very consciously, for example in his *Elegy to the Spanish Republic* series.

In 1947, Pollock placed a large empty canvas on the floor of his studio. He walked across the canvas, dripping paint on it from a can with holes drilled in its bottom. In this way he eliminated almost any control over his actions. The intensity of the physical act lost something of its vigor in this way but, on the other hand, Pollock now literally moved around within his painting. No longer he stood before the canvas in opposition with it; he now was one with it. In some way, Pollock had realized the wish of the Situationists to unite life and art. However, his direct, instinctive way of working did not allow a separation between doing and reflecting, and creating remained an individual adventure, something that was far from the cerebral and mutual way the Situationists imagined the fusion of life and art.

Later on, Pollock seems to contradict his words from 1947, cited here above. In 1951 he stated the following:

“When I am painting I have a general notion as to what I am about. I *can* control the flow of paint: there is no accident.” 7)

And art critic Clement Greenberg, speaking about Pollock in 1970, says:

“The anatomical motifs and compositional schemes sketched out in his first and less abstract phase are in this third one clarified and realized.” 8)

It are these kind of observations that express the wish to connect the work of the action painters with the tradition of European art. In this way *Abstract Expressionism* or *Action Painting* can be seen as the final stage of a five hundred year long development that started in the early Renaissance. It is therefore that, here, we regard Andy Warhol's work as the first, genuine American form of art.

Andy Warhol was one of the first to challenge the muscular way of working of the action painters. *Abstract Expressionism* dominated the American art world in the fifties of the last century and was waiting for someone to dispute its reign. Warhol came with a subtle way of expression, absolutely contrary to what was the fashion. Gallery owner Ivan Karp tells that, as Warhol showed him his *Campbell's Soup Can* pictures, he noticed the contrast between the thinly, subtly painted images and dirty drippings that marred the bottom of the canvasses. When he drew Warhol's attention to this matter, the artist answered him, almost excusing himself:

“You've got to drip. If you don't drip it's not art.” 9)

Such was the influence of *Abstract Expressionism* in the United States at the end of the fifties, and so much more significant is Warhol's step to present flat images of well-known brands of soda bottles and soup cans as art.

As so many of the other artists in this essay, Warhol was a versatile person. His work included illustrations, drawings, paintings, films, installations, the management of the Velvet Underground, and later in his career, supplemented with photography, video, the creation of a magazine, and the writing of several books. Warhol would call his successive studios The Factory, a reference to commercial, achievement directed labor, and perhaps, in a deeper sense, referring to the environment and circumstances in which he grew up. In the last ten years of his life, Andy Warhol changed into a public figure, just as undone of an individual personality as the figure of Louis XIV.

Kim Evans' documentary on Andy Warhol 10) very appropriate starts with images of industrial Pittsburgh from before the Second World War. We see factories, blast furnaces, a river crossed by bridges. Everything is covered in thick smog, so dense that the city had the streetlights on in daytime. It was a world completely appropriated by industry. Pittsburgh, *the Steel City*, the domain of Andrew Carnegie, makes us irrevocably think of *Metropolis*.

Here, in 1928, Andrew Warhola, his official surname, was born into a family of Slovakian immigrants. The family lived in precarious circumstances as so many other laborers during the depression that followed the 1929 stock market crash. This was a situation far removed from Ralph Waldo Emerson's America, with its freedom, its opportunities and unlimited possibilities. In a documentary, the poet Taylor Mead tells:

“Tremendous poverty. They used to make ... diner was a ... Heinz ketchup in a bowl of hot water ... and Heinz was the largest employer in Pittsburgh and also his father worked there, I think, so they had plenty of Heinz's ketchup to make soup with ... otherwise they would have starved ... and Andy of course never forgot

that.” 11)

Andy was a weak and sickly child. He learned early in life that he could not participate in the tough games his peers played and drawing became his refuge. Thanks to a separate sum of money that his early diseased father had put aside for this purpose, he was able to study at the Carnegie Institute of Technology, in his hometown. As a child he had realized he could ward off the aggression of other children with his drawings, even turning this aggression into something that came close to admiration. This insight would become the guideline of his life. He understood he was different from other people and learned to use his weaknesses to his own advantage. With his pale complexion and his delicate constitution he easily became the subject of pity and his whole life long he would shamelessly take advantage of this.

After his graduation in 1949, he moved, together with a fellow student, to New York City where he started a career as an illustrator. Already at the Carnegie Tech, as Bob Colacello tells us 12) , Andy developed a way of working that was turning him into a very requested draftsman. It is intriguing that the very technique he developed in his early years as an illustrator, namely reproduction in separated steps, would turn him into a famous artist ten years later. This early technique worked as follows. Confronted with a subject, he first made a drawing. If this drawing satisfied him, he copied the drawing, using a material like blotting paper, or tissue paper, that only partly held the ink. Then he made a print, pressing the inked piece on a third piece of paper. This way of working resulted in a partly broken, hesitating line that has a sensitivity that cannot be made directly by hand and a shape that suggests more than it actually describes. Leonardo da Vinci already drew the attention on this ability of suggestion, with the example of stains on a wall.

“Because in indeterminate things the spirit awakens new designs”. 13)

In New York he almost directly found work as an illustrator. His broken line technique drew attention. In the United States the idea of specialization had penetrated deeply in all areas of industry, also in her more creative branches, and Andy’s way of creating images set him apart. Assignments started coming in a fast pace, mainly illustrations for magazines and publicity material. Andy became known and could afford a studio and an assistant. He made the drawings while the assistant occupied himself with the printing process. Here a way of working started that would turn into one of his essential contributions to the art of the sixties of the last century.

In the following years he obtained mayor assignments, and his fame grew to the point where, in 1957, he received what is considered the Oscar of the world of publicity, the *Art Directors Club Award*. Andy Warhol was now officially New York City’s most successful illustrator. It was not what he was really looking for.

Since 1952 he was going from gallery to gallery with his portfolio, peddling his artwork. A couple of exhibitions followed, such as *The Golden Slipper Show* 14). The title characterizes the way Andy was taking; illustrative work, skillfully done, but without any deeper, permanent value. The drawings of shoes were dedicated to famous persons. Andy was looking for a way to find acceptance in the world of glamour, a world that was, for the time being, closed to him. The world of art was still dominated by the action painters, and the soft, sensitive features of his work did not catch on. Only in 1960 Andy was able to make work that received the attention of the art world. By then, artists such as Jasper Johns, Robert Rauschenberg, and Roy Lichtenstein had come up with a new approach to art, one that sharply distinguished itself from Abstract Expressionism. Particularly Jasper Johns based his work on that of the early Marcel Duchamp. Initially Johns painted two-dimensional subjects, such as targets, the American flag, or numbers, asking questions on what was reality and what image.

Andy's flat painted images of cartoon heroes as Popeye, Nancy, Superman, Batman or Dick Tracy, an idea rather shamelessly taken from Roy Liechtenstein, fit in this new approach that revalidated the image in painting. When we look at the portrait of Dick Tracy, we see a completely two-dimensional image, accented with rough crosshatching in crayon. These last additions lift the image out of the cartoon atmosphere, and give it, together with the incomplete background, an art-like appearance. Warhol still did not ignore completely the language of *Abstract Expressionism*,

“You've got to drip. If you don't drip it's not art.” 9)

however, the crosshatching is no more than an addition to the simplicity of the copy of the cartoon image, and the possibilities of the well-known image must have drawn the painter's attention. Images of Coke bottles and other familiar imagery followed, sometimes done with a visible brushstroke, with spatters and drippings, sometimes painted completely flat, resembling printed matter. But it is only in 1962, when he paints a series of thirty-two pictures, one for each of the thirty-two flavors of Campbell's Soup available at that time, that he convinces the art world. The Ferus Gallery in Los Angeles gave him a show. It caused some commotion. Putting up images of soup cans in a serious gallery was regarded as a challenge to what was common in art at the time. Warhol's pictures were offered for sale for a hundred dollar a piece. As Bob Colacello tells, a neighboring supermarket piled up hundreds of Campbell's soup cans in its window and advertised with:

“The real thing for only 29 cents a can.” 15)

This actually is a beautiful reaction, which makes perfectly clear where the significance of this series resides. Warhol showed something that did not distinguish itself from daily reality. It drew art and life together, diluted their usual distinction. That was something that confused the spectator. Eliminating the difference between life and art was an important issue in the first half of the twentieth century. Warhol gives this theme a twist into banality. With the *Campbell's Soup Can series* he did not try to elevate life to the level of art, as was the intention of many progressive twentieth century art movements, but lowered art to the level of life.

One can doubt if Warhol was all together conscious of the radicalism of his deed. As a commercial artist, Warhol was used to creating a certain type of images. It was their presentation in an art-environment that triggered the reaction and turned them into art. As such, it repeats Duchamp's gesture from 1913, when he showed a urinal at the Armory show. 16)

Warhol's main objective was getting famous, as famous as the film stars he was admiring so much. Just as in his advertising days, his work was a means to something, not a thing in itself. The story goes that someone else gave him the idea of painting the soup cans, and it is known that he shamelessly picked his friends' brains for useful ideas. The concept of The Factory, a place where he gathered people around him, is precisely based on that concept.

However, the importance of the *Campbell's Soup Can series*, and of the work that followed in the next three years, cannot be denied. It revolutionized the art world. The banality of his images was exactly the counterweight the art world needed to dismantle over-serious and omnipresent *Abstract Expressionism*. Warhol was doing something new, something exciting. One can almost imagine the New York public sigh at the opening of yet another action painter, of another significant variation of a canvas smeared full of paint, another critic with a long-winded explanation. What a relief to watch Warhol's work and to realize that this could be art too.

The *Campbell's Soup Can series* was made as follows. A photo was projected on the canvas and copied, after which the lines were filled in with paint. Although they were

reproductions in a narrow sense of the word, they all showed some aberration which distinguished them from each other. This is typical for all of Warhol's work. Whatever reproduction technique he used, there are always some spatters of paint, an uncontrolled brushstroke, difference in color, or more or less pressure during silk-screening. It gives his work a minimal connection with the art of painting as we know it historically, a connection necessary to be able to accept his work as art. Without this modest addition his work would not have distinguished itself from publicity.

Warhol found the handwork of painting time consuming. After his success in Los Angeles, he started to use the silk-screen technique to be able to produce faster. It was the first step in dismantling the artistic act. The application of color in four different phases, by means of four different screens, changed the artistic process into a mechanical one. It involved preparation and had to be executed according to a plan. The result is only visible when the whole process is concluded. This goes for classical painting too, of course, but ever since, say French impressionism, artists had been liberating themselves from plan-like approaches, substituting them for a freer *modus operandi*. *Action Painting* was the very summit of this trend. Warhol now turned back to a phased procedure, at first to work faster, but eventually, also to become less involved in the process of creating.

The silk-screens were not paintings strictly seen. But they were presented as such and in consequence, functioned as such. This was a revolutionary step in itself, one that Warhol would exploit in the next three years.

At the same time he used this technique to create a distance between himself and his subject. He regarded this distance as "modern"; always a magical word for him, but on a deeper level one might suspect a certain fear of revealing his personality. He seems to want to turn the making of art into a mechanical process, in which the individual act loses importance. A majority of his biographers attribute this feature to feelings of inferiority, obtained in his youth.

From 1962 until 1964, an enormous amount of work was produced by means of the silk-screen technique. This body of work has all kind of subjects, but only limited variations in style. This creates an unexpected coherence between subjects that we normally see as having very little to which each other. Images of civil rights protesters, car accidents, or the electric chair, were treated in the same way as images from film stars and consumer objects. Warhol drew our attention to typical American icons, subjects that, up to then, had been the dominion of advertisement and were thereby automatically excluded from the world of art.

As his work was regarded highly controversial, it received a lot of attention, an aspect that Warhol quickly learned to use to his advantage. On the other hand, he had truly broken open a new field in art, one that would play an important part in the way we regard art up to our present day.

In 1962, Marilyn Monroe died. Warhol used her fame blatantly in a series of silk-screens. Time after time he returns to the image, a still from the film *Niagara*, sometimes using the single image, sometimes using the same image twice, four, nine, up to a hundred times, on the same canvas, using different color schemes every time. By depicting a famous person, Warhol believed that some of that fame would transfer to his own person. Which indeed it did.

In 1963 John F. Kennedy was murdered, but it was Jacky Kennedy that Warhol started to paint. In a precise assessment where the public's sympathy, as well as its unconcealed curiosity, resided, he did not depict the murdered president but his widow. The president could come later. Warhol uses different images of Jacky in different combinations. We see her smiling in happier times, we see her during her husband's funeral, we see her at the moment Lyndon B. Johnson is sworn in aboard Air Force One. Just as the other images from these years, different color schemes are used, but in contrast with the other subjects, Warhol keeps his colors here somewhat subdued.

Again, he assess precisely his public's feelings which, in this special case, would reject the over bright colors of the other series.

A photo, taken at The Factory from those years, underpins well the democracy among subjects Warhol applied. We see three different pictures of Jacky leaning against stacks of imitation Brillo and Kellogg's boxes. These boxes were wooden replicas of the cardboard boxes that held these products, produced in a further intentional debasement of traditional art. In fact, they are a three-dimensional repetition of the *Campbell's Soup Can series*. The photo of this accidental composition in Warhol's studio sharply illustrates his intentions.

The *Disaster Series* and the *Electric Chair Series* show such an essential element of modern society that they are regarded as key art-works of the twentieth century. In the *Disaster Series* we see reproductions of car accidents, sometimes as a single image, under a single field of color, at other times as repeated images. Printed one over the other these last ones give us the impression of a huge highway collision; a pile-up of crashed cars and traffic victims.

The *Electric Chair Series* show the same morbid quality. But here, Warhol uses a single image of the electric chair to create the series, merely experimenting with color and sometimes zooming out and showing more of the room that hosts the chair.

Other subjects from these years were series of most wanted criminals, an atom bomb explosion, victims of food poisoning, a portrait of Watson Powell, a cow, a portrait of Robert Rauschenberg, and, the *Mona Lisa*.

In 1963, the Louvre lent the *Mona Lisa* to the Metropolitan Museum in New York City, an occurrence that aroused a lot of publicity in the press and produced long queues of people in front of the museum. Everyone wanted to see the painting.

The image of the *Mona Lisa* was multiplied million fold in newspapers, magazines, and television screens. Just as Marcel Duchamp, who responded to the exhibit by complementing his famous *la Giaconda* reproduction from 1919, to which he had added in pencil a goatee and a moustache, with an unaltered reproduction which he called *rasée*, or *shaven*, Warhol reacted to the media attention and temporary interest in Leonardo's famous painting that resulted from it. His contribution is a canvas on which the image of the *Mona Lisa* has been reproduced around thirty times in yellow, red, blue and black. The images are printed one over the other as to emphasize the sudden repetitive appearance of the image in the media. Warhol seems to illustrate Walter Benjamin's comment on such phenomena, written thirty years earlier.

"The situation into which the product of mechanical reproduction can be brought may not touch the actual work of art, yet the quality of its presence is always depreciated." 17)

Warhol treated every subject equally. It is either depicted under a layer of transparent color, or separated in different shapes, each of them treated with a different color. This creates a gaudy world of flat surfaces in which all subjects are alike. The room to maneuver has been made extremely small. Everywhere we go we stumble upon the same. The only thing that offers us some space to move in these pictures are the imperfections left during the process of production. Traces of printing-ink or paint, difference in pressure during printing, too much or not enough ink applied, random compositions in which images overlap others: these elements constitute the escape route from this closed worldview.

As a side effect Warhol managed to neutralize the difference between commercial art and fine art with these pictures. Since the second half of the nineteenth century, art and commerce had operated on different plains. True art kept far from the haggling, the peddling, and the dealing that commerce involved. It was situated above such low motivations as making money. Warhol's work, on the other hand, was openly

commercial, and its success changed a paradigm that had ruled in art for over a hundred years.

As an illustrator, Warhol had learned to think in terms of repetition and knew how to duplicate something. He was acquainted with notions as recognition, sales strategies, competition, communication, or market research, and applied these concepts, maybe unconscious, in the making and presentation of his work. His view was directed outwards, and not inwards as most artists in those days. His work was focused on creating an effect in the world of art, and not on getting something clear for himself. His versatility was a result of this concentration on effect; after all, a good idea could multiply its effect using different media. Repetition was essential.

There is also a practical reason for use of repetition. The silkscreen frame, by which the photo-image is transferred on the canvas, has a maximum size. The nylon screen has to be tensed absolutely. If not, the screen would wobble which would result in a blurred image. A too large screen would have that effect no matter how tensed it was because of the flexibility of the material. Besides, the so-called squeegee, with which the ink or paint is pressed through the screen, has to be operated by hand. That means that the screen cannot be larger than the range of ones arms. Consequently one can only transfer a relatively small image. The wish to apply the silkscreen technique on large canvases forced him to repetition.

A comparison with the textile prints of Mariano Fortuny, another successful commercial artist, imposes itself. Fortuny developed a mechanical printing process based on flexible moulds. He could produce large quantities of printed material in this way. However, he was not satisfied with the mechanical results as such. He added finishing touches by hand, turning every product into a unique piece. Warhol, on the contrary, used the reproduction process to avoid personal interference as much as possible and to create something like mass-produced art. In this sense he does much the same as the Situationist Pinot-Gallizio had done in 1957 with his painting machine **18**); devaluing art to a serial product, although their aim for doing this was quite contrary.

Although the *Disaster Series* and the *Electric Chair Series* have become essential in the history of art of the twentieth century, it are not the themes in Warhol's work but their recurrence that turn him in an crucial artist. Images of tragic moments and well-known faces are duplicated over and over again in the media, turning them into symbols. Warhol introduced this subject matter into the art-world. With this he diverged from a cannon that had been ruled European art for centuries; that of the uniqueness of a work of art. Walter Benjamin once more:

“The authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced. Since the historical testimony rests on the authenticity, the former, too, is jeopardized by reproduction when substantive duration ceases to matter, and what is really jeopardized when the historical testimony is affected is the authority of the object.” **19)**

Warhol steps away from this. The way he treats art is a new and significant manner of expressing the rational character of our society. Its main trait is acceptance. All of these pictures together, with their harsh, flat, smooth, non-emotional design, create an image of the rational, mechanical character of our Western society. We have seen artists deal with this subject with a lot of emotional involvement, from Mary Shelley to Guy Debord. Warhol, on the contrary, limited himself to unemotional registration.

“Sometimes people let the same problem make them miserable for years when they could just say, *So what*. That's one of my favorite things to say. *So what*.”

20)

Duchamp, Dada, the Situationists, all of them had tried in vain to break down the essential values of art. Warhol succeeded in this in an alliance with the taste of the general public. However, after three years of working in this way and producing over two thousand pictures, he noted that the market value of his work, through sheer numbers, started to go down. It made him stop working in this way. In 1964, Warhol declared, in what resembles a Duchampian gesture, that he would renounce painting and, from now on, would dedicate himself to filmmaking.

In 1963, Warhol was asked by art collector Robert Scull to make a portrait of his wife Ethel. In one way, it is almost as if Warhol's filmmaking started with this assignment. *Ethel Scull, 36 times* is a large work. It measures 202 by 363 centimeters. Its exceptional measurements seem a challenge to those who still believed in *Abstract Expressionism*.

This portrait assignment would be the first of a long series, but one that would never be surpassed in quality. The painting is made up of four strips of nine portraits. Ethel's different poses, and the variety in background colors, create a contrast with the straightforward division in squares. Some of the images are repeated, but in that case they are either reflected, or cut out differently, and always used with a distinct background color, which makes that these repetitions almost pass unnoticed. It illustrates Warhol's mastering of technique. Here too, we see imperfections such as a face that sinks too deep in its background, or images not placed exactly straight. Again, these flaws grant the work a painterly expression.

The photos of Ethel Scull that Warhol used were, according to the story, made by herself in a photo booth on Times Square, where she had to invent her own poses while Warhol was handing her coins and collecting the developed pictures from the slot. It is yet another example of Warhol looking for the largest possible distance between himself and his subject. In this occasion he turned things so that it looks like Ethel was the person responsible for the work and Warhol a mere helpful technician.

In *Ethel Scull, 36 times* each of its thirty-six parts is immobile. However, placed in a series and aided by slight differences in size of the person portrayed, Ethel seems to move. We see her laugh, looking satisfied with herself, reflecting, smile, put up her sunglasses, call out, rise from her seat, arrange her hair, stare. Our eye does not follow the series from left to right, but shoots across the surface through the colored blocks, finding nowhere a place to rest. We have to force ourselves to examine a single image and even then we have trouble concentrating in this unruly environment. It is as if *Ethel Scull, 36 times* is truly in motion. Warhol once said:

"Isn't life like a series of images that change as they repeat themselves?" 21)

The direct relationship with reality, the hygienics of it, the ease of the process, were all aspects of filmmaking that appealed to Warhol. The most remarkable facet of Warhol's early films is his questioning of the medium. Films such as *Sleep, Eat, or Empire*, are unique considerations of the use of the medium. Motion is one of the fixed values of film. When we are not confronted within seconds with a change of image, or motion within the image, boredom strikes. Warhol put things into a new perspective:

"I like boring things." 22)

In films as *Sleep, Eat, or Empire*, the subject cannot be separated from what was actually happening in reality. Just as this is the case with the *Campbell's Soup Can series*, it brings life and art on one level. And once more does this fusion contribute nothing to the value of life, but instead makes us doubt the value of art.

Sleep was Warhol's début as a director. The film lasts six hours, but is constructed of repetitions of a couple of fragments that, together, take up no more than twenty minutes of shooting. The repetition of these fragments is similar in concept to the repetition of images in his paintings; creating something with a minimum of effort.

In *Empire* the camera does not move its position during the eight hours the film takes up. The only movement we undergo is, at first, the slowly darkening of the image, and, when it is almost complete dark, the slowly lightening up of the image. Possibilities such as editing or montage are ignored, with which the time aspect becomes reliable. Once again, life and art melt together.

Warhol used these first films as background projections during concerts of his house-band The Velvet Underground, or as wallpaper in motion at the Factory, in a further intent of dissolving fixed values.

Warhol's later films, directed by Paul Morrissey, use a more traditional way of doing, and involve a plot, sound, and editing. But here too, Warhol does not lose his ability to question fixed values. The quality of the camera work leaves a lot to be desired, the sound is at times unintelligible, the unexposed strips of film at the beginning and end of every shot were not cut off during editing and confront us with useless intervals during the projection. On top of that the actors and actresses are often amateurs who operate according to vague directions. A stage direction from Warhol, completely in this line:

"Don't try and act. Be yourself" 23)

Chelsea Girls, from 1966, is Warhol's and Morrissey's first commercial success. It is one of their most emblematic films. It was almost totally shot at the Chelsea Hotel in New York City, where we follow a number of young men and women in their doings. What they are exactly up to is rather hard to grasp as there seems no line in their actions and their voices are tough to follow.

Warhol and Morrissey exhibit a certain indifference towards what they were filming. They did not involve themselves too much in the process, but waited for the unforeseen and the spontaneous to happen. We can also notice their unconcern in, for example, the haphazard use of the zoom. Sometimes the cameraman appears to try out the range of this device, zooming wildly in and out, devoid of any relevance to the scene. The only excuse for this behavior would be to make us conscious of the fact that we are watching a representation, instead of reality, in the manner of Bertold Brecht. However, looking for reality was exactly the thing the two directors wanted to doing.

Warhol and Morrissey used an Auricon; a type of camera that registered image and sound at the same time. They thought this would intensify the level of realism of the shots and, indeed, we never have the impression we are watching something else as reality. Besides, Warhol and Morrissey did not select their material; they show it all. They present their subject in all its imperfectness and chaos. What is more, this confusing aspect is literally doubled with a so-called split screen projection, a form whereby two projectors project two film spools parallel. The material, which resulted from six and a half hours of shooting, was divided over two film spools while the soundtrack then supported one half, then the other. Apart from that, some parts were shot in white and black, some in color. *Chelsea Girls* has an approximate length of three hours; quite a sit.

Because of the technical impossibility to synchronize split screen projection in the same way with each showing, every representation of *Chelsea Girls* was a unique event. In fact, each time one saw a different film. This was the equivalent in film language of the spatters and drippings of Warhol's paintings.

In *The Velvet Underground* song with the same name, the film is characterized as follows:

“Chelsea Girls

Here’s room 506
It’s enough to make you sick
Bridget’s all wrapped in foil
You wonder if she can uncoil

Here they come now
See them run now
Here they come now
Chelsea Girls” 24)

In spite of the inadequate distribution; most of the representations took place in cellars, or in backrooms of cafés, the film enjoyed an enormous popularity and brought Warhol a lot of fame.

The Velvet Underground existed from 1964 until 1973. In 1965, Warhol met the members of the band, and cooperation started. Warhol managed the band and incorporated them in his multimedia show, the first of this kind, called *The Exploding Plastic Inevitable*. It is a significant name. One that hints that the artificial is unavoidable, thereby said that in those days “plastic” had a connotation of “something not being real”. “Exploding” commented on the direct, dynamic aspect of the spectacle. It was performed between 1966 and 1967, and included, apart from the songs of The Velvet Underground, light and film projection, and dance performances from Factory members. Warhol brought about a cooperation between the band and the German singer Nico, who had played a part in the *Chelsea Girls* movie. It resulted in the album *The Velvet Underground & Nico*, from 1967, an album that is still regarded as among the most influential of its time. The term “Underground”, that was used to describe their music, derived from the fact that many concerts took place in cellar spaces. Later the term spread and went and described any art form that resisted social conventions.

There is some similarity between *The Exploding Plastic Inevitable* and Wagner’s *Ring*. Both artists were looking for a total experience, one that could only be realized through the integration of sound and image. Wagner moved heaven and earth to impose his concept of the *Gesamtkunstwerk* 25). A special theatre was built, a special association was founded to supply funding, a special orchestra had to be formed, his demands on illumination and stagecraft exceeded the possibilities of his days, and on top of that, he asked from the public to sit through five hour long performances, without intervals, on wooden folding chairs. Warhol’s spectacle was comparable in concept, but the way he put his ideas into action was much more imaginative. He rented a Polish community center, at Saint Marks Place in the East Village, which had fallen in disuse. It was called *The Dom*. “Dom” is Polish for “home”. The music that was played required only limited musical skills from its performers, the dancers were Factory members, the projections were easy to realize but had a major effect blurring all elements of the show into one, and the public could enter and leave as it pleased.

Even the songs from The Velvet Underground are in some way comparable to Wagner’s music. Their music was based on the continuous repetition of a few chords. The simple, stultifying sounds hardly differed from song to song, but contrasted heavily with the piercing lyrics, often dealing with the seamy side of life or other unconventional themes. For example:

“Some people work very hard
But still they never get it right
Well, I’m beginning to see the light
There are problems in these times

But none of them are mine
Baby, I'm beginning to see the light" 26)

In a certain way, the continuous rhythm of the Velvet Underground songs compares to Wagner's "Leitmotiv" or "guiding motive". The "Leitmotiv" kept recurring in Wagner's compositions and organized its elements, giving each of them its place in the totality, and thus putting across their meaning.

In the lyrics above, we can also detect a certain similarity with the Situationist's mentality towards life, a mentality that is well expressed in Debord's single phrase, written on a wall of the Rue de la Seine, in 1953:

"Ne travaillez jamais", 27)

Or with this phrase from his biography:

"I could not even think of studying for one of the learned professions that lead to holding down a job, for all of them seemed completely alien to my tastes or contrary to my opinions." 28)

A total experience, a *Gesamtkunstwerk*, as the *The Exploding Plastic Inevitable* holds a lot of attraction for us. What is artificially separated in different categories, suddenly meets in a unity of phenomena. Sound, image, movement, progress, it all melts into one experience, and in this way creates a more truthful reflection of our reality. It was Andy Warhol on the height of his creation.

Portraits play an important part in Warhol's oeuvre. They divide in three types. There are the autonomous works of art from the period between 1962 until 1964, the portraits done in commission from the nineteen seventies and eighties, and the self-portraits Warhol kept on making during his entire career.

Film stars and other famous people, admired from a distance, are the subjects of the first group of portraits. Here Warhol extends his collection of autographed photos from Hollywood stars he started being still a boy. He relies on the mechanism of idolizing, the same makes people go to the cinema, to attract attention to his work. On the other hand, it certainly must have been a surprise to see these faces, so familiar from the tabloids, feature in art galleries. The fact that they were shown together with soup cans, soda bottles and newspaper pictures of car accidents, suggested that they were as much a product as a person.

An effect of motion, such as we saw in *Ethel Scull 36 times*, is sometimes present. In *Triple Elvis*, from 1962, the same image is repeated three times. The three images are overlapping each other, while each has a different intensity of print. This results in the impression of the person moving forwards, approaching us from the right side of the picture. It brings to mind Duchamp's *Nu descendant un escalier*.

The portraits from the seventies and the eighties were for the greater part commissioned. Warhol and his staff at the Factory had turned the working method of his first period into a trademark. These early paintings were now regarded as highly significant and shown in important galleries all over the world. The same method was used to portray famous people. Commissions were almost aggressively purchased.

To create these portraits, he used the silkscreen technique. The resulting work has the same characteristics as the early paintings: bright colors and repetition. But the bite has gone. As these portraits had to be flattering, there was not much room to experiment in any way. Warhol compensated that loss with a large range of different color settings, which sometimes resulted in undeniably beautiful portraits.

The self-portraits connect the early work with the commissioned portraits. Here he was free to keep on experimenting, something that resulted in many interesting paintings. But in the seventies there shimmered another objective behind these works. With his self-portraits he showed his own person on the same level as the ones he portrayed: the rich and famous. Bob Colacello's biography of Andy Warhol is one long explication of the artist's determination to reach the upper rungs of New York City's society.

Self-portraits have often been the key to an artist's personality as we have seen before in our chapters on Leonardo da Vinci or Marcel Duchamp. Warhol's first self-portrait, from 1964, shows him in the first phase of his fame, remarkable healthy without his silver wig and with a full face. He pulls down the corners of his mouth and his expression is rather uncompromising. It makes us think of the promotion pictures of the Velvet Underground, a kind a rejection of the banal "aboveground". He wears sunglasses and, with his right hand, keeps the collar of his raincoat closed.

On another self-portrait, from 1967, we see Warhol in his phase as a film director, still young from face and without the wig, in a thoughtful pose, his hand at his chin. It shows us Warhol the intellectual.

In 1978, a portrait with a skull origins. The skull sits on Warhol shoulder, who is looking straight into the lens, his mouth slightly open, as if he was taken by surprise. There is another photo where the skull sits on top of his head, suggesting Warhol was fooling around during this session, trying out Hamlet-like poses. Still, *Self-portrait with skull* is a penetrating image. It might show the sequels of the attack on his life that took place in 1968, an attack that left him damaged physically as well as mentally. The incident does not only show in his startled expression, his whole physiognomy has changed. The face is sunken and the eyes are hollow, resembling the ones of the skull on his shoulder.

In *Self-portrait, Strangulation*, made shortly after the one with the skull, we see Warhol being throttled from behind by two hands. His mouth is open wide and his eyes turn up, but one can clearly see this is a pose. However, every variation of color settings creates a different effect, and a blue and pink version suddenly transmits something of genuine terror.

Also in 1978, he created a remarkable portrait of himself in negative, in which he shows his face from three different angles, turning from three-quarter to almost profile. This work creates a faint illusion of motion.

All of these works were silk-screens.

There is also a photographic work from 1981, one among several of the same style, where he is dressed up as a woman. His face has been made up and he wears a curly blonde wig. But the angular, sunken face has not been masked. And then his glance, as if he was somewhat embarrassed, is not very helpful in evoking a female person either.

A self-portrait from 1986, made a year before his death, is suddenly almost frightening. The head has been placed low in the picture, as being separated from the body, pink against a black background in this particular version. His mouth is opened once more, but this time not in amazement but in an expression not far from cruelty. The spiky hair of his wig has been complemented with brushstrokes in the same pink color. His face is heavily marked, gaunt. We see a horrifying specter, an impression that is being emphasized by its floating appearance, and it is tempting to read in this picture an announcement of his death, a year later. Then again, he died completely unexpected.

Another self-portrait attracts our attention because it has been made in a completely different way. On a piece of cardboard he has stuck, next to each other, nine passport photos. On each image he takes a different pose, making a full turn over the nine photos. Beneath this series he has placed two larger, six by six cm, identical passport photos. This photo had been made at the end of the fifties, at the height of his

commercial career. He has corrected the right hand photo; has given himself longer hair, falling over his forehead, and has made his nose slimmer, turning it into a portrait of the artist as he looked in the sixties. The sheet has been signed by Warhol, and thus should be taken serious as a work of art. Apart from the signature, one can read three letters: "D, u, s". It has been suggested they stand for:

"Do you see me?" 29)

If one agrees to that, then this self-portrait is, in all its simplicity, a revealing work. We see here brought together images from before and after the assault that damaged him for the rest of his life. He had trouble digesting food, had to wear a support girdle, and above all cope with a fear of repetition. This last aftereffect gives the abbreviation suddenly a distressing twist, away from simple vanity.

Warhol's career knew many aspects, and is often divided in periods. One decisive moment is the attempt on his life by Valerie Solanis, on June 3, 1968. For a long time Valerie had tried to persuade Warhol to produce a feministic play, written by her. But Warhol was not interested. She shot him down in the Factory, probably in a fit of paranoia. The bullets damaged his liver, right lung, esophagus, and diaphragm. He nearly lost his life and the incident deeply affected him. He reacted to the experience by installing an almost complete inaccessibility for the world outside his small circle of confidants. At the same time he created the Andy Warhol as we know him, naive, shy, and never without his silver wig.

Valerie Solanis was a radical feminist. A line from Mary Harron's docudrama *I shot Andy Warhol* says it all:

"Females should just be running the whole show. You know, males are biologically inferior." 30)

Her work, a manifest and a play, had a certain influence on the feminist movement, where she is sometimes seen as a radical precursor. It seems she imagined a society, controlled by women, in which production was automated. This reminds us of the ideas of the Situationists. Another dialogue from Harron's documentary, one between Warhol and Solanis, makes us think of Debord's previously cited graffiti:

"Oh Valerie, get a job.

"Come on Andy, you know that's against my principles." 31)

We do not know if Valerie Solanis was familiar with the work of Debord, but there appears to be a certain similarity in thought.

Valerie turned herself in on the same day as the assault. She served a three-year prison sentence and after her release she kept on approaching Warhol who was terrified of her.

Warhol's most important self-portrait, a series from 1979, does not really belong to the category. He called the series *the Black on Black Retrospective Reversal Series*. The pictures measure 195,5 by 241,3 cm. Judging from the title, we may assume that these pictures hold a special place in his oeuvre. We see, in this particular case, a dark colored canvas, which right upper corner is taken up by the reproduction of a painting from the *Flower Series*, from 1964. Right underneath this, we find a reproduction of *Cow*, from 1966. On the left there are two prints of the Kellogg's boxes from 1964. Across this image, a small copy from *the Electric Chair Series* has been printed, combined with a portrait of Mao. The left side of the canvas shows a quadruple *Marilyn* in negative. The upper left area is only partly used and shows two identical passport photos, one placed under the other, an image from the sixties with short hair and

sunglasses. These photos are partly covered by an image of a car-wreck from *the Death and Disaster series* from 1963, placed in an angle of more or less thirty degrees, which, in its turn, is partly covered by a mirror-imaged picture of a Campbell's tomato soup can, from 1962.

The importance of this picture lies in its choice of subjects. We may take for granted that these were the images that were important to Warhol. Except for *Cow*, all of them were made between 1962 and 1964, in his early period as an artist.

This compilation makes us irresistibly think of Duchamp's *La Boîte en Valise*, a cardboard box with replicas from his early works. Duchamp tried to create a unity in his work by placing the heterogeneous works from his early years in one context. Warhol did much the same with *the Retrospective Reversal Series*. Instead of miniaturizing the works and putting them in a box as Duchamp did, he placed them together on a single canvas. But the image described above has an extra quality, which turns it into a self-portrait. Warhol obtains this extra quality by placing the car-wreck across the lower passport photo. The dented front of the car is light from tone, making it transparent. Warhol's face shimmers through this light area and the two images blend in which is a spooky view of a wounded person.

Warhol once said he wanted to be a machine.

“Machines have less problems. I'd like to be a machine, wouldn't you?” 32)

One has the impression that Warhol meant to say that he wanted to be invariable, that he would like to be a person who could go on and on with producing art and harvesting admiration. For Warhol, the appeal of the machine resides in its ability of endless repetition. This creates an assurance. It denies the passage of time and the decrease of vitality. Seen in this light, Warhol's statement connects with one of the central themes of Western thinking, a theme that stems from pre-Socratic philosophy: that of the continuous transformation of reality. In a next assertion, Warhol connects this “being a machine” with the wish that everybody was alike, something that would make reality even more reliable.

“The reason I'm painting this way is because I want to be a machine. Whatever I do, and do machinelike, is because it is what I want to do. I think it would be terrific if everybody was alike.” 33)

Dull maybe, but absolutely reliable.

In the second half of the twentieth century we had become accustomed to the ever-growing presence of machines in our lives. While the actual machines operated behind the walls of the factory or workshop, and only skilled workers came near them, another kind of machines started to gain more and more influence over us. Apparatus such as electric razors, cars, turntables, refrigerators, or washing machines became omnipresent. Most of these apparatus brought new elements of motion into our existence. But the most influential apparatus was the television set. Our era entered a new phase with television. It suddenly led to a constant flow of moving images into our living rooms. It deeply affected our habits, our views, as well as our way of dealing with reality. Marshall McLuhan described this effect sharply though somewhat dramatically:

“Television demands participation and involvement in depth of the whole being. It will not work as a background. It engages you. Perhaps this is why so many people feel that their identity has been threatened, this charge of the light brigade has heightened our general awareness of the shape and meaning of lives and events to a level of extreme sensitivity.” 34)

Television presented an instant but collage-like view of reality in which serious issues were blended with amusement and publicity. The homogeneity of the medium that presented this mixture, the single gateway through which all of the information passed, suggested the equality of all its content.

There is a noteworthy photo from 1958, made by Evert Baumgardner, on which we see an American family grouped around a television set. Four teenage kids are sitting on the floor in various poses while the father adjusts the settings. But the significant part is played by the mother, sitting erect on the sofa. She lowers the newspaper she was reading, and transfers her attention to the televised images in a gesture that, we now know, foretold the future.

Television affected us deeply. Not a single work of art equaled the impact, just a short while after the actual incident, of the murder of president Kennedy. These images were etched on the collective memory of the Western world. Warhol brought this phenomenon under our attention. The images he used for his art had figured before on the television screen and in the newspapers. By bringing them in the art gallery he extended art into a new region. Art turned into a medium in the way McLuhan had described in his book *Understanding Media*. We might understand Warhol's wish to be a machine better when we take into account McLuhan's view that

“the content of any medium is always another medium”. 35)

In the late sixties of the last century an important change in society took place. Youth rebelled against the values established by earlier generations, and created a space of their own. The so-called *counterculture* expressed itself mainly with music and appearance. Art lost its place as the main vehicle for cultural innovation, a place that was taken over by pop-music and clothes. Warhol played an important part in this transformation. Not only did he managed The Velvet Underground, generally seen as one of the most influential bands of the sixties, he too set up Interview, a unique kind of magazine. It had an important influence on what trends gained a foothold in Western society. In the seventies and eighties Interview became the podium of everything that was cool, in a fusion of music, fashion, Hollywood, and advertisement.

Around 1970 Warhol started painting portraits in commission. His customers were famous people; pop stars, film stars, sports heroes, politicians, and society figures. These portraits were based on Polaroid photos that Warhol took of his client. In a next stadium he transferred one of the many images he took on a silkscreen template and printed it onto canvas, often changing the original picture by adding bright colors. Some of these portraits have an undeniable quality, but when one reads Bob Colacello's chapter, “Portraits and ads”, 36) on how these commissions were obtained, and how the portrayed were recruited, serious doubt about the nature of this kind of work arises. For one thing, in these series Warhol employed the same manner of picturing as he had done ten years before, a way of doing he had used to even out a collection of the most heterogeneous subjects. He did so with the intention of portraying American reality. It had made sense to do so at the time. But to simply repeat this way of doing, rendering it into a style, and portray the rich and famous, somehow seems inappropriate. One could of course argue that this was coherent with the conclusions the early work had left. Still, to us it seems that the Warhol's painting stopped at that moment, no matter how many more portraits he produced in the following years.

Warhol only dealt sporadically with motion as a subject. On the other hand, he was very interested in arrest. In his first important exhibition, where he showed *the Campbell's soup cans series*, arrest plays an important part. The repetition of the images tells us that nothing will change, or it must be the flavor, present in small red type beneath the logo. But when we would put that first, and would go from painting to

painting to examine the different flavors, we would act in the same way as we do in the supermarket. The only difference would be that we do this inside an art gallery, an effect that Marcel Duchamp created fifty years before during the Armory Show. It makes more sense to direct our attention to the similarities because, when we do so, we realize that the repetitive aspect of this exhibition leads us away from the single object and forces us to see the exhibition in its entirety.

Perceived like this, it tells us that the image has had its time as the representative of art only and has become the carrier of commerce as well. The double role this situation creates and the confusion it generates is Warhol's true subject. His work is the crystallization of what Debord states:

“Le destruction extrême du langage peut s’y trouver platement reconnue comme une valeur positive officielle, car il s’agit d’afficher une réconciliation avec l’état dominant du choses, dans lequel toute communication est joyeusement proclamée absente.” 37)

Warhol seems to illustrate this insight. In his society portraits he consciously limits his ways of expression, creating what Debord called *an official value*. He does so by means of repetition, by elimination progression, and establishing arrest. His society portraits create a state of detention.

Arrest is also present in Warhol's early films. Here he tried, with success, to deny the first characteristic of this medium, the image in motion. In *Empire* motion is being reduced to the gradual change a building undergoes during eight hours time. The fascination for this work rests totally on the realization of the fact that this is a film, a *moving picture*. It is in motion in spite of the fact that we are unable, just as with the passing of the minute hand of our watch, to register that visually. *Empire* hovers somewhere in-between traditional painting and traditional film. With this Warhol laid the basis for video art, a medium that entered the art world in the seventies of the last century.

Warhol's naivety, sardonically described in Bob Colacello's biography, is the equivalent of Leonardo's secrecy or Duchamp's silence. One wonders, every time again, if this naivety is real or just an act, and Warhol uses this confusion to hide his sources, procedures, and aims. In an interview, to be seen in Kim Evans documentary, he limits his answers to yes or no, and when the interviewer insists, or puts a question in such a way that Warhol has to answer in full, gallery owner Ivan Karp replies for him. Although Warhol is not considered an intellectual, much of his innocence was indeed play. But behind this media mask, his strategy was often is well thought out. He surrounded himself with a large group of followers behind which he could disappear when necessary. He used their ideas, and they used his fame, in what was a fruitful cooperation. The Factory was highly creative and stimulating environment. Billy Name, one of Warhol's earliest assistants, described this environment as follows:

“You just had to create. It doesn't matter what you do, if you paint, or dance, or make music. Use everything. In New York you're free to create.” 38)

It sounds like a rather blunt repetition of what Emerson said about America's future.

“We will work our own field, we will work with our own hands.” 39)

Warhol saw his fame as a passport to the world of high society, the world of film stars whose signed images he collected as a child. He kept his whole life a yearning to belong “up there”, as he used to call it. In reality he stayed forever in the schoolyard where he had to placate his peers with drawings to escape their aggressions. But while

he aimed for personal gain, his work opened a field that has not been abandoned since. Glamour, trends, death, trivialities, lust, amusement, perversities of all kind, compete in a domain without boundaries. It is up to anyone to find its individual way in this unlimited area that is contemporary art. While the unruliest work of Willem de Kooning or Jackson Pollock is still retraceable to art's history, along a long and twisting path, but one that leads us as far as Leonardo da Vinci and his contemporaries, Warhol's work leaves us without any references, alone in the gallery, standing in front of it, our hands empty of tools.

Warhol once said, in a variation on a well-known saying:

"I like to be the right thing in the wrong space and the wrong thing in the right space ..." 40)

It would have been more precise to say that he was the wrong thing in the wrong space, and, just as two negatives multiplied result in a positive, the sum of he who did not really believe in himself as an artist, combined with a public that did not really take him serious, resulted in work that had, and still has, an important influence on the development of contemporary art.

Notes:

1

The triumph of American painting, p. 2
Irving Sandler
Harper & Row publishers, 1970
New York, 1970

2

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3

"Virgin of the Rocks"
See chapter 2

4

Duchamp, p. 402
Calvin Tompkins
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Video

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23

I shot Andy Warhol
Mary Harron
docudrama, 1996

24

Chelsea Girls
Lou Reed
The Velvet Underground & Nico, 1967

25

see cheaper 5

26

I'm beginning to see the light"
Lou Reed
The Velvet Underground & Nico, 1967

27

"Never work"
Graffiti, Rue de la Seine, Paris, 1953, by Guy Debord
Guy Debord, p.23
Andy Merrifield
Critical Lives
Reaction Books, 2005

28

"Guy Debord, p.23
Andy Merrifield
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29

Untitled illustration in an article on Warhol
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Lluis Antonio de Villena
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37

"There we see the most extreme destruction of language, something completely accepted as an official and positive value, because, here, the objective is to bring about a reconciliation with the dominant state of affairs, where every communication is happily declared as absent."

La Société du spectacle, p.192

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38

Billy Name

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Motion in Art, chapter 11

Do it yourself

According to many people Vivienne Westwood is one of the most influential fashion designers of the last three decades. Well-known names in fashion such as Jean Paul Gaultier or Issey Miyake recognize her influence while other big names, such as Carl Lagerfeld or John Galliano, may not name her as a source of inspiration, but cannot veal her influence on their designs.

That Westwood has such an important influence is even more surprising when one realizes that she started designing clothes seriously in her mid-thirties, a relatively late age. She was a primary-school teacher and has no formal study of fashion. Her important role in contemporary fashion can only be explained by her talent, her willpower, and her broad interests. This last aspect makes her break the canons of fashion design and cross barriers that withheld others. Together, these characteristics have lead to collections which were so groundbreaking that they, thirty years after their conception, still influence what is being designed today. Even parts of her own contemporary work, gathered under the label *Anglomania*, often lean on her earlier design ideas.

The last twenty years or so, after having been ignored for years by the most important mechanisms of the fashion industry, such as magazines as *Vogue* or *Women's Wear Daily*, Westwood is now valued for her innovative work. Although she still carries an aureole of enfant terrible, her influence is beyond dispute. In fact, one may say that in the last thirty years, her ideas have been copied so many times, and adapted to a more general taste, that the mainstream public now regards them as acceptable. With that, her direct influence on the brand *Vivienne Westwood* has somewhat lessened and many of its elements are nowadays designed by her husband Andreas Kronthaler. Here too, we can see the irrevocability of a process that Guy Debord describes in *La Société du Spectacle*. Each form of rebellion against the system is ultimately absorbed by the system through its mechanisms.

“En analysant le spectacle, on parle dans une certaine mesure la langage même du spectaculaire, en ceci que l'on passe sur le terrain méthodologique de cette société que s'exprime dans le spectacle.” 1)

But maybe for Vivienne, after having suffered poverty and denial for long years, this is not such a bad development.

We can find the foundations of Westwood's development into a one of the most important fashion designers of our time in her youth in the fifties of the last century. Halfway the decade a certain awakening and emancipation of young people started that created a space between childhood and adulthood. The *Second World War* had left England, just as the rest of Europe, in ruins, and its aftermath dominated the

following decade. The general effort, necessary to rebuilt society, created, apart from a truly felt togetherness, a suffocating atmosphere from unity and solidarity of which no one could escape. Young people, forced to accept adult values, challenged this state of affairs and did so with the means available: their own appearance. Nowadays we understand such opposition as a necessary phase of the adolescent, and, confronted with it we are a good deal more lenient than our parents or grandparents were. But Vivienne Westwood and her contemporaries had a difficult time freeing themselves from the smothering civility of those years.

The awareness of having a separate status, being a teenager, was accompanied by the wish to manifest itself. The obvious to do was to dress different. In her biography of Vivienne Westwood, Jane Mulvagh tells how Vivienne started to alter, or adjust, the clothes she owned, when she was fifteen years old. 2) It was then that she started to see the importance of clothes as self-expression, something that has remained one of her basis beliefs. That early, she was not really designing her clothes, but yes aware of the effect that clothes had on a person's appearance.

In 1957, she relocated, with her parents, from the North of England where she was born in 1941, to London. As yet her life did not seem to follow a distinctive course. She married, worked as a schoolteacher, had a child. The years passed. In 1965, she divorced from her husband and went back to live with her parents. There, in 1967, she met Malcolm McLaren, a friend from her brother. With him she started the unique adventure that would take her eventually to the top of the fashion world.

Malcolm McLaren was, he died in 2009, a cultural entrepreneur who busied himself with fashion, music and film. As an art student he had been influenced by the *Situationists*, and without ever becoming a theorist, or embrace any intellectual pretensions, he adopted the essence of that movement. He made their rebellion against society his own, in particular their way of expression themselves with slogans, such as appeared on the walls during the May '68 revolution in Paris. He claimed to have been present in Paris at the time, and would go up against the established order in many of his projects.

A relation developed between the two that was, at the same time, sentimental and businesslike. In 1971, they opened a shop in secondhand Rock & Roll paraphernalia, called *Let it Rock*, at what is now a well-known address, King's Road 430, in Chelsea, London. The business in secondhand albums was soon extended with secondhand clothes for the same era. Malcolm suggested that these goods, with their firmer, tougher, smoother traits, offered a way out of the slowly dying era of the hippies and their flower power. He felt, perhaps still without the sharp sense for trends he showed later, that young English people were looking for something new, and he tried, with a revival of Rock & Roll, to reach this public. Vivienne was brought into the shop to repair the secondhand garments, and to wash and iron them. The business was doing well and became known amongst a young public. In 1973, in a gesture that was typical for McLaren, he changed tack and temporarily closed the shop to offer a different, more radical style of clothes.

The early seventies was dreary epoch. After the optimism of the sixties, the Western World was confronted with the first signs of the decay of her dominant culture. The United States lost their first war and had to leave Vietnam with a negative balance of a hundred thousand fallen soldiers. This trauma was followed by the *Watergate scandal*, which resulted in the abdication of president Richard Nixon. In France, the revolution of May '68 had resulted in a return to normal, lead by a ultra-conservative government. In Germany, Italy and Spain, terrorist attacks created a climate of insecurity. The Yom Kippur war between Israel and Egypt created an oil-crisis which bared Europe's dependence on this raw material. And with the Report of the Club of Rome, in 1972, *The Limits to Growth*, came the first general awareness of our environmental problems.

The England of those years suffered an economic recession. Images from Julian Temple's documentary *The Filth and the Fury* 3) show demolished buildings, streets littered with garbage, and riots. Musician Steve Jones describes those days as:

"It was cold and miserable. No one had a job. You couldn't get a job. Everyone was on the dole. (...) People were fed up with the old way. The old way was clearly not working." 4)

McLaren wanted to make use of this general feeling of dissatisfaction among young British people, and spur them into protest against this state of affairs. This protest had to be propagated through the two things in which a majority of young people was interested in: clothes and music. He was consciously looking for elements that had a subversive character and called the new shop *To fast to live, to young to die*, in a reference to the actor James Dean who portrayed this type of youthful protest in *Rebel without a cause*. The shop sold leather garments, the type worn by motor bikers, such as jackets adorned with shiny metal ornamentations, boots, belts, as well as non-leather articles as oil-stained jeans and hand-decorated T-shirts. These lasts were Vivienne's contribution to the shop's assortment, and her first steps into professional fashion. The clothes transmitted a certain atmosphere of violence. The teenagers who bought these clothes were not especially violent, as for example hooligans were, but they knew that these kinds of clothes would anger adults and mark off their own place in society. The shop was a commercial success and, apart from teenagers, started to attract showbiz people.

In 1974, McLaren found it time for a change once more and closed *To fast to live, to young to die*. At couple of months later, he and Vivienne opened, at the same address, a shop called *SEX*. Its name was placed across the facade above the shop in large, bright pink letters. Later, McLaren explained:

"I decided to go down another route. Rubber and leather fetish wear. I felt that would look fabulous and exciting on the King's Road." 5)

Once more this shop started to attract its own customers and formed a center for dissatisfied young people who had found something exiting there. Access to the shop had been made purposely difficult with shop-windows that did not allow a glimpse inside the shop. Even the door had been made opaque. When one had found the courage to go inside, one was confronted with a stock of tight rubber pants, transparent rubber shirts, and a complete assortment of sadomasochistic commodities. The walls were decorated with inciting slogans, among others some of Valerie Solanis, the radical feminist we met before. 6) Vivienne developed a series of printed T-shirts with outrageous subjects.

The shock of such a shop was perhaps larger then we can imagine nowadays. It was a novelty for those days, and apart from that, McLaren tried everything to enhance his provocation. He became a skilful manipulator of the media in those days. The shop was no more than a vehicle to shock the British public, and should not be understood as a statement in the sexual revolution. It was no more than a step on his way in creating a counter-culture for its own sake. His aim was to put people in motion.

In 1973, he and Vivienne had visited to New York City to promote *To fast to live, to young to die*. There they met Sylvain Sylvain, front man of the New York Dolls, a local cult band. They followed his suggestion and checked into the Chelsea Hotel, the same where Andy Warhol had shot *Chelsea Girls*. An interview with Warhol's magazine followed. The members of *the New York Dolls* introduced them in the club circuit of the city. In the *CBGB's* they saw a performance of Richard Hell and his band *Television*, something that made a huge impression on McLaren. Hell's performance was cleansed of all decorum. It was pure, but at the same time degenerated. The music was simple.

His clothes were dirty, torn, and was kept together with safety pins. He did not shrink from wounding himself on stage. McLaren recognized the power of the image and would remember it. Back in New York, in 1975, he tried to engage Richard Hell and take him to London. When that did not work out, he went looking in London for a band with the same potential and found the *Sex Pistols*.

Malcolm McLaren was the first one to recognize the potential of the combination clothes and music. From the very start, their shop had offered more than only clothes. A specific kind of music was played that supplemented the clothes on sale, and apart from that, or because of that, the shop acted as a gathering point for youngsters. Steve Jones:

“That’s why we always ended up at Vivienne’s, because it was like a hang-out. I liked the clothes, they were different. (...) It was a lot more rebellious and I was drawn to that.” 7)

McLaren realized that the experience of visiting the shop would be stronger if he could, apart from the clothes and the atmosphere, design the music too. He was looking for a total event, in a way something comparable to a *Gesamtkunstwerk*, which would allow him, all at once, to agitate against the stiff rules and values of the British establishment, to gain personal recognition, and to make decent living. He was the sensitive membrane, who felt exactly what was present in a still latent form, waiting to sprout, but he was also the gifted manipulator, ready to take advantage of anything new, and capable of creating social movement. He described this talent as:

“I am a bit like a sculptor, except instead of using clay I use people.” 8)

This compares to Joseph Beuys’ ideas about a *Soziale Plastik*, a *social sculpture*, which he was working on during the *Documenta 7* in Kassel. Just as Beuys, McLaren did not put up with an artifact that suggested possibilities but was looking for a way to turn his ideas directly into a social reality.

The music had to sell the clothes and the clothes had to sell the music. To do so, a single image was necessary. One that would bind all elements. Together with Vivienne Westwood, he created this image from an amalgam of different impressions; the *Internationale Situationiste*, Richard Hell with his torn and dirty clothes, the rebellious exclamations from Valerie Solanis and her spiritual companions, singer Johnny Rotten who wore his college blazer inside out, Pamela Jordan, né Rooke, a client from *SEX* with a defiant way of dressing, and Vivienne’s bondage clothing she had made for the shop. There were trousers from which the knees were connected with straps, or a shirt made from blue parachute silk, held together with crossed bands and decorated with slogans as

only anarchists are pretty, 9)

or a shocking T-shirt, adorned with a swastika, an image of a crucifix taken from a picture of Matthias Grünewald, and the word destroy written above it.

They called this image *Punk*.

During their concerts, the *Sex Pistols* dressed in Vivienne’s clothes. In such a way their concerts, organized by McLaren, created publicity for the shop. Their lyrics promoted rebellion while the music was limited to a couple of chords, in an utter simplification of the music of the *Velvet Underground*, a simplification in which the *New York Dolls* and *Television* had preceded them. It is an open question if Rotten and his band members were aware of these connections. Most likely their musical gifts were such that McLaren had to make a virtue of necessity.

But what the band lacked in musical aptitude was corrected by the intensity of their performance. The pure energy the quartet expressed, in combination with the seditious lyrics they sung, not only yielded them a large amount of fans, but also much publicity in the form of press articles. *Punk* was directly recognized as good selling copy and the tabloids exhausted themselves in painting the punk movement as a threat to the British society. In its first days, the movement was made up of maybe only two hundred people, but all the attention in the press brought the ball rolling.

Punk hit a nerve. It bared the falsity and the emptiness young British people experienced in their existence. The slogan *No Future*, taken from a Sex Pistols song summed it all up.

There is no future
In England's dreaming 10)

The music struck too because it was interpreted as a rejection of the rock music of the early seventies and the *Hollywood* status of their interpreters. *Punk* was understood as an antidote to the pompous music from Yes, Genesis or Queen, or the smooth, over styled disco music from Marvin Gaye or Gladys Knight and the Pips. The amateurish songs from the punk bands offered a direct connection with their circumstances. The musicians were people just like them. In the pubs and other maladapted venues where punk bands performed, no barriers existed between the musicians and them. No separation between art and life.

Many punk fans started to dress in a special way, expressing a total dismissal of established values. Their dress was made up of torn garments, adorned with chains, and daubed with slogans. They pierced parts of their bodies with safety pins. During concerts they jumped up and down, in the most primitive of dances, during which their bodies violently collided with others. Sedation was sought in cheap means such as beer or glue. But in spite of the repellency of their appearance, a certain care remained necessary. Punks were not bearded, and the cocks combs and elaborate make up needed daily attention.

Westwood connected perfectly with this attitude. Contrary to McLaren, she was part of the punk scene and the clothes she designed were more a result of identification with her customers than the will to create fashion. It was there that she developed the idea of *do it yourself*, the idea that all of us have to create our own clothes in order to create a unique image, a concept that would be partly responsible for her unique position in contemporary fashion.

"Otherwise we'd all look the same." 11)

Not everybody could afford the clothes for sale in *SEX*, or *Seditionaries* as the shop was soon renamed. Many punks fashioned their own clothes from second hand stuff, created their own look, and inspired Vivienne. Later she said about this period:

I never wanted to be a fashion designer. I did it to help the boyfriend that I had who's name was Malcolm McLaren." 12)

Punk was challenging British society, but it was not a political movement such as the Situationists had been, and although it had a lot of effect, it was not able to generate something as the May revolt of '68.

"It was a fashion thing, it was a music thing." 13)

Vivienne's experiments with T-shirts stem from these days. She started with adding elements such as feathers, transparent plastic pockets with a pornographic image

stuck in, or zippers on unexpected places. She printed slogans on the shirts too, an idea from McLaren. Nowadays we are quite used to T-shirts that spread an opinion, but in the late seventies this was a new idea. In this garment McLaren found a substitute for the walls of Paris. Jane Mulvagh describes how Vivienne adorns the shirts with felt-pens and potato stamps, 14) The highlight of these interventions were two series of T-shirts with a text, one that said *PERV*, another that said *ROCK* of which the letters were made with chicken bones, that dangled on the wearer's breast. Only twelve of these shirts were produced. They have turned into collector's items.

From that moment on, things took a more serious turn. The T-shirt, the simplest of all garments, became her object of research. She took it apart and tried to come to an even more essential shape. She undid the seams, eliminated the sleeves, and connected the front and back with knots on the shoulders. This was followed by a design that was made up of two identical squares of cotton which sides and shoulders were connected in such a way that it created armholes and a neck. These deconstructive and constructive acts show how innovating Westwood was.

In the nineties of the last century, deconstruction, or deconstructivism, became a recognized design method. This method is often associated with the concept of deconstructing with which the French philosopher, Jacques Derrida, analyzed texts. Although Derrida busied himself indirect with architecture, his original analytical approach to texts is not really comparable to the way the architect or designer uses the notion. Derrida meant to bare inherent contradiction in texts, while the designer considers the elements of a certain existing complexity as the initial impetus to a design. Doing so gives a new turn to the well-known canon which states that the whole is more than the sum of its parts. Respecting the parts; a building, a dress, a landscape, and regarding their complex as a meeting place, often in the shape of a confrontation, creates a new image; one that invites us to contemplate the very nature of design. In that type of design we see the parts celebrating their independence and, through their sovereignty, we gain an insight in the built-up of the complex. Often, a design is regarded successful when all of its parts; shape, function, structure, significance, form a tightly knit unity, as it does in the modernist architecture of Le Corbusier, for example. However, this perfect design does not relate to reality such as we experience it. While reality is unstable, variable, in constant process, classical design presents us with something that is stable and inflexible, inalterable. The *deconstructivist* considers this signal a deception.

Fashion designers are interested in the fluency of a material. With that they mean the effect of a certain unity in motion a material shows when exposed in space. In most cases, creased material does not have a nice fall because too many directions interfere. Its image is too complex. Most designers prefer unity.

Vivienne's early experiments created the basis for later groundbreaking collections such as *Savage* or *Buffalo* where she took great liberties with fit and construction, and was able to give her designs a suggestion of motion that was completely new.

A beautiful description of such an effect in a comment on the work of Belgium designer Ann Demeulenmeester:

"How do you suggest movement? How do you unbalance a body? How do you cut a garment that challenges gravity? These questions result, with Ann Demeulenmeester, in clothes that evoke the illusion of movement, even when the wearer is standing still. Trousers slip down a little, a cardigan gaps open, a draped dress exposes a shoulder: mainly expressions of casualness that would never betray the complicated study which was often required to achieve it." 15)

Significantly Demeulenmeester often claims that *Punk* has inspired her.

While the *Punk* movement was growing, the specific relationship with the original group of followers, the so-called *Bromley Contingent*, and *Sedentaries*, the shop on the King's Road, disintegrated. The Sex Pistols were paying a heavy toll for all the excesses their image required. There was always the pressure to keep up their news value. Extravagances in drugs and violence marked their way. Clearly, McLaren had bitten of more than he could chew. Their song *God Save the Queen* created honest outrage with many British people, and the media played a perverse part in condemning the very facts that made them sell their newspapers. Here too, one sees Debord's theories become reality:

Le spectacle se présente à la fois comme la société même, comme une partie de la société, et comme instrument d'unification. 16)

After disastrous occurrences during their American tour, at which bass player Sid Vicious, undermined by the use of heroin, had turned unmanageable, Rotten dissolved the band. Sid Vicious' death through overdose, a couple of months later, meant the end of an era, for McLaren as well as for Vivienne.

They broke off their sentimental relationship and went each their own way. McLaren went for a year to Paris, Vivienne stayed in London and manned *Sedentaries*. And while McLaren was absent, looking in vain for a new project, Vivienne created, all by herself, a collection that she based on the post-revolutionary fashion of late eighteenth century France.

The French Revolution had ended the opulent elegance of the *Rococo* and its fabrications of an unspoilt *Arcadia* as depicted by Antoine Watteau, and performed by Marie-Antoinette in the gardens of Versailles. The bourgeoisie, exasperated by the century long arrest of social progress, started by Louis XIV and continued by Louis XV and XIV, replaced the monarchy for a form of civil authority. However, within a few years this authority degenerated into a reign of terror, denominated *La Terreur*. This period, in which thousands of people lost their lives, ended, in July 1794, with the arrest and execution of Robespierre, the man who was supposed to be the main instigator of *La Terreur*. The feelings of relief, felt when this period came to an end, were expressed, at least by the more affluent classes, with an outburst of frivolity. This social change gave rise into a change of style. A new interest in the pure and democratic ideas of the *Classics* arose, with the painter Jacques-Louis David as the forerunner.

These ideas translated in fashion too. The *Ancien Regime* had been characterized by a restricting outfit; corsets, narrow shoes, wigs, all expressions of the autocracy France suffered. Now people rejected this attire that limited free movement, and dressed in unconstrained garments following the neo-classic fashion. These garments, robes and tunics, fell loosely over a body no longer hampered by constrictions. Endless yards of transparent material were draped around the female body and veiled and revealed her forms at the same time. Cleavage and a hairdo of loose tresses, as we can see on David's pictures of Madame de Verninac, from 1799, or that from Madame Récamier, from François-Pascal-Simon Gérard, from 1802, accented this playful and frivolous style. The political freedom, that had brought the revolution, had found a counterpart in the freedom of dress. And not only women partook in this change. Men too started to dress with a lot of fantasy, wearing earrings, long hair, and wide trousers. This group of upper-class people called themselves the *Incrovables* or the *Merveilleuses*, and there was a large component of sexual freedom in this way of dressing. It was this aspect that drew Vivienne's attention. She started research in libraries and museums on the history of fashion in what would become a way of working. The seductive garments of the *Incrovables* and *Merveilleuses* inspired her in creating her first autonomous collection. When she showed the result to McLaren, who had returned from Paris, he

directly noticed its originality, but also its commercial limitations. The historical background would not connect with young people's perception. He gave Vivienne's idea another direction, one with which the customers of their shop could identify, that of the pirate.

They started to work together again. McLaren was the entrepreneur, the art-director with a flawless feeling for what would become a trend, while Vivienne had an almost unrestrained talent for design but one that needed certain guidance to come to practical results. In these first years, McLaren offered the context in which her design qualities could function and the collections they realized together in this way belong to the best in the history of fashion design. *Pirates* is such a collection.

Vivienne based *Pirates* on historical examples, just as she had done with the *Incroyables* and *Merveilleuses*' designs. Her research translated into a complete array of shapes and colors. Wide shirts, trousers with a low crotch, slender gilets, wide gowns, sashes with tassels, hats in various shapes, shoes and boots, all based on original models she had studied in the *Victoria and Albert Museum*. The wide sleeves, narrowing at the cuff, find their origin in the necessary freedom of movement that the eighteenth century French nobleman needed to defend himself with the floret. In paintings she saw how buccaneers as *Blackbeard* had copied this dress. Over the wide shirt a narrow gilet, a jacket without sleeves, was worn. It brought out the male figure and left the arms free for defense. The low crotch of the pants serves the same freedom of movement, while the high waist enhances the manly stature. Vivienne was capable of using these elements in their original cut and combining them in such a way that they look contemporary. During the presentations of the collection, McLaren intensified the necessary present-day image by providing each model with a *Sony Walkman*, a portable cassette player that had been recently appeared on the market. This apparatus made it possible to listen to your music out on the street. The slender headphones and the small device, worn at the belt, pulled the clothes definitely out of the atmosphere of costume and suggested their absolute modernity. The collection with the decorated fabrics and exuberant colors created an atmosphere of luxury, adventure and exploration. McLaren complemented it with a complete redo of the King's Road shop, which was renamed *World's End*. This name came from the old epithet of this part of London, but, at the same time was a reference to the once end of the world; the Caribbean, the traditional pirate hangout. As a further support McLaren formed a new band, called *Bow Wow Wow*, which members wore pieces from the collection during their performances. They played a novel kind of music, based on ethnical rhythms. Once more, McLaren sought the scandal and made the fourteen year old singer of the band, Annabella L'win, pose naked on the sleeve of the album in a pastiche of Manet's *Dejeuner sur l'Herbe*.

Half a year later Vivienne came with a new collection, called *Savage*. This collection was the result of Vivienne's investigation in ethnical cultures. Not only she analyzed and used the colorful motives of, for example, African dress, but she based her models too on the cut of these garments. Traditional African design works with limited resources, and does not spill material by following the curves of the human body. Two rectangular pieces of cloth are simply sawn together. At the most, just for comfort, a neck is cut out. The sleeves are created from rectangular pieces too and joined to the body-piece without creating a sleeve inset. Vivienne copied these ways of construction which resulted in garments that were cut deliberately oversized, creating an impressive silhouette. These straight-shaped clothes were sometimes tied around the waist with a strip of leftover material to give the silhouette a change.

The collection was meant for men as well as women. It was elaborated of tough materials, such as coarsely woven cotton and linen, stonewashed leather, raw wool and felt, while the seams were turned outside. Some of the fabrics were printed with geometrical motives which were wrapped around the body in such a way that the

regular shapes of the motive became twisted and offered a kaleidoscopic effect when the body was in motion. Other garments of the Savage collection were decorated at their insides with prints of famous works of art, such as Picasso's Guernica, Matisse's abstract motives, or Andy Warhol's Campbell Soup Cans. At the show, the models wore earth-colored make-up and their hair was styled, in the African way, with mud.

Her next collection, called Buffalo, from 1982, was in a certain way a continuation of Savage. The first thing that catches our attention is the somber palette of rich natural colors. Vivienne had inspired herself here on elements as cowboys and cowgirls, prairies, outdoor living, or, to summarize it in one of the rich metaphors of the fashion industry; Appalachian Folk. Once more the clothes were starkly oversized but, this time, built up from many layers, and a complete array of different materials. Striking are the large overcoats, assembled from pieces of sheep hide, the seams that held them together turned outside. The collection was littered with such inventions. One sees bags which straps that are coiled are the torso, holding different pieces of clothing together. There are wide hoods that are worn together with a hat. Garments are wrapped around the body together with lengths of material in protective layers, sometimes tied with a course strap of hide. A highly remarkable detail were the bustiers, worn over the other clothes. As Jane Mulvagh remarks, it was a detail that was taken from the women in the South-African Townships who were proudly showing the western underwear. Gaultier would use this idea and dress Madonna with it as part of her costume. 17)

Buffalo was the first collection Vivienne showed in Paris. The models did not walk with the usual measured, rhythmical steps, but danced, moving wildly, across the catwalk. Their movements were inspired by a new type of music, McLaren had imported from New York, called scratching. As Vivienne had foreseen, the models' wild movements made the clothes slip down their bodies, and the having to hold them together, and hoisting them up every now and then, gave a highly sensual effect. Showing in Paris brought her international attention. Japanese designer's such as Issey Miyake, Kansai Yamamoto and Rei Kawakubo were inspired by Buffalo and imitated its form language, although they toned down the colors to more reserved grays and beiges.

Vivienne's next collection was *Hobo-Punkature*. Again we see the loose, flowing shapes in a composition of many layers. A dress, a blouse over it, and a vest over that, all held together with a sash that binds them into a unity. The generous cut leads to original details such as the sleeves sliding over the hands.

As the name suggests, this collection was inspired on the improvised dress of the hobo, the vagabond, the vagrant; people who, out of necessity or by choice, fit together what they wear with what they can find in the garbage, or receive from others. As they have less choice, their dress results in combinations of clothes that were not meant to coalesce, which, seen from a different angle, offers novel images. Vivienne Westwood acknowledges such imagery in her *Hobo-Punkature* collection. It would shape one of her basic ideas on fashion; do it yourself. She said once in an interview:

"It comes from the concept *D.I.Y.* Take the tablecloth if it's beautiful, and take the towel if it's good enough, or take the curtains. Put things together yourself and take things from your husband or your boyfriend, like my boxer shorts. (...) And you can take a beautiful thing just as well and put it with a thing of rubbish or what ever.

Don't spend money, just take what you can find, take your old things, keep on wearing them. Don't buy much fashion anymore. But if you do buy it, choose really well. Wear it for at long time until it sort of drops from your back and gets even more wonderful maybe. And if it is horrible, if you wear it for ages it probably looks better." 20)

Consequently, the *Hobo-Punkature* collection has all kind of elements of improvisation and recycling, such as rags held together with a piece of cord, hats in tatters, torn fabrics, fabrics with holes, garments too wide that will come down, elements that are roughly sewn on such as large pockets. The total image is one of careful sloppiness, full of stains, as if it has been worn out completely. It makes us think of Eliza Doolittle, a piece of cloth around her shoulders, the seam from her skirt hanging loose. We see rags, wrapped around the feet, piece of material with frayed ends, cut and left without a finish, garments with a single sleeve.

This collection fits perfectly in Constant's *New Babylon*. The *Homo Ludens*, the roaming person who is freed of labor, has to fill it time with occupations that necessarily take on the qualities of a game. We can imagine that the way this person dresses would take on shapes which Vivienne explored in *Hobo-Punkature*.

The originality of this collection also becomes apparent in the relative incomprehension with which it was received. Although it was copied right and left, the essence, the element of improvisation, the value of *do it yourself* as a method of design, was not understood. We see parts of it return in, for example, the collections of Zandra Rhodes. In elegant translations of Vivienne's ideas, she uses golden safety pins, or careful cuts, finished with gold colored embroidery thread. Vivienne Westwood:

"In Italy they take cheap cloth and make it look expensive, and I take expensive cloth and make it look cheap. They just don't understand what I'm trying to do!"
18)

These words inescapably call to mind Mariano Fortuny's way of working in which he turned simple cotton in luxuriant brocade. 19) As a matter of fact, during her career Vivienne Westwood did not shun any way of working and used cheap as well as expensive materials for her collections. Still, *Hobo-Punkature* is an essential collection, not only in the history of fashion design but also in Vivienne's career. Many of her ideas seem to come together here, or originate from this point, more so than in any of her other collections.

These first four collections, with which Vivienne Westwood started her official career as a fashion designer, contain so many new ideas and so much unique creativity that her further collections may look a little disappointing in comparison. However, there too we can find many original ideas. Many of these are based on the history of costume, but some on personal experiences. For instance, the *Witches* collection includes a gymslip; a traditional garment she had worn in her youth. This is a wide pinafore dress, worn during gym classes, over a polo shirt. Its loose-fit and wide sleeves allow a great deal of movement. In 1983, Vivienne designed a collection round this garment with all kind of semi-sportive characteristics. There are T-shirts with oversized shoulders that end in a peak, wide skirts wit a low waist, and enormous overcoats with wide sleeves. These ample garments are contrasted by narrow skirts with a wrapped-up waist in a play between perfect fit and oversize.

The *Witches* collection was shown on the rhythm of rap music and under stroboscopic illumination. It hampered the continuation of the spectacle the spectators were watching, creating a visual stammer. Or as McLaren put it:

"Like sequences of things, where people are dislocated somehow at the same time that they're moving." 20)

This makes us think of one of Warhol's statements:

"Isn't life like a series of images that change as they repeat themselves?" 21)

Motion is used here as an example, not of the flux of reality solely, but too of its effect of being a helpless victim of it, swept along by it, unable to create a proper course.

Another idea that was highly original and would cause much imitation was her re-use, in 1985, of the crinoline. The crinoline was popular between 1850 and 1860 and is a very wide skirt, held up by a circular construction of hoops made of whalebone. The bendable whalebone made sitting down, while wearing a crinoline, possible. Originally the wide shape and its necessary stiffness were created by a petticoat made from a combination of horsehair en linen, hence the name. The later, light construction was an improvement in comfort. This skirt, which reached till the feet, paradoxically meant something of a liberation for the women in the Victorian era. As Jane Mulvagh remarks, this wide skirt replaced the narrow petticoats, allowing the wearer more freedom of movement. 22) But the crinoline had its disadvantages too. In some cases it reached a span of 180 centimeters, a size that must have made the wearer think twice before leaving the room. Sitting down while wearing a crinoline required a special way of doing. If one did not spread out the skirt in a certain way, the whole construction could bounce back and make the wearer disappear behind it.

The crinoline disappeared around 1860 with the implantation of the railway, Space was more restricted in a railway compartment than in the horse-drawn carriage and did not allow the dimensions of the crinoline.

Vivienne Westwood combined the volume of the Victorian crinoline with the length of the mini-skirt from the sixties and thus created a garment she called the Mini-Crini. She combined this short, voluminous skirt with small, tight cut jackets. The combination centered the attention at the hips, which was quite contrary to the fashionable silhouette of those years.

Motion plays a determined role in fashion design. Clothing has two functions: it protects us against the elements and it creates an image of ourselves. Freedom of movement is respected as much as both objectives allow. Fashion, codes of behavior, or functional requirements have thwarted this freedom often, with the corset, the uniform or the harness as examples. The twentieth century has abolished many of these limitations and liberty of movement is, normally spoken, an inherent aspect of modern fashion design. Vivienne Westwood went various times against this norm in her career. The bondage wear, as the name already indicates, limits the body's natural conduct and forces it into certain movements that are regarded, in some circles, as sexually stimulating. In the versions Vivienne produced for Seditioaris, the rebellious image was all-important and the straps hardly impeded movement. On the other hand, the unusually high plateau-heels, the Rocking horse shoe, which she designed herself and often combines with her clothes, has a serious impediment on natural motion, as top model Naomi Campbell, modeling for Westwood in 1993, famously came to notice. Vivienne holds that wearing these shoes grants the wearer sexual confidence. She argues that they force the body into a slightly different position which enhances the wearer's physical consciousness. Comfort is not always her first concern, different sensations are:

“ If you've got something that's draped on the body, that's constantly moving, you will play with it and it will play with you.” 23)

In his notes Leonardo mentions garments and draperies in motion, a description that evokes images of Westwood's Savage and Buffalo collections.

“The draperies thin, thick, new, old, with folds broken and pleated, soft light, shadows obscure and less obscure, with or without reflections, definite or indistinct according to distances and colors; and the garments according to the rank of those who wear them, long or short, fluttering or stiff according to the

movements; so encircling the figures as to bend or flutter with ends streaming upwards or downwards, according to the folds, clinging close to the feet or separated from them, according as the legs within are shown at rest or bending, or twisting or striding; fitting closely or separating from the joints, according to the step or movement or whether the wind is represented.

And the folds should correspond to the quality of the draperies whether transparent or opaque ...

On the thin clothes of the women in walking, running, and jumping, and their variety. 24)

Leonardo meant these notes as possible subjects for a treatise on painting, but they read as if he was describing a group of women in motion, Isadora Duncan dancing in front of a horse cart on sunny Greek byway. 25)

Since the sixties of the last century, the apparatus has become generally accepted in our society and has replaced the machine as the symbol of progress. One thinks of Richard Hamilton's ironic collage *What makes modern live so appealing*, from 1956, on which several domestic apparatus figure as icons of modernity. Through the years portable versions were developed for some of these devices, such as the television, the computer or the telephone. The last years, many of these functions are regrouped in the smart phone. This apparatus combines a large amount of different utilities, and they are constantly extended. Already it has turned into something that for a lot of people has become an indispensable part of their lives and something that is carried with them constantly. Here, in their mutual property of mobility, clothing and apparatus meet.

It is not hard to foresee a future in which this device forms an integral part of our existence, holding our personal identification, the code to enter our house or car, or the necessary tools to pay for something. The smart phone symbolizes our connection with reality. Not being connected gives us the impression of being excluded. We react on its electronic impulses, ring-tones, bleeps and vibrations, and are worried when the circumstances, hospital wards, concert halls, force us to break off the connection, or when connection is interrupted, as in subway tunnels, or traveling by air. There is the typical image of people checking their messages at the luggage drop of the airport. This direct dependence of something artificial gives us something artificial too.

The orientating ability of the smart phone with its connection to the Global Positioning System is diametrically opposed to Constant's concept of the use of New Babylon, where roaming and losing one's way forms an integral part of a creative existence in which life and art merge. Critical observers warn us against the reversed effect of the GPS, which makes it possible to follow us in almost all aspects of our life. We only free ourselves from this oppressing realization by remembering our number, and through that, our unimportance. While we have gained a larger freedom of movement as ever before in history, we have connected ourselves voluntarily to a global network which make us instantly localizable. That this is generally regarded as progress is a significant trait of our society.

Another characteristic of our time is the growing independence of the apparatus. As we write 2014, this aspect has probably been developed furthest with the robot Asimo, a project from the multinational Honda. 26) This robot, supposedly named after the American science fiction author Isaac Asimov, has a human stature, But it only measures one hundred and thirty centimeter; the height of a twelve year old child. The Japanese engineers have chosen consciously for this size. Although the robot has an adult capacity, they did not want a corresponding shape, aware of the threatening impact a full size robot could have. The association with Frankenstein's monster is self-

evident. We can easily imagine a six-foot Asimo roam the streets of Tokyo, seeking revenge for his miserable existence. Its diminutive version seems harmless though. His voice is childlike too, and its movements are deliberately measured and never abrupt, even when it is running. 27) Asimo is the first robot that is able to climb or descend a flight of stairs. This is actually a highly complicated human action and it has taken engineers years to master the complexities and enable a machine to do so. It is highlight of a whole set of carefully imitated human abilities. Asimo's going down a flight of stairs call to mind Duchamp's Nu descendant un escalier, from 1912. In this picture we observe a human being, turned into a machine. Duchamp's ideas were inspired by the ongoing industrialization and, who knows, too by Freud's concept of the unconscious, which suggests that we are guided by impulses without being able to exert much free will. Honda now turns the conception around; the machine is turning human. It is suggested that, in the near future, this type of machines will replace human beings, not only in mechanical tasks, such as the robots in factories do, but also in social tasks, for example in taking care of babies or elderly people. These machines can speak, listen, respond, and draw conclusions. Their memories contain a wealth of information, which will turn them in valuable company. In his article, Pere Cuixà speculates that the continuous humanization of the robot will make it a necessity that these machines start wearing clothes. In the long run its nakedness would regarded as offensive.

In the Japanese concept of Mecha we can find a blend of machine and man. A Mecha is an anthropomorphous vehicle that is, more or less, one with its occupant. The idea was first launched in a Manga cartoon called Mazinger Z, drawn by Go Nagai, but has been taken serious by science and converted into practical applications. Handicapped people may benefit from this new technology. 28) Around the same time as Asimo's debut, Toyota developed the i-foot, a mixture of prothesis and a machine, operated by a joystick, that enables disabled people to navigate staircases. 29) In the film Avatar, from James Camaron, we see a Mecha on the warpath. The soldier is placed within a armored shape, which is a combination of a harness and a tank. This type of contraptions creates a hybrid area between clothes and machinery in which motion is the main binding factor. Perhaps the next step in this development will be a flying version, something with which Leonardo da Vinci's five hundred year old vision, the first demonstration of modern thinking, will become reality.

Notes:

1

When we analyze the spectacle, we speak, in a certain way, the same language as the spectacle, there were we enter the methodical field of the community that expresses itself by means of the spectacle.

La Société du spectacle, 11

Guy Debord

Editions Gallimard, 1996

2

Vivienne Westwood, an unfashionable life, p. 21

Jane Mulvagh

Harper Collins Publishers, 2003

3

The Filth and the Fury

Julian Temple

Film Four, 2000

4

Steve Jones in The Filth and the Fury

Julian Temple

Film Four, 2000

- 5
Malcolm McLaren in The Filth and the Fury
Julian Temple
Film Four, 2000
- 6
See chapter 9
- 7
Steve Jones in The Filth and the Fury
Julian Temple
Film Four, 2000
- 8
Vivienne Westwood, an unfashionable life, p.128
Jane Mulvagh
Harper Collins Publishers, 2003
- 9
Vivienne Westwood, an unfashionable life, p. 114
Jane Mulvagh
Harper Collins Publishers, 2003
- 10
God save the Queen
Sex Pistols
Virgin Records, 1977
- 11
Interview with Vivienne Westwood
Friday Night with Jonathan Ross
BBC One
- 12
Lynn Hirschberg talks to Vivienne Westwood
The New York Times Style Magazine
- 13
Sid Vicious
Sid Vicious, final 24
Alan Jones
Video Documentary
- 14
Vivienne Westwood, an unfashionable life, p. 77
Jane Mulvagh
Harper Collins Publishers, 2003
- 15
Belgian Fashion Design 2000
Catalogue
- 16
The spectacle is presented at the same as society itself, as a part of society, and as a tool of unification.
La Société du spectacle, 3
Guy Debord
Editions Gallimard
Paris, 1996
- 17
Vivienne Westwood, an unfashionable life, p. 160
Jane Mulvagh
Harper Collins Publishers, 2003
- 18
Vivienne Westwood, an unfashionable life, p. 195

Jane Mulvagh
Harper Collins Publishers, 2003

19
See chapter 5, Titian's contemporary

20
Victoria & Albert Museum web site: Vivienne Westwood, the Early years

21
Andy Warhol, Artistic Revolutionist
Jisoo Park
Video

22
Vivienne Westwood, an unfashionable life, p. 191
Jane Mulvagh
Harper Collins Publishers, 2003

23
Vivienne Westwood, an unfashionable life, p. 234
Jane Mulvagh
Harper Collins Publishers, 2003

24
The notebooks of Leonardo da Vinci, p. 167
Selected and edited by Irma A. Richter
Oxford World's Classics

25
See chapter 6

26
Asimo, un robot angélico
Pere Guixà
Cultura/s La Vanguardia, 30 01 2008

27
asimo.honda.com

28
Un pequeño paso para Mazingher
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