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Cultural Studies of Science: Skinning Bodies in Western Medicine

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November 1995

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ISBN 0-612-12028-7

Canada

Abstract of M.A. thesis "Cultural Studies of Science: Skinning Bodies in Western Medicine" by Patricia Futterer.

This thesis explores the cultural implications underlying the medical practice of cutting human flesh. The examination focuses, in particular, on the function of representational technologies -- from anatomy sketches to computer imaging -- in the scientific understanding of the body in the West. By foregrounding the technologies of representation which inform and have directed a history of surgery, it is hoped that the cultural aspects of modern medicine will be made apparent. This thesis argues that while science benefited from art to construct its image of 'the' body, it has had to rid itself of art in order to justify its empirical claims. The study concludes with a discussion of the work of the French performance artist Orlan who uses plastic surgery in a performative setting to deconstruct these very claims.

Ce travail explore les implications culturelles qui sont à la base de la pratique médicale de couper la chair humaine. J'examine en particulier le rôle des technologies représentatives -- des esquisses anatomiques aux images electroniques -- et son rapport à la compréhension du corps humain dans le contexte scientifique de l'Ouest. La discussion des technologies de représentation lesquelles ont influencé l'histoire de la chirurgie veut rendre apparent les aspects culturels de la médecine moderne. L'argument le plus important dans ce travail est que pendant que la science a bénéficié de l'art pour construire son image "d'un" corps, il lui était nécessaire de se défaire de l'art pour justifier son discours empirique. Ce projet conclu avec la discussion du travail d'Orlan, une artiste de performance française qui emploi la chirurgie plastique dans ses performances pour deconstruire le discours scientifique traditionnel.

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Introduction

The body is history, for "it is produced through and in history"[1]. Recent work in the cultural studies of science and medicine seeks to understand the discourses and representational regimes that have defined knowledge of human bodies. In particular work by feminist theorists of science (i.e., Evelyn Fox Keller, Ruth Hubbard, Donna Haraway, Valerie Hartoni) has sought to foreground the relation between life sciences and culture, to understand a history of scientific practices in which the production of truth depends on the effacement of culture.

This thesis is concerned with the relation between a history of representation and a history of the body as something to be perfected, understood through representation. In Western cultures, scientific understanding of the body -of the inside and the outside- has been mediated through representation. The human body has become an image modifiable at will according to Western standards of health and beauty.

I begin this thesis by exploring the concepts of inside and outside, by looking at skin as one space where the two connect and find articulation. This articulation is then examined in relation to subjectivity, especially women's subjectivity. I examine the history of body modification, drawing examples from surgery to performance art, with respect to women's bodies.

The body is of course a fabric of tissues and organs -of materials which serve an organic function; as such it remakes itself and modifies itself everyday by building new cells and letting go of

old ones or by taking in food and expelling what is of no use. Simultaneously, there is also a cultural construction and remaking of the body that both influences and is the anatomical comprehension of the body. The history of "body building", particularly where women's bodies are concerned, is the principal focus of this thesis.

Skindeep

> *"Skin shields your messy guts from the world's dangerous elements: heat, dirt, chemicals, a hug from a friend with the flu. But skin has a problem; it can't just stand guard. It covers the body with the chance to feel, and it's nerve endings engage as easily with pain as with pleasure. The pin-prick or the cigarette burn, the too-hard bite of an eager lover--skin seems fixed on such sensations, almost eager for them. And sometimes skin can't tell the difference; a hit can feel like a kiss when the body's starved for attention. Skin's just hungry, like the soul it holds inside."* [2]

Ann Powers, in her review of the latest *Nine Inch Nails* CD The Downward Spiral, says that Trent Reznor takes us to a place beyond help (help for the pain in this lonely place called life) and wants to celebrate feeling since that may be all we have left "in this darkness". What is striking here is the valorization of pain as an intense sensation that reveals the existence of a subject. "Beyond help" is where pain is not something that has to be overcome, but where his sensation is form of expression and self-creation. Trent Reznor's songs acknowledge that this attitude may be the result of desperation ("Maybe that is all I have/ Maybe this is a cry for help") which he experiences with immense intensity also in his body. But it does not matter what preceded his scream, whether desperation or anything else, what matters is the sensation, and his music expresses the piercing pain as it moves through the layers of skin,- his and the listener's.

Skin is a boundary, a surface, as well as an organ in itself. It consists of two main layers: dermis and epidermis. Dermis is the one that reproduces cells and where the sensory points are located. It is where nerve-endings activate and cause swelling of the skin in excitement and where it initiates contraction for protection against cold temperatures or in fear. The epidermis is the outer layer from which dead cells flake off. It is the one we look at when we see a person and which offers the body in the past tense[3].

As a semi-permeable boundary it is between an inside and an outside. It shields our messy guts from outside intrusions, diseases, etc., and it shields the outside from the inner world of sensorium and feeling. Like a sponge, it soaks-in affectionate contact, exhales sticky liquids, and has the ability to signal bodily and emotional irritations. Boundaries are not typically 'working spaces' except, ironically, that boundaries are *always* spaces, expanses with depth also, which must "work" to maintain themselves as clear, defining markers. The definitions for where boundaries begin or end are constantly reworked, especially with a boundary like skin which is part of a larger living conglomerate and a larger cultural environment. As a border which filters the outer world and exhales the inaccessible inner world, skin is a boundary which is always already not a boundary. Skin as a dividing surface is necessary, but it is a boundary which is a contradiction in terms because of its semipermeable properties which makes it what we know that it is: the skin, bordering on the outside and holding together the body.

This very awkward, disturbing, discomforting space/place/point/line of skin's ambiguity can perhaps best be

described as a liminal space, a threshold. In skin, one is literally on the verge, not totally inside and yet inside, not totally outside and yet definitely also outside, and one can never be quite sure where, exactly, one is with skin, and yet, one is somewhere -on the verge. This insecurity makes it discomforting but thrilling nonetheless; to be on the verge is also terrifying because one never quite knows what one is on the verge of because the definitions of what is inside and outside, before or after are never fixed or universally defined. Rather these are constantly shifting, blurring and changing. Hence one is all at once in/on/at/by/through that ambivalent space/place/spot/thing/line/point/border called skin.

The surface that it provides serves as a screen upon which identity politics are projected and where subjectivity finds inscription, expression and creation. It is a "working space" for objective and subjective experience to coexist in celebration and in abandonment of the self. Skin is also an active organ in itself; it is part of a larger organism which continuously creates and recreates itself from itself.

The work that the skin does, the shedding and recreating, is forever liminal, eternally becoming from beginning to end (like the story of death). It is a constant repetition of what has already been. This sense of continuous uncertainty and compulsive repetition, the constant shedding of dead skin, dead identities, a constant shedding of pastness to remain or strive to be present and always already dead, is a frightening kind of work that our bodies are undertaking every living, breathing, deadly moment.

The multiplicity of skin as a boundary of inside and outside, as a surface of inscription and expression, and as an actively creating organ which flakes off the dead past, problematizes the history of surgery or any cutting of skin undertaken from one outside (scientific) standpoint. Throughout the history of surgery, the sides were defined in such a way that the surgeon was always on the outside, the real world, and the inside, while shifting in boundaries, was to be explored and/or discovered -it was to be materialized in the visual materiality of the outside world. One of the main assumptions about this process was that the two have to be and can be brought into direct correspondence, whereby the invisible interior is brought to the surface where it can be perceived. Throughout this history, changing realities of the processes and meaning of life and death are resisting the striving for visual and corporeal unity which is based upon the objective, rational, scientific logic. The cutting of skin here inscribes outside cultural forces and mechanisms into the body, even the tools that are being employed to cut are extensions of the outside logic and desire. In return, the inside can find expression by surfacing on the skin and hence taking on a visible form. Through the materialization, it facilitates the correspondence with the outside. The instability of the inside, of interiority is always a threat to the logic of the scientific enterprise which established the division between inside and outside, visible and invisible, in order to protect itself from uncertainty.

Skin is the space between an inside and an outside. The inside is a sensory world that individuals often find difficult to express to the outside world. Social, cultural, and even political conditions are

part of an "official" world which does not correspond to the experience of many. David Wojnarowicz's Close to the Knives[4] is the journal of someone who does not feel that the "preinvented world according to the image of the American Dream" corresponds with his own experiences, or that he is even part of this world. This incongruency clarifies a distance between these worlds for him, which increases as he discovers how little of the outside world is part of his experiences, and how little this outside world cares for him.

Whereas David Wojnarowicz's story is the one of an HIV+ gay man who does not feel part of the preinvented outside world, his experience is shared in one way or another by a number of people of various groups. Women may have similar experiences of an outside that has a rigid image of the female subject which does not correspond to individual experience. (Of course there are many outsides that may depend on demographic factors.)

In the history of ideas and science, the life-world has been separated off to the point where it is believed to have been surpassed in a post-world, i.e., the world after. The ideology behind such pretense of having besieged nature or surpassed the human body reflects the forces of Cartesian rationality: mind over matter. Rationality in this sense is what is superior to the body or human sensation, which is weak and unreliable.

The construction of images in and by Western science reflects the desire to control its environment and epistemology. The image precedes experience in this linear model of scientific causality. And if the experience does not correspond to the image which is

presumed to be the "real" one, the personal experience has to be altered until the image has been achieved. The world is made to conform to a standardized norm in which the experience of the individual is always understood in relation to the image of one, shared world. "Our fates have already been guided in advance, in our Being with one another in the same world and in our resoluteness for definite possibilities"[5]. This perception does not account for a simultaneous authentic experience of the individual and marginalizes those who do into a space of solitude, such as experienced by David Wojnarowicz.

One example of this is the image of female beauty. Long before a woman has a sense of herself, images of what she must be are presented to her together with a code of social and sexual behaviors, all based on objective causality: if this...then this. Naomi Wolf points out that mainstream western beauty images have absorbed the Judeo-Christian rites of creation: god created man, took a rib and created woman in his image. As a result, women are treated as second rate and always need the male gaze to approve of themselves[6]. All these features of the outside world carry the stamp of their creators and work to reinforce traditional power relations; by presenting them as the one and only 'true' reality, they protect themselves from critical intrusions which might threaten the sterile immunity of the objective world.

The sensorium that the outside excludes can be found on the other side of the skin, inside. Emotions, feelings, and all non-rationality are imagined as flourishing in this undercover networld. Its presence is often ignored and wished away, just like the body

that it inhabits and which stands in the shadow of the invisible mind. It is also serves as a retreat from the objective world. As a hiding space, it provides a safe place for the development of subjectivity as it is set apart from the objective outside. Susan Bordo in Flight into Objectivity points out that the emergence of the subject parallels Descartes' ideas of the mind/body split which "created a new sense of experience as deeply *within* and bounded by a self"[7]. In the objective outside world which is also material and visible, the invisible and ambiguous inner world is reduced to a mode of existence of lesser value since it is variable and thus, unreliable.

The outside world is also inside; to go back to the example of beauty for women, in plastic surgery, beauty is inserted under the skin in the form of silicon breast implants, or beauty is gained by means of removing fat tissue through liposuction. Women's surfaces are turned inside out in the Western world both to internalize beauty images and to display sexuality for objection and deprivation[8]. Essential female body parts and processes, such as menstruation and skin transformation after childbirth, have no place in the outside world. The insertion of objects under the skin in the name of beauty puts a piece of the outside into the inside, and "...the interior gains some small share of the blissful immunity of inert inanimate objecthood."[9]

Seemingly gentler trespassers of the outside through skin into the female body are skin products. Advertisers offer creams that "lubricate luxuriously" to "ensure maximum penetration" and nourish a deserted inside, guaranteeing affection[10]. The private wish of the inside for responsiveness to internal sentience from the outside

remains under cover and is manipulated to respond to the outside demands of perfection instead of receiving unconditional recognition. In turning the inside out, this responsiveness is demanded by acts as violent as surgery and it finds ways of articulation in order to reconnect with the outside. When turned outside, the inside becomes outside and the exterior is forced into acknowledgment and response.

This form of inside-out, one that is chosen as opposed to imposed, transports sentience "out onto the external world, [and] that external environment is deprived of its immunity to, and unmindfulness of, and indifference toward the problems of sentience."[11] In The Body in Pain Elaine Scarry focuses on sensations of pain and says that "pain is "remade" by being wished away; in the external action, the private wish is made sharable; finally in the artifact, the shared wish comes true."[12] The scientific world cannot accommodate an unreliable body and attempts to replace it with the image of one objective and stable body.

Scary perceives artifacts as extensions of sentience that contain pictures of the human body but which try to make it unrecognizable: "Though the abjects are projected fictions of the responsibilities, responsiveness, reciprocating powers of sentience, they characteristically perform the mimesis more successfully if not framed by their fictionality or surrounded by self-conscious issues of reality and unreality."[13]

My initial interest in skin began when tattooing, piercing, and to some extent scarrification and branding gained popularity in the

early 1990s. I was initially intrigued by the optic modification and reassembling of the surface skin, as well as the change that such an act signifies as a mark if identity. This interest lead me to research the history of cutting the body in Western cultures for scientific/medical purpose, which I found to be closely linked to the history of representational technologies. In the first four chapters, which form the main body of the thesis, I discuss the cutting of bodies for scientific purposes, and the developing technologies of representation from the Renaissance, to the present time which informed such practices. The historical framework I employ to survey changes in surgical practices and image technologies is conventional and in a longer study it would have to be thoroughly investigated. For my purposes, however, this periodization -the Renaissance to the age of Information- enables me to consider and compare specific scientific practices within a larger historical context.

I conclude this study by examining the work of French performance artist Orlan who uses plastic surgery in a performative way. Her art questions the relationship between science-art and beauty-health, and her act is part of a feminist body politic which seeks to negotiate these questions with (and in) her body. By discussing her performance, I wish to further reveal the interconnectedness of science and art.

In the history of science and medicine, the body has been seen as pathological, and the stereotypical link between women and nature (as opposed to men and culture) opens up many questions about the epistemological context of this development. The many

representations in art of medical practice (especially surgical/anatomical) have accompanied the historical development from early anatomy sketches to contemporary computer images. As Bruno Latour points out in his landmark essay "Drawing Things Together": "The earlier we go back in the history of science, the more attention we see being paid to the setting and the less to the inscriptions themselves"[14]. In the beginning of this history, the body was the model and the aim was to document the anatomy on paper; an image was created which was to represent the body. Today, the image has become the model and the body is being remodeled according to an image, i.e. as in cosmetic surgery.

During the centuries in-between, one standard image of a healthy and beautiful body was created and it was based on the male anatomy. Until today, medical textbooks of general anatomy display only the male body unless a specifically female reproduction organ is discussed. In this thesis, I will be examining the role of women and their bodies in the history of surgery, their lack of presence, their presence as preferred cadavers, and as subjects of cosmetic surgery in the present time.

> "Medicine, like science, was based on the unveiling of nature. Woman, as the personification of nature, was the appropriate corpse for anatomy, which was not just literally male in that its exponents were male, but was symbolically male in that science was also the masculine practice of looking, analyzing and interpreting."[15]

Since the 1970s, women performance artists have come to use this pathology as a tool for self-expression and empowerment, thus

re-articulating the cultural connotations embedded in women's bodies. Finally, I will close this project with some of the questions which emerged for me during the course of this work and which might be of interest for further research.

[1]Grosz, Elizabeth. Volatile Bodies (1994) p.148.

[2] Powers, Ann. SPIN (1994) p.93.

[3] Winterson, Jeannette. Written on the Body (1992) p.123.

[4] Wojnarowicz, David. Close to the Knives (1991).

[5] Heidegger, Martin. Being and Time. (NY: Harper & Row Publishers) 1962. translated from the German by John Macquarrie and Edward Robinson, *Sein und Zeit* (Tübingen:Neomarius Verlag) p.436.

[6] Wolf, Naomi. The Beauty Myth (1991) p.93.

[7] Bordo, Susan. Flight into Objectivity. (Albany: State of New York University Press) 1987) p.53.

[8] Wolf, ibid., p.155.

[9] Scarry, Elaine. The Body in Pain (1985) p.285.

[10] Wolf, ibid., p.119.

[11] Scarry, ibid., p.285.

[12] Scarry, ibid., p.291.

[13] Scarry, ibid., p.325.

[14]Latour, Bruno. "Drawing Things Together" in Representations in Scientific Practice. (1990) p.42.

[15] Jordanova, Ludmilla. Sexual Visions (1989) p.110.

A History of Surgery

1 - The Renaissance

> *"We remain poised between the body as that extraordinarily fragile, feeling, and transient mass of flesh with which we are all familiar -too familiar- and the body that is so hopelessly bound to its cultural meanings as to elude unmediated access."* [1]

The cutting of human bodies, dead or alive, has been the subject of controversy for centuries. Questions and issues surrounding the cutting of bodies have seemingly always played a part in the healing procedures throughout time and across various cultures. In Western accounts, the cutting of bodies in medicine is part of the history of surgery, and locates its roots in Antiquity. India, China, and Japan are some of the cultures in the Far East where surgical procedures have had significant influence on medical practice.[2] Other cultures in which surgery has played an important role, are the Jewish and Islamic cultures. In all cultures, the need for such a practice is at least partially related to their history of war; wounded soldiers required medical treatment that went beyond herbalist approaches. Until this century, surgery advanced most significantly and increased its social status and credibility during war periods.[3]

The Western history of surgery has been mostly influenced by the knowledge of the Greek and Roman practitioners of medicine. This knowledge remained somewhat ignored and especially unverified until the end of the Middle Ages, when scientists began to study and

examine the findings of the Ancient philosophers again. There was also a trend towards new primary research and scientists began to rely less on ancient knowledge but began to experiment themselves. Mundinus (Mondino de Luzzi, 1275-1326) revolutionized the study of anatomy by personally and publicly performing human dissections, -the cadavers were those of executed criminals. His main work, *Anathomia*, concentrated on surgical techniques and instructions; but because of his research, he was able to reveal some of the errors of previous surgeons due to a lack of understanding of basic anatomy. Although his book was primarily an instruction book for surgical procedures, it still served as the basis for anatomy for about two centuries. Ira Rutkow points out,

> "Most of the early interest in human anatomy was directed toward mediocolegial purposes. Although understanding the human body was an important concept, the main social force that finally allowed dissection was the attempt to determine the causes of death or to learn the nature of diseases, especially during epidemics." [4]

This indicates a shift in the way research was undertaken and its role in the cultural context. Before this time, the end of the Middle Ages, barber-surgeons had gained prominent status to cure certain diseases, such as hernia and hemorrhage, as well as the healing of open wounds. The cutting of the body was part of the healing procedure of an already wounded or ill body. With the increasing interest in understanding the development of diseases and how they eventually lead to death, surgeons realized that a better knowledge about human anatomy was needed, and began to study the body increasingly through dissection, that is, cutting bodies for research purposes and not merely for healing.

The new world view which emerged during the Renaissance defined and influenced equally science and art. But the shift towards this new way of perceiving the world was more gradual than it may seem from historic writings which tend to place a more solid border between the Middle Ages and the Modern Times, between pre-scientific and scientific thought, and between a more oral culture to a more visual one. "No 'new man' suddenly emerged sometime in the sixteenth century"[5]. Instead, the changes in the Renaissance directed the world view in a particular (scientific) direction, and later developments defined more clearly the direction that had begun to emerge from this early reformation. Similarly, historical accounts of medicine often portray the rise of surgery during the Renaissance as a turning point between savagery and civilization wherein the formerly inaccessible (body) could be conquered[6]. As much as the Renaissance was a changing point in many ways, such changes were often limited to the reality of those who expressed them and it took a long time before they trickled through all layers of the fabric of culture.

Surely, one of the most significant inventions for Western culture during this time was the printing press and its role in the larger change towards a more visual culture. But it alone is not responsible for the increasing importance of the visual; it did not directly advance thoughts but helped to organize the already existing knowledge. "The printing press does not add to the mind, to the scientific method, or to the brain; it simply conserves and spreads, no matter how wrong, strange, or wild."[7]

The question remains, and Latour asks it again, following Alpers and Foucault: how did the same eyes suddenly begin to look at representations? And he answers again with reference to Foucault, that medicine does not become scientific in the mind or in the eye of its practitioners, but in the application of old eyes and old minds to new fact sheets inside new institutions.[8] The new "fact sheets and institutions" are ways in which the changes manifested themselves, the language though which they were conveyed. New ways of expressing knowledge permit a shift in thought. Dagonat has shown, that no scientific discipline exists without first inventing a visual and written language which allows it to break with its confusing past.[9] To look into the cadaver enables a break with an understanding of the body which could not until then conceptualize what was going on inside, and the location of life forces changes from outside the body into the body. The bodies remain the same in their anatomy, but before, this anatomy did not have the same importance nor was there a way of explaining what it was that one was holding inside oneself; the shift towards visualization indicates both a change in what it is to see and what there is to see.[10] The new language used to express this truth was pictures; images which on a two-dimensional surface represented the three-dimensional reality. This simplification of a real body flattens out confusing layers and universalizes the access to these anatomical observations.

Still, Renaissance surgeons had to rely mainly on the knowledge of ancient times, and it was not until the Enlightenment that the findings of the Renaissance were grounded and

universalized through empirical methods. Early Renaissance artists, such as Leonardo Da Vinci, Albert Dürer, or Michelangelo performed the most exacting human dissections in their studies of human anatomy, but with little effect on the progress of science. The artistic illustration of anatomy allowed for very precise mappings of the human anatomy, and they combined scientific accuracy and artistic ability. Donatello (1386-1486) was the first artist known to perform dissection to further his artistic efforts, but it was Leonardo DaVinci (1452-1519) who founded iconographic and physiologic anatomy[11]. Da Vinci had a strong background in mechanics, and this knowledge and interest persist in his anatomical studies through which he was able to gain better understanding of how the body was "constructed". His dissections and paintings were guided by his analytic perception, and he was devoted to finding a rational grounding of beauty in the body, which motivated him to undertake anatomic studies of the body. His findings and paintings represent the (mainly male) body with a precision that was also of great use to the students of anatomy. His approach to representing bodies and their beauty remained on the surface of these bodies because he never painted the inside of the corpses which he must have encountered during his numerous dissections. He never painted the death of the bodies, the pathological developments of bodies, or disease, and because of this, his approach to studying the body has been compared to the one of an architect who maps surfaces[12]. This surface thinking can be understood in the larger context of the time which had a generally flat and schematic view of the world. DaVinci was on the cusp of

that shift to the third dimension which stands in relation to the increasing concern with the interior of bodies, the subject of anatomy.

Andreas Vesalius' (1514-1564) book on anatomy, *De Humani corporis fabrica*, was the first book entirely based on observation and dissection. Like DaVinci before him, the precision of his drawings was remarkable from an artistic and a scientific point of view. The main difference between DaVinci's anatomy portrayals and Vesalius' is that the former concentrated on representing the living human body, while the latter portrayed the cadavers as he studied them. DaVinci's bodies have life in them, but Vesalius bodies lie before ones eyes dead and cut open. Vesalius also did not only portray surfaces, but he illustrated cross-sections of organs in great detail. Vesalius' work shows that his knowledge of anatomy is based on what corpses are revealing to him. DaVinci's knowledge still sought to ground knowledge about life and truth in life and his interest in mechanical functioning and movement are present in his anatomic representations in which the bodies, although based on cadavers, always have a certain dynamic tension and reinvest in life; Vesalius, on the other hand, anchors his knowledge in death and his portrayals of human anatomy show this in every detail.

The studies of anatomy from this time period, however, are all "personalized" and brought close to the living anatomy through the details that accompany the medical illustrations, such as mustaches or hair on the head, or through the elaborate background landscapes. Philippe Comar identifies a parallel development at the

margins of this essentially medical tradition which is pursued by Michelangelo, DaVinci, Vesalius, and other less famous anatomists at the time. "Skinners", on the other hand, were sculptors and painters who represented human morphology in their work in a more universalizing way. Without personalizing details such as hair, beard, skin, or even gender identifying signs, the work of these "skinners" is more abstract and impersonal.[13] The identity of the bodies vanishes and their representations attempt to unify bodies into one standardized form which underlies all bodies.

There were many branches of medical studies which helped along the development of surgery. Anatomy was one of the two most influential areas that advanced surgery, pathology was the second one. Although Morgagni, a surgical anatomist, is commonly held to be the direct originator of pathological anatomy, Antonio Beniviendi (1443-1502) was the one whose work grounded the research to follow in pathology. Beniviendi's work distinguished itself through his habit of performing autopsies after his patients' death, a rare practice at the time. For his post-mortem examinations, he often had to obtain permission from the pope and from the patients' relatives. His detailed records reveal that he did not dissect the bodies but that he performed only incisions; his drawings were accordingly sketchy.[14]

During the Renaissance, the human body was seen as the source for truth and knowledge about life in the art world, philosophy, and medical science. But the basis for this new way of exploring and gaining knowledge was not yet clearly documented, and growing

practices such as surgery did not take on a defined direction until the seventeenth century.

Surgeons continued to practice and apprentice without handbooks or any standardization of techniques, rather, the procedures were mostly kept and sold in secret, and in spite of innovations in anatomy and pathology, traditional forces in surgery impeded its advance.[15]

In his historical review of surgical practice, Owsei Temkin points to the social relations of medical and surgical therapy; he claims that during the Renaissance, surgeons were the healers of the masses and physicians were mainly treating the aristocracy16. He elaborates that common people were more ready to receive the severe treatments of the surgeons than were the aristocracy. One of the treatments that distinguished the two practices was the use of mercury. Surgeons used mercury more readily than physicians. "Physicians reckoned a physiological or individual concept of disease and surgeons an ontological or disease-entity model[17]."[18]

Physicians and surgeons remained two different practices during the Renaissance, but surgery was gaining social status, and by the end of the sixteenth century, surgery had attained a respected position within the world of medicine. Each country began to develop schools of surgery in addition to the existing divisions between itinerant surgeons, barber-surgeons, university-educated surgeons, and physician-surgeons. Although surgery was a widely accepted form of healing, other schools of healing which did not rely on the cutting of bodies were also very influential during the

Renaissance; the most well known school might be the one founded on the methods of Paracelcius, who insisted on herbal treatments instead of amputations or incisions.[19]

During the Renaissance, surgeons had claimed the interior of the body as their domain and as an object. Of course the "surgical point of view" in history is not value-free or timeless (in other words, it is only one in which history can be understood). This history has a particular way of describing the body and disease which in turn shaped bodily knowledge. The intellectual invasion of the body triggered by the rise of dissection goes beyond the use of pathology; these are part of a larger context of attempts to localize disease and to illustrate death through mappings of the body. Various schools at the time revealed epistemic differences, for example the French and British schools localized disease differently. In one, disease was connected to one particular organ, in the other, it was perceived as affecting all other body parts as well, but with varying intensity. The possibility of a view of the body which appears more interconnected and less divided had to surrender in the coming century to a model of the body which systematically divided the body into separate parts. It was grounded in the knowledge retained from Vesalius' drawings which were soon followed by physiological specifications and a localization of the system. Once the human dissection had become the medical rule, the body was progressively *organ-ized* into discrete functional systems. Given this practical framework of localization and of place, the illnesses

of body could hence be viewed as treatable as specialties by specialists. "A place for everything, and everything in its place."[20]

The nature and significance of body organs were profoundly re conceptualized with the practice of dissection, and so were the concepts of health and disease. The perception of the body before the Renaissance, stemming from ancient Greek knowledge, was connected to its environment, and the disease was not localized in a specific body part.[21] The radical materialization of the body in this period, encouraged by dissections and the visualizations and as the opposite of spirited animism, has to infuse life into what is inanimate: visual aids that represent bodies, represent life in drawing bodies which are based on cadavers. The body itself serves only as a basis for all the possible work which follows the representation and interpretation; the body on its own can only reveal so much, and once the anatomy was well documented, more "meaning" was added to the human anatomy. When the world could not be controlled and explained by understanding it as a powerful system functioning according to higher powers (Middle Ages), meaning and justification for life was sought in the body; "when they first cut open a cadaver they are struck not so much by the wonder of what is there but by the wonder that is all that there is."[22] Death and life came together in the representations of corpses that were infused with the desire to explain life. This desire was shared by both artists and scientists. The body was the new basis for the incommensurability of life and death, illness and health, and female and male. The relationship between the male and the female was defined by difference but in the building of systems and

hierarchies, language could not account for women and these differences were erased in the one, true model of the body: the male. "The more Renaissance anatomists dissected, looked into, and visually represented the female body, the more powerfully and convincingly they saw it to be a version of the male"[23]. Just as it is easy to forget that a corpse that served to explain the living body is not a living body, it is also easy to overlook that, despite a certain resemblance, the female body can not adequately be represented by a standard version of the male.

[1] Laqueur, Thomas. Making Sex: Body and Gender From the Greeks to Freud (1990) p.12.

[2] Rutkow, Ira M. Surgery, an Illustrated History. (1993) p.67.

[3] Rutkow, ibid.

[4] Rutkow, ibid., p.113.

[5] Latour, Bruno. "Drawing Things Together" in Representation in Scientific Practice eds: Lynch, M. and Woolgar (1990) p.19.

[6] Lawrence on ideas by Turner, in: Lawrence, Christopher Medical Theory, Surgical Practice (1992) p.30.

[7] Latour, ibid., p.34.

[8] Latour, ibid., p.31,37.

[9] Latour, ibid., p.36.

[10] Latour, ibid., p.30.

[11] Rutkow, ibid., p.128.

[12] Comar, Philippe. Les Images du Corps (1993) p.72.

[13] Comar, ibid., p.79.

[14] Rutkow, ibid., p.139.

[15] Rutkow, ibid., p.127.

[16] Lawrence, ibid., p.18.

[17] Lawrence, ibid., p.19.

[18] Lawrence use of the terms ontological, as he explains, is one that understands ontological as identifying disease with a specific entity which might be clinical, pathological, or etiologic, but not all of them at once. He explains that the ontological physiological distinction is actually one of the early nineteenth-century. (Lawrence, p.42 footnote 107)

[19] Paracelcius qualitative examinations of humans were considered to be part of the iatrochemical school which was in opposition with the iatromathematical school that understood the human body and its physiological functions as a machine that strictly obeys the laws of physics and mathematics. One of its major adherents was Descartes who himself in his book *De Homine* treated the human body and its pathological conditions as a material machine directed by a rational soul which was located in the pineal body. Rutkow, ibid., p. 192.

[20] Sheets-Johnstone, Maxine (ed). Giving the Body its Due (1992) p.142.

[21] Sheets-Johnstone explains that the body was seen according to the balance of certain elements which were either in harmony or disharmony, which was the origin for disease. The environment played an important role in maintaining this balance, and overall, health and disease were a question of proportion. During the Renaissance, the body became the center of interest the emerging perception viewed humans less as affected by larger balances but as somewhat separate from the environment and others, and organized the concepts of health and disease according to discrete systems. Sheets-Johnstone, ibid., p.141.

[22] Sheets-Johnstone, ibid., p.137.

[23] Laqueur, ibid., p.70.

2 - The Enlightenment

"The discovery of the bleeding heart is the last act of both the tragedy of the blood and the terrible price of treason." [1]

Renaissance surgeons mostly had to rely on and work with the knowledge of the ancient times, but the surgeons of the Enlightenment were able to ground their knowledge in the recently gained empirical knowledge of anatomy, operation techniques, and newly designed instruments[2]. With the help of the scientific revolution, one of the biggest mysteries of the human body until then could be solved: the functioning of the blood-system and the heart. The speculations that Galen had proposed in the second century A.D. could finally be proven wrong through means of experimentation.[3] Vesalius had also maintained that Galen's theories did not match his findings during dissections, but he was unable to explain how the heart pumped blood from the right chamber to the left, and through the entire body.

This epistemological shift also reduced the artistic aspect of surgery, but it allowed for the surgeons to obtain equal status with physicians because both relied mostly on the knowledge of anatomy. The art of surgery became increasingly the science of surgery. While approaching the status of a university-learned practice, surgery also distanced itself from its former tradition as a craft. Surgery and physic became two different disciplines that worked closely together, both grounded in knowledge of anatomy and pathology.

The cutting of bodies into pieces through dissection challenged the underlying principle for identity based on a coherent and integrated mass of body. During the seventeenth century, this fundamental attitude changed and parallel to it the social role of dissection. While before, there had been a certain reluctance towards this practice, which meant that dissection was predominately conducted with doors closed to the public and it was more difficult to obtain bodies (mostly those of prisoners that had been sentenced to death); by the end of the seventeenth century, almost the opposite was true and the practice had gained much popularity to the degree that dissection theaters served to amuse the public[4]. [5] An entirely different attitude towards dissection and the understanding of the relationship between identity and body permitted this rapid shift, and it was linked to the overall changes of thought and practice as an outcome of the scientific revolution. Descartes' dream was the body based on a model of a corpse cut by the anatomist, a body which is stuffed with organs, displayed at the moment, and fixed within a network of inscribed force.[6] To master the body and to de-realize it by imposing a division of object versus subject upon it, the flesh is made to contribute to science but as an inferior object. The subjects (surgeons in this case) are dispositioned at an inner distance from themselves and locate the living body away from an ambivalent interior to the outside of the margin of discourse, and thus amongst other objects. "To discourse is now to live; this body is beyond the limit."[7]

This development during this period has been explained in terms of the initial abandoning of the body which was to characterize subject-object relations until the present. One of the most often discussed examples of artistic expression of the "abandoned body" and the objectification of the body in medicine is Rembrandt's painting *The Anatomy Lesson of Dr. Nicholas Tulp* (1632). It is one example of the many paintings and drawings of anatomy lessons which were very popular at the time, not only for medical purposes but like in this painting, for portraits. Since dissection had been legalized public performances of them served public amusement and it is not surprising, given this context, that the emphasis in this painting is not on the cadaver but on the portraits of the men surrounding the corpse.[8]

The painting also gives an indication of the relationship between the scientist and the cadaver before him, and of the emerging scientific attitude. Placing the painting in the cultural and historical context of the time, Barker writes: "The abstracting operation by which modern knowledge will master flesh, even at this more or less initial moment, emerges in the painting at the very point where Tulp's forceps, and the social relations of domination they mediate, transform the corpse of Aris Kindt into a resource for epistemic processing."[9]

After the body's anatomy had been well accounted for, the body itself became the obstacle to the dream of the scientist who was continuously searching for infinite truth. The corpse takes had taken the place of the "abandoned" body and becomes a specimen. Integrated in the development of the scientific discourse is the

growing importance of vision and sight, to which the finite body is an obstacle because it cannot give what is sought to be seen; within the space of linear perspective vision there is reason and motive to abandon the body and to recreate a vision of a body which will be able to satisfy the demands of science (and the dreams of scientists).

The body within the linear perspective of vision is less important as a source for carnal knowledge of the world, less destined to make sense of the world itself[10]. The definition of the body had shifted from the living body to the cadaver, and was increasingly defined according to anatomical functions -by what the body is not how it lives in the world. Romanyshyn explains well that the main difference is that the body of living flesh is which one is, and it differs from the body as anatomical object which one can have -"can have", he explains, because corpse is an invention in relation to the adoption of a specific attitude which is rooted in linear perspective vision[11]. As such, the body with which we actively live in the world is different from the body which we have come to know about in the history of medicine.

At the same time that the living flesh was discursively divided from the body and the dead body comes to represent the body in general, the idea of one body was well established and women's bodies were absent all together. Mirroring the social order in Western cultures, this development was reinforced and ingrained by the overall changes towards division and power ranking. The subject versus the object and male versus female are examples of the

emerging attitude towards the splitting in superiority into opposites.

The cultural and social aspects of the seventeenth century prevented medicine and surgery from becoming more integrated fields of research with an interconnected communication network among the researchers, and surgery was struggling for recognition.

By the end of the seventeenth century, the necessary role of surgery within the context of medicine had become clearer. The interdependence between internal medicine and surgery increased during the eighteenth century and was cultivated on the common ground of eighteenth century pathological anatomy and physiology. But it was not until the end of the eighteenth century that surgeons were able to rise above their former status as craftsmen and technicians to become professionals equal with physicians; this was mostly because surgery became increasingly grounded in the principles of physiology, pathology, and anatomy. Although eighteenth century surgeons became more and more university-educated and less apprenticed, many of them learned from their work in the military service and the battle grounds of the ongoing wars.

In the eighteenth century, the administration of military medicine became in many European countries a function of the government. The wars of succession during this period involved almost every nation in Europe and surgeons were employed directly at the battle fields where wounded soldiers were treated before

being transported to a hospital in the nearest city. During this time period, surgeons contributed significantly to the reformation of hospitals by making the first suggestions towards modern principles of military sanitation, especially concerning the ventilation of hospitals.

In general, the eighteenth century, or the Age of Enlightenment, was characterized by rationalism, empiricism, which lead to elaborate classification and systematization of and in knowledge.[12] The efforts of categorization resulted in the publication of specialized medical texts through which it was possible to account for even previously ignored pathological findings. Internal medicine was the main interest of medical research during the eighteenth century, and it mostly relied on the findings of pathology and anatomy. As in previous centuries, surgery played an increasingly important role in defining the knowledge of these areas. During this century, although at various times in the different countries, surgery rose above the traditional social status as technicians or craftsmen and became equal with medicine and grounded in science.

Medicine was entirely based on pathology which served as the bases of perception towards disease and death. The tendency is well illustrated in the medical portrayals; they document that by the end of the eighteenth century, the "art" of portraying dead bodies is at a peak of interest and perfection. Cadavers are painted with such precision and reveal the desire to transform the body into a translucency which at this point of anatomic knowledge is beyond mere desire to discover details of human anatomy; the voyeuristic

aspects and the sensationalism attached to the anatomic theaters are witness to this development. Comar notes that in this excessive precision, the skinned body image, far from revealing its mysteries, offers a frightening strangeness[13].

Apparently, in the circle of medical practitioners, this sensationalist aspect had also critics; Xavier Bichat, founder of pathological anatomy, was one of them. His main work, *Anatomie générale*, does not contain any pictures. He criticized the popularity of the exaggeration of the anatomic details because in his opinion, this way of description had little to offer for medical progress. (Comar, p.81) At the end of this century, the sensationalistic aspects of dissection, along with the strong artistic interest in anatomic representations, began to diminish, and surgical demonstrations moved increasingly behind closed doors again, away from the public.

Different historians place this change into different time periods. Rutkow explains that this move away from the public took place in the eighteenth century, whereas Lawrence places it in the nineteenth century. One of the possible reasons for this incongruity might be that these changes most likely occurred at different times in different countries, and the authors' sources might be culturally biased. Despite this time delay, philosophical and cultural trends spread throughout Europe and increasingly so with means of developing communication technology. Overall, the most important advancements in surgery until the end of the eighteenth century took place in Europe. North-American surgeons were not as divided from medical practitioners as they had been in Europe, but they did not at

that time contribute much to the advancement of the field; overall, they were more practice oriented.

The changes in thought during the Age of Enlightenment due to empiricism did not directly lead to radical advances in surgery or medical research overall, but they lay the groundwork for scientific research during the following centuries. "The full impact of cardinal features of eighteenth-century clinical medicine - the introduction of postmortem examinations, new methods of testing that yielded more precise diagnosis, and the use of preventive inoculation- would not be apparent until the following century."[14]

In other areas, the changes of the Age of Enlightenment are as important and also influence current perspectives in epistemology and science. During this time, the division between the public and private spheres reorganized the power relations between the state and citizens, the body and soul, and language and meaning[15]. Along with increasing privatization, a reinforcing and controlling structure was build on which Foucault has given elaborate analysis. Foucault also talks about the interiorization of these power relations and the disciplining control mechanisms, whereby these outside mechanisms reach into the existence of a person who reproduces them, and "The state succeeds in penetrating to the very heart of the subject, or more accurately, in pre-constituting that the subject was one which is already internally disciplined, censored, and thus effective support of the emergent pattern of domination."[16]

The privatization of the body allows for its objectification, to perfect what has begun in the Renaissance: the regulating and

controlling of the body, of the messy anatomy, and the search for an essence in this interiority. But all this to find nothing, no essence, no controllable soul, nothing but an unfulfilled interiority and the absence of life in the objectified cadaver. In such a moment of reality, of perhaps confusion and disappointment that the imagined depth of the body turned out to be less mysterious than expected, control and regulation become important in dealing with patients and with bodies. Diseases were still uncontrollable, people were still in large numbers dying of smaller illnesses, and the body had not been subjected to science.

The more science tried to be objective, the stronger the gap between subject and objects became defined, again, in many areas, not simply scientific research, and by the end of the eighteenth century, sexuality had been created as a human attribute with a specific object: the opposite sex[17]. The emerging relations between state and private agents, objects and subjects, and women and men are witness to the changes which lead to a doubling of outside changes in the interiority of bodies. When the body lies displayed before the emotionally detached dissector, the scientist, depth is not in the figure of interiority by which the concealed is of another quality from what is external, but by a doubling of the surface[18]. The body was reduced to its functionality in a mechanistic form, and the uncertainties about illness and health were a threat to the desire for control and infinite power. Scientists had taken on the responsibility of a god-like power to determine and manipulate life and the world, but failed at the most basic level: the body, which did not offer itself in the expected ways.

One of the deepest fears was the one of death, and closely linked to life, it remained a mystery, whereby illness was a sign of death and revealed a danger to the treasure of life. The concept of life was one detached from death and became more so as pathology separated itself from healing but became an area on its own (ultimately to serve healing, but not directly). Based on the ongoing scrutiny and surveillance, the ideal body which was holding health and life, namely the male body, the opposite was split off during this time, the female body, which was deemed unhealthy and deviant[19].

Women's bodies became more integrated into the social and clinical discourse, but as inherently diseased or pathological, and "they were in effect "reduced" to sexual functions that were seen to account for a host of neuroses and maladjustments".[20] The establishment of such opposites allowed a categorical determinism of how life and the world was functioning and reduced not only women to a diseased object, but also reduced the complexity of all things to an either/or position in an imagined certainty.

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[1] Barker, Francis. The Tremulous Private Body (1984) p.90.

[2] Lawrence, ibid., p.5.

[3] Rutkow explains that prehistoric humans must have known that blood was in motion when they cut open a living animal or saw a bleeding vein or artery. Aristotle believed that the heart is the center of all life, and Hippocrates understood that a "certain force" entered the heart and motivated the heart. Galen believed that the blood moved from one heart chamber to the other through little pores. Galen's misconception was so widely accepted for centuries mainly because of his authority. Rutkow, ibid., p.186.

[4] Comar, ibid., p.79.

[5] Molière, in Le Malade imaginaire, writes: "Il y en a qui donnent la comédie à leurs maîtresses, mais donner une dissection est quelque chose de plus galant."

[6] Romanyshyn, Robert D. "The Human Body as Historical Matter and Cultural Symptom" in: Sheets-Johnstone, Maxine (ed) Giving the Body its Due (1992) p. 160.

[7] Barker, ibid., p.67.

[8] Even Nicholas Tulp, the dissector in Rembrandt's painting, is better known for his appearance in this painting than for his pioneering work on beriberi or his description of the ileocecal calve ("Tulp's valve"). Rutkow, ibid., p.189.

[9] Barker, ibid., p.78.

[10] Romanyshyn, ibid., p,162.

[11] Romanyshyn, ibid., o.168.

[12] The most well known classifier of the time was Carl von Linné or also known as Linnaeus (1707-1778), who invented the system of binomial nomenclature and attributed to every living being a generic or family name (genus) and a specific or given name (species). Linnaeus was the first to classify humans as *Homo Sapiens*. Rutkow, ibid., p.229.

[13] Comar, ibid., p.80.

[14] Rutkow, ibid., p.237.

[15] Barker, ibid., p.10.

[16] Barker, ibid., p.47.

[17] Thomas Laqueur explains how the sexes came to be seen as opposites in the history of medicine while being forced into what he calls the one-sex-body; all anatomy was based and illustrated on male bodies, whereby the female body was always but a version of the male, and of lower rank.

[18] Barker, ibid., p.28.

[19] Spizack, Carole. "The Confession Mirror: Plastic Images for Plastic Surgery" in Canadian Journal of Social Theory, Vol.XII, No. 1-2 (1988), p.38-50.

[20] Spitzack, ibid., p.39.

3 - Industrialization

In the early nineteenth century, the continuing scientization reinforced the power relations which had begun to emerge during the previous century. Female biology did not parallel male biology; rather, women were seen as men turned outside in[1] which grounded the question of inequality no longer in politics, but stressed the difference in biological facts. Women were "explained" in terms of ovaries and uterus, and were reduced to a pathological biology. The inside of women in science was not even accessible to women in the emerging language of medicine, but the focus on the female reproduction organs rendered their interiors accessible only to gynecological experts.

> "*Women have become over history the problematic sex, indeed the sex.*" [2]

The scientific attitude of investigation and exploration of the female body relates to the desire to claim the territory of the inside, the body, and to control it or even reduce it by exercising power over it. The relationship between female patients and medical practitioners (generally only men) is reflected in the attitude which prevails in the scientific method. The very terms in which knowledge, nature and science are understood are suffused with gender, "partly through the tendency of ancient origin to personify them, and partly because, as a result of personification, we think of the processes by which knowledge is acquired as deeply sexual."[3]

The scientific method, based on the looking into and thereby intellectually mastering of the object and of nature, is expressed in the attempt to unveil women in order to make visible the core of their sex[4].

In the late eighteenth and in the nineteenth century especially, there was a particular obsession with the female body for dissection. The interest in women's biology at that time, whatever else it may have accomplished, mediates implications beyond the explicit content of operative success. Elston writes:

> "The underlying controversy over ovariotomy in the 1870s and 1880s was not just technical success but the values the operation symbolized and threatened. The key question was whether it unsexed women. Destroying women's essence was, to critics, the ultimate example of [...] the investigate attitude taken to its logical extremes, reducing the living patient to animal or even inanimate status."[5]

The literal violence of dissection against women in particular eroticized the body on the operating tables and opened up questions surrounding sexuality. One of the questions which had to be resolved in order to be able to look into women at all was whether it was decent to insert an instrument into a virgin[6], since in the general culture it was indecent for women to display their bodies. It was indecent for a woman to have sex outside a marital relationship or to masturbate (and perhaps insert herself objects into her vagina), but it was acceptable for strangers -men- to insert whatever into the vagina, justified with scientific detachment and non-pleasure for the woman. Thus, further boundaries implying clean/dirty,

pure/defiled, healthy/pathological were established, whereby the (male) scientists divorced themselves from presumed evil associations. They viewed themselves as clean, knowing about health, pursuing puritan goals and without bodily desires.

Jordanova discusses the popular use of wax models at this time and how they gave an erotic dimension to the unclothing and dismantling , parallel to dissection, that permit an even deeper looking into the body[7]. All these techniques reveal the desire to remove layers, a desire which stems from the eighteenth century concern with the organic layering of body membranes. Physiology was based on assumptions of bodily depths, dissection and analysis were the tools to unveil this depth. The penetration of organisms served to approach the origins of life, and "going deep into the body meant going deep into time"[8]. All the questions that scientists had they explored in the depths of the body. The hidden and invisible , and until then unknown depth of the body was the ideal(ized) space for scientists where they could explore all their questions.

During the eighteenth century it was taken for granted that the human body was legible, even if there was not one explicit theory of how it should be read. The visible indicators of the surface no longer rendered the desired truth and invisible traits were located inside the body. Material reproductive processes and organs came to be associated with an abstract concept of femininity which replaced the direct experience; the abstract *idea* of gender was easier to control because it was constructed at a distance from the actual person. No real advances in the pursuit of universal knowledge can be claimed, even as science and medicine gained more knowledge about

anatomy since the confusing reality of experience could not be controlled. Concepts of masculinity and femininity were not stable and were simply acted upon in the gendering of medical images of the body; the representations which served to differentiate between the masculine and the feminine served the attempt to stabilize, control, and systematize knowledge.[9]

The representation of a woman's body in the process of being dissected is historically significant because it relates directly to the idea of unveiling and to the assumption that anatomical and surgical knowledge unveils the body and the/a truth about nature.[10] At the same time, anatomy alone could not "read" the body in a temporal sense but only spatially through the examination of surfaces. Anatomy offers the body as a cadaver and the search for answers about life could not be found there. The medical gaze had to find a new way of looking: vertically, from the surface of tissue to symbolically expressed depth on surfaces; the same surfaces were not just cells and tissue as themselves ill or healthy, but they now expressed symptoms of unseen processes and concepts. Foucault finds two key factors in this development: the joining of a temporal conglomerate of symptoms and a coexistence of spatial tissues, and the connected shift in perception concerning disease and death in relation to life[11]. Before this time, the focus on cadavers as anatomical material allowed a controllable, fixed procedure which did not have to be concerned with temporal development of disease since no further development of the disease could take place in a dead body. The symptomatic examination of disease in process,

closely linked to life, requestioned the concepts of life/death and disease/health, leading to a new perception of clinical anatomy[12].

During the course of the nineteenth century, the mode of the scientific method changed from the view that every piece of evidence can be directly observed and reproduced to a more interpretative one. The methods of experimental science, developed during the sixteenth and early seventeenth century by Galileo and others, were slowly replaced by 'conjectural' or 'divinutory' knowledge which allows the observer to understand much more than what can be directly seen.[13] Carlo Ginzburg discusses this shift in science, the arts, and in the attitude of the forming nations in which the state apparatus was increasingly controlling and classifying knowledge, and he identifies the traces of the "Morelli method"[14] -based on the interpretation of small clues- in various areas of culture at the time. Ginzburg discusses in particular the conjectural method in the arts with Morelli, in the method of police investigation (Sherlock Holmes), and in the perception of the human body (Freud). This development in the methods of investigation in diverse fields is linked to larger cultural developments. The rise of nationalism during this time encouraged the sophistication for methods of systematization and classification which are rooted in the previous historical periods. One example which is in relation to both the growing nationalism and the shift in investigation and interpretation, similar to the Morelli method, is the use of fingerprints as a means of identification of people. Like the Morelli method, the identification of the individual by fingerprints concentrates on a small detail of a person from which the entire

person is identified. This method contributes effectively to the controlling mechanisms of the emerging states by giving the state access to identifying characteristic details of the bodies(skin) of its population, and expresses the need to regulate and perfect a national body for militaristic and trade purposes. From such a *clue,* a possible criminal personal history could be inferred. In medicine, outer features served to infer an individual unique, but masked history, whereby "physiognomy and phrenology involved *reading* the hidden properties of the soul and the intellect.[15]"

The trend towards the formation of nations during the nineteenth century lay the ground for the nationalism of the twentieth century. In Imagined Communities, Benedict Anderson understands nationalism as a cultural phenomenon that is the result of many historical forces. Anderson attributes the ambiguity surrounding nationalism and any definition of it to the ambiguous nature of artifacts. He writes that "nationalism is not the awakening of nations to self-consciousness: it invents nations where they do not exist.[16]" This invention of nations is based on certain characteristics shared by a group of people which are to make up the nation. Based on these characteristics, a larger invisible identity is inferred, similar to the conjectural method or the Morelli method. "Nationalism is not the awakening of nations to self-consciousness: it invents nations where they do not exist.[17]" This official recognition of invisible traits which gathered populations under the wing of an organized conglomerate of culture corresponds to the visualization of invisible truths in a variety of political and ideological constellations, such as science, medicine, and art. There

also the invisible reality was made public by inferring from visible details -clues, which lend themselves to the interpretation of the observer. This logic of inferring is only possible if a standard interpretation is given concerning what is being inferred and modes of analysis, otherwise one small detail will invoke radically different interpretations in every observer. The previous century especially had laid the ground work for a unified standardization so that people familiar with this method would be able to make sense of out-of-context details. Many laws and regulations were passed to ensure the unification of nations as states. The application of these laws and rules were the artificial communality that people shared in the nation states of Europe, since often times, the states were formed according to the borders of the former empires which gathered many different nationalities. Others were more culturally unified but still needed to organize and structure the diverse cultural groupings. Examples of the increasing standardization which implemented a more homogenous reality in many spheres, even the private, since the regulation of the individual through public laws makes the state reach into the personal sphere; Foucault discusses this as the panopticum in *Discipline and Punishment*. Examples in other areas than the legal system are: the implementation of a uniform public education system or the regulation of the Medicare system. The recently gained knowledge in bacteriology and other scientific areas encouraged the standardization of hygiene practices in hospitals and in the general population.

At the end of the nineteenth century, in line of this methodological development, Sigmund Freud also interpreted "clues"

to understand the invisible workings of interiority and individual histories. By the time that Freud argued for this mode of interpreting larger conglomerates, namely by studying characteristic details, the "conjectural" method had become significantly influential in the science and the humanities. Small, visible details were viewed as able to furnish an understanding of a deeper reality which is inaccessible when looking at the entire organism. This is the similarity that Ginzburg detects in Freud's symptoms, Holme's clues, and Morelli's features of paintings[18]. The more the detailed features of the individual took the place of the whole body, the less it appeared possible to construct a body of rigorous scientific knowledge[19].

With this interpretative method, a body of knowledge, a body of medicine, a body of interpretation, a body of discourse, -a body could be invented from the clues that were obvious and visible, and this attitude allowed for an embodiment of the invisible and a disembodiment of the visible. Aided by the developing technologies to visualize the body without wounding it, the solid body "evaporated into appearances through circuitry.[20]" The abstraction of the body into images, along with the regulative norms and the increasingly "clean" (hygienic) body during this period encouraged the emergence of an aesthetic idealization of the body. An idealized form of the human body -- one standard, perfect body -- could be abstracted from the messy and unclean model (namely the actual alive body) and given form in the image. In the image, it was possible to attain the idealized form of the human body, filled with health and life.

The actual body in a holistic perspective had at this point ceased to be seen as a valuable source for truth, and the dissection of the body into always smaller units of representative entities for knowledge was replicated in the splitting of subareas of science. It was understood that no one person could "know everything" and the emerging specializing areas of medicine claimed their share of the bodily territory.

Nation-states became identified with specific philosophical and scientific developments, and thus came to have an active interest in supporting and fostering research. Overall, the new mode of investigation, as discussed above, focused on symptoms and details. It was in France that a particular extension of this method was developed by Bichat, who examined not only symptoms but also on their relation and interconnectedness. His work characterizes the French Clinic, whose method reconceptualized the perception and procedure of medical practice. From the Renaissance until the end of the eighteenth century, knowledge was part of life and was viewed as positive contribution to life which was clearly separated from what death and disease were. Bichat found new possibilities of analysis in the relation between life and death by considering the complexities of the interconnectivity of these two. Bichat did not continue with the tradition of asking life from life and studying disease in death, but he focused on the connection between life, death, and disease -- making the analysis part of the pathological process instead of something outside of it all.[21]

With this shift in analysis, the old ambiguities surrounding death and disease resurfaced but were for the first time integrated

into analytic approach. The rise of pathology during this time is part of this development, and it became the most significant area in all medical research. Death was no longer a fixed incident but it was part of the disease development and integrated in the temporal and spatial occurrence of disease.[22] Anatomy ceased being the underlying base for the understanding of disease, and pathology had taken its place.

Death as a part of the diseased body becomes the invisible truth, the visible secret[23]. The integration of the possibility of death into the living body does not lead to a joining of the established opposites. Scientists distanced themselves into a state of analysis in which they renounced all properties of vulnerability and ambiguity, and the objective method continued to take its toll on life and the body. The secrets which cannot be seen in the anatomical body as it is are made to reappear in distance with the help of technological innovations. The medical gaze as an absolute and neutral tool is reinforced by medical technologies such as the stethoscope, which enables the interior body to be real. The scientist is metaphorically inserting his extended sense organs into the body by means of the stethoscope or even the roentgen rays, and the invisible inside of the body is externalized through the technology, encoded and represented in a symbolic language of representation.[24]

While the literal inside and outside of the body was seemingly merging and not only penetrated but also reversed, a new invisible interior was invented, further splitting the subject into divided a existence and drawing a line between inside and outside;

psychoanalysis is born at this intersection. During the course of the nineteenth century, new limits of outer and inner visibility were established which conformed to the general perception of how the world was to be understood. These were supported and influenced by scientific findings and innovations that found application and grew out of medical research.

One of the main changes implemented with the French clinic is the direct observation of the living body. The discovery of roentgen rays in 1895 enabled the boundary between the invisible inside and the observer to be dissolved. The skin of the body is but a veil to be lifted by the scientist without touching or hurting the body. Never before could the body be looked at with such transparency and ease, and during the early twentieth century, this technology finds application on a larger scale in the population. The fascination with the possibility of seeing the skeleton of a living person through a seemingly "magical" technology, reinforces the connection between death and hidden truth but under the appearances of medical images.[25]

During the first half of the nineteenth century the scope of surgery remained limited, and only after 1850 did innovations and many new discoveries lead to distinct advancements in surgery. According to Rutkow, the most important changes to have impact on surgery were: the discovery and employment of anesthetics, the establishment of antiseptic and aseptic surgery, the improvement of old practices and the advent of radically new operative procedure, the use of roentgen rays, the evolution of practical blood

transfusion, the removal of any restriction on the study of human anatomy and pathology, changes in educating surgeons, the reform of Medicare as a result of the raising of nursing as a profession, the formation of national and international surgical societies, and the more rapid transfer of information due to periodicals and other forms of communication[26]. Rutkow elaborates that the changes were so rapid and radical due to the general advancements during this time and surgery was so inclusive of them that the ground work for operating procedures to be performed during the twentieth century was laid until the end of the First World War[27].

The practice of autopsy became standard method for research and education in medicine during the nineteenth century. This time period is the source for many horror stories about the management of cadavers and the methods for obtaining this raw material. The secrecy and elitism of science (of which surgery by now was absolutely a part) at that time may have influenced the public perception about the market of corpses for research purposes. Foucault believes that the dealings with cadavers was by far not as terrifying as the public perception makes it out to be. He believes that many misconceptions about autopsy and dissection have lead to popular views of horror.[28] Rutkow, on the other hand, find records of dealings with corpses that hint to a darker side of the medical research at that time:

> One macabre method used to advance nineteenth-century medical sciences concerned the obtaining of bodies for anatomical studies. In early nineteenth-century Great Britain and the United

> States no public regulations guided the supply of dissecting materials for teaching purposes. Access to cadavers was an absolute necessity for medical students, and the need was often met by surreptitious methods. Most bodies were those of executed criminals: professional hangmen, for a small fee, cut them down from the gallows and delivered them to the anatomical schools. If a shortage of bodies occurred, another class of individuals would resort to digging up cadavers during the night, after funerals. These individuals, usually criminals and ruffians, became known as the "resurrectionists" or the "body snatchers". The most famous corpse suppliers were William Burke and William Hare, called the "sack-'em-up men" of Edimburgh. Quite impatient regarding natural death, they resorted to murder to increase their supply of bodies. ... As a result of the scandal of the black market in human corpses, Parliament passed the Anatomy Act of 1834, which regulated the obtaining of cadavers for anatomical research.[29]

The increasing importance of autopsies and vivisection encouraged the raise of experimental surgery and pathology which was to become one of the main areas of research at the beginning of the twentieth century. These practices in particular have many horrifying stories attached to them and it is difficult to determine the extent to which they are accurate. One significant aspect in approaching this topic of historical validity is of course the agency that various sources may have in presenting history in certain ways. While scientists may be able to validate all sorts of experiments, the public perception may not accept these practices mainly because they are the ones being experimented upon.

> Animal experimentation became a widespread practice in the course of the nineteenth century, not just because of the medical benefit which was said to flow from it, but because it helped to legitimate biomedical research as a true science and

thus to confer on its practitioners the social prestige they sought. [30]

Foucault's perception that much of medical history is sensationalized may be true for the French clinic during the eighteenth and nineteenth century; there, the practice of vivisection was not as prominent as it was for example in Britain or Austria. Moreover, the suffragette lobbyists in Britain had also taken up the fight against vivisection and there is much more literature available from there because of them. Elston explains that much of this literature portrayed "women and animals alike as victims of the sexually depraved monster, the vivisector.[31]" The metaphor of medical science and medical practice on woman as rape became dominant in anti-vivisectionist literature in the late nineteenth century and reveals a fear in the public, particularly in women.

Lederer, in her review of vivisection in turn-of -the-century-America also describes the exploitation of certain groups by the scientific community Even after regulating legislations which demanded the consent of those participating in this sort of research, economically and socially less powerful individuals such as prisoners, black slaves, inmates of insane asylums, children in orphan homes, the poor in need of boarding, were easily "bought" to consent to vivisection. The Second World War was a time when vivisection was an important part of the scientific advancement of this century, and in response to the cruelties of these experiments, particularly of the Nazi regime, after the Second World War, precise

legislations concerning the experimentation on humans were established[32].

Britain has a particular history of dispute about dissection because beginning in the eighteenth century, British surgeons displaced their interest in animal dissection for their humane care and treatment, and heated debates surrounding vivisection became prominent amongst surgeons and in the public. While the vivisection of humans was never as publicly accepted as the one of animals, it was still a method used to advance science. In the nineteenth century, bacteriology, immunology, and radioactive experimentation lead to an increase in experimentation on healthy bodies which were infected with bacteria of leprosy or other epidemics.

Two seemingly contradictory tendencies can be found in late nineteenth century surgery: one the one hand, after the discovery of roentgen rays, the germ theory of disease and penicillin, the tendency towards healing without cutting the body continued since these new findings permitted to see and reach into the closed body. This approach remained rooted in the history of medicine where physicians are perceived more serious than surgeons. On the other hand, experimental surgery was rising, and with it the number of vivisections and autopsies, which sought not to heal but to research. One of the main obstacles which kept surgery from being fully accepted by medicine and the public was the discomfort and complications associated with its practice. These gaps in the surgical procedure were at that time of greater concern to patients than the affirmative knowledge that surgery could eliminate potentially devastating disease processes[33]. The role of surgery in

the healing process became more specific and surgery itself did not see itself anymore as part of all healing. Instead, surgeons began to have particular tasks in which they had more experience than physicians. For example, the practice of bloodletting, which was a very common practice for a long time in medicine and which was performed by surgeons decreased in popularity and by the end the of the nineteenth century it had almost entirely ceased to be part of medical procedures.

During the course of the nineteenth century, physicians and surgeons were working closer together than ever before, making use of discoveries from other fields. One development that favored this sharing of information was the growing distrust of the traditional affiliation of physicians with the clergy, who had been reluctant to accept the opening of bodies as a valid procedure for advancing healing[34]. As mentioned above, at the beginning of the twentieth century, particularly after the First World War, the foundations for the surgical procedures of this century had been laid and surgeons had gained social power during the previous century. Surgeons began to specialize in specific areas of their field, which led to the fragmentation of the field and increased the detailed knowledge of physiology and pathology. However, Rutkow points out that "the most consequential achievement for twentieth-century surgery was the eventual social acceptability of surgery.[35]" Socioeconomic context and technological advances determined the surgical advances more than anything else in this century, whereas beforehand the history of surgery was more affected by individual achievements.

[1] Cooter, Roger. "Dichotomy and Denial: Mesmerism, Medicine and Harriet Martineau. in: Benjamin, Marina ed. Science and Sensibility (1991) p.158.

[2] Jordanova, Ludmilla. Sexual Visions (1989) p.43.

[3] Jordanova, ibid., p.5.

[4] The gender bias in anatomy was taken to the extreme, and clear lines were established between opposites, one of them being male and female. For example, the nervous system was assumed to be more feminine, whereas the muscular system masculine. (Jordanova, p.58) Further, men's life was explained in terms of the brain, whereby the study of the brain allows the anatomist to reconstruct their life, and examining the outside of a man allows to infer about the state of the brain; in women, the same was assumed about the uterus. Jordanova, ibid., p.77.

[5] Elston in Rupke, Nicholas A. Vivisection in Historical Perspective (1987) p.279.

[6] Jordanova, ibid., p.138.

[7] Jordanova, ibid., p.55.

[8] Jordanova, ibid., p.57.

[9] Jordanova writes: "Such representations acted as naturalized bases to which other attributes of masculinity and femininity could be added, by tradition, by metaphorical extension, by contingent demands." Jordanova, ibid., p.65.

[10] This goes back to the association of women with nature.

[11] Foucault, Michel. La naissance de la clinique. (1963) p.135.

[12] This approach was particularly practiced in France, hence Foucault's examination of the French clinic. The view stresses that the body was no longer invaded by a pathological disease from the outside, but that the body itself was site and contributor to disease which lead to a restructuring of the localization of disease from precious centuries. Foucault, ibid., p141.

[13] See C. Ginzburg "Morelli, Freud, and Sherlock Holmes: Clues and Scientific Method" in History Workshop 9 (1980).

[14] Morelli was an art-historian who proposed a method to verify the authenticity of paintings. He said that instead of focusing on the obvious larger characteristics, such as the way how Leonardo painted smiles of women and which could be easier imitated, one should focus on smaller details, especially those least significant in the style of the painter's own school, for example earlobes, fingernails, shapes of fingers and toes. (see Ginzburg ibid.)

[15] Stafford, Barbara Maria. "Presuming images and consuming words: the visualization of knowledge from the Enlightenment to post-modernism", in Culture and Consumption: The World of Goods. J. Brewer and R. Porter (eds.) (1993), p.471.

[16] Anderson, ibid., p.6.

[17] Anderson, ibid., p.6.

[18] Ginzburg, ibid., p.8.

[19] Ginzburg, ibid., p.16.

[20] Stafford, ibid., p.466.

[21] Foucault writes about Bichat and the shift in analytic perception: "Si la maladie est à analyser c'est qu'elle est elle même analyse." (Foucault, p.131)

[22] Foucault writes: "Le regard médical ne plus celui d'un oeil vivant mais celui qui a vu la mort." Foucault, ibid., p.146.

[23] Foucault, ibid., p.176.

[24] This reversing of the sides, of the invisible and the visible is described by Foucault.

[25] Particularly at the beginning of this century and during the First World War, a popular image was that of the skeleton and it was frequently used in propaganda material about politics in Europe as well as in the United States. Michael Biro was one of the most known painters of the time who portrayed the raw and naked truth of political consequences through skeletons. In the United States, anti-war propaganda "x-rays" the image of a recruiting poster and reveals the hidden truth in form of a skeleton (Comar, ibid., p.86): death and truth, hidden underneath appearances, become visible.

[26] Rutkow, ibid., p.321.

[27] Rutkow, ibid., p.321.

[28] «...cette reconstruction populaire est historiquement fausse. On a imaginé une conjonction noire de la dissection, une église de l'anatomie militante et souffrante, dont l'esprit caché aurait permis la clinique avant de faire surface lui-même dans la pratique régulière, autorisée et diurne de l'autopsie.» (Foucault, ibid., p.127)

[29] Rutkow, ibid., p.322-3.

[30] Rupke, ibid, p.200.

[31] Elston in Rupke, ibid, p.260.

[32] Lederer, Susan Marie. Human Experimentation and Antivivisection in Turn-of-the-Century America. (1987) p.223.

[33] Rutkow, ibid., p.505.

[34] Lawrence, ibid., p.9.

[35] Rutkow, ibid., p.506.

4 - Beauty in the Information Age

At the turn of the century, advances in science allowed scientists to observe increasingly smaller units, constantly changing and adding more details to the knowledge of the body and foundations of life. With the heightened precision of technological devices that allowed researchers to conduct their work, previous knowledge and underlying assumptions inherent to the study of life had to be questioned. The increase in knowledge actually produced less certainty.

Bohr's Principle of Uncertainty marked the changes in the perception of the world and his theory significantly influenced all areas, science as much as the arts. In previous times, Newtonian science sought to explain the world in terms of absolute laws. Rutherford's atom model followed this line of thought, and explained the atom's structure as closed and finite model which functioned according to fixed laws. This model worked within the overall perception of underlying continuity and quantifiable behavior of the particles.[1]

Bohr, at the turn of the century, suspected that Rutherford's atom model limited the movement of the particles and found in Max Planck's idea of the quantum of action the basis for his theory of discontinuity. This theory attributes the previously known laws of continuous change to large objects only, and new laws for the discontinuous change to small objects.

> The concepts of continuous motion, space, and time were derived by man through his biological experience and formed his natural mode for exact description. But when he discovered that the properties of very small objects were not continuous, he found that he could describe natural phenomena unambiguously only at the expense of neglecting the excessively minute, and if he wished to speak with complete accuracy he must always be slightly ambiguous. The principle of uncertainty is an expression of this limitation, which arises from the inapplicability of continuous concepts to discontinuous phenomena.[2]

Other thinkers in other fields at the same time were also invoking discontinuity as the basis. T.E. Hulme situates the historic changes in perception in his critique of humanism. He states that during the Renaissance, perfection was sought outside the body, paintings focused not on the body or the person, since it this was too trivial at the time[3], but on more divine themes. After the Renaissance, however, the focus shifted onto (and into) the human body, which made human nature the center of interest and also the main subject in literature and art; truth and perfection was pursued and localized in the human body. According to Hulme, the shift in thought at the turn of this century which found one manifestation in abstract art, was a sign of the collapse of naturalistic and humanistic attitudes; this foreshadowed a transformation in society which abandoned the dogma of continuous human perfectibility.

While uncertainty and discontinuity had to be acknowledged even by the most deterministic thinkers, it did not lead to Hulme's predictions of abandonment of human perfectibility or a shift in the localization of truth. The human body remained at the center of

scientific inquiry and was especially, during this century, made the object of perfectibility and durability. The domestication and disciplining of humans through always more sophisticated instruments continued, and whenever these resources were not yet available, scientists still explained the available knowledge in terms of a consistent world view. Bohr did not view his Principle of Uncertainty as a revolutionary theory to rupture scientific thought; he claimed that he saw it as an advance in objective knowledge and a continuation of previous scientific experience[4].

The "uncertainty" about previous understanding of life and humans can also be found in the change in medical images, which after a long history of precision and detailed illustration of anatomy tables were replaced with the less clear images that technologies such as x-rays allowed. Comar notes that the image of the cadavers was only a transitory phase, surely the most fascinating one, but also the most sterile as it emptied the body of its life and of its sense[5]. During the twentieth century, the images freed themselves from their macabre link to the fixability in death and to the idealization of this fixability. New innovations, such as the scanner, are much like the roentgen rays in the sense that they permit scientists to look into the living body without cutting it, and these images, like the radiographic ones, distinguish only between different textures of tissues (softer ones and harder ones such as bones). These new images reduce the body to the sum of numbers translated onto the computer screen, and the diagnostic of the bodily conditions changes from qualitative (morphological image) to a quantitative one which delivers directly the parameters of the

diagnostic[6]. The body is being mapped as it was in anatomical drawings, but these images differ from those ancient representations in their representation of an immediate living body. The Renaissance drawings are very precise and deliver the body in a much more naturalistic manner (i.e., the whole body and its environment) than any technological representation. The technologized images of the body are abstract and leave much more ambiguity surrounding the processes which it attempts to reveal.

Another technology which represents the inside of the body is thermotechnology, whereby body tissues are represented in different colors according to their temperature. The fact that the colors on the computer screen are not indicative of the actual color inside the body is not an issue, since the goal is not to represent the inside in an exacting manner, but to get a sense of inner bodily processes according to temperature. Medical images no longer attempt to reveal the comprehensive complexity of the body as in the Renaissance, but continue to reduce this complexity into partial materializations on a two-dimensional surface.[7]

Over the past century, the materialization of the body advanced radically through technology, and the sickness of the body is not palpably read or heard, but computed[8]. The process of materialization on screens does not infuse the perception of the body with more life even though it is no longer necessary to dissect the body in order to look into it; the materialization takes away the living body and replaces it with a material object --the computer image. The present concept of disease and medicine has been very ideationally consistent; over the past centuries, a strictly material

body was built and it is still in the making. The body itself has not changed but how we perceive it and how we relate concepts of health and disease have changed.

During our own century, influenced by the "French Clinic", there emerged a shift towards a perception of the body as a network. This perception leaves behind the idea of fixed centers to which things are connected, and instead, focuses on the connections which exist between all things in a more animate way[9]. At the same time, in such a view, the power is more distributed and all parts can effectively influence all other parts instead of there being one dominant center. (The heart is no longer the core of life.) This changes the perspective of the transformatory displacement through computed images. The anatomic image is no longer an inscription of truth which is the center of attention, but the inscriptions themselves are manipulated and worked upon by the body changing during the transmission of data.[10]

One of the dreams which has been pursued by scientists for centuries, but was particularly pursued since the technological revolution, is the perfection of the human body; perfection in its functioning and perfection in its appearance. Until the twentieth century, surgery was fighting to gain acceptance and to establish itself as an acknowledged profession equal to medicine. Its purpose was seen in the advancement within the context of pathology and medicine, and as such it was concerned rather with the functioning of the body, not so much its appearance. Perfection in this context was mainly understood in mechanistic terms. At the end of the

nineteenth century, the rapid expansion of the knowledge in all fields lead to an increase in specialization and decrease in general researchers while drawing many previously distanced areas into close cooperation. The fragmentation of the field of surgery into more specific research areas gave birth to reconstructive surgery, until then part of all surgical procedures. Any surgery involved this element to some extent, and reconstructive and plastic surgery did not become a separate field of interest to surgeons until well into the twentieth century (about 1930).[11]

One of the first accounts of plastic surgery for nasal reconstruction in Western history of surgery is Pfolspeundt, a German Renaissance surgeon. His accounts document his operations in which he elaborated on the "Indian" method of nasal reconstruction in which skin from the cheek, forehead, or arm was used in order to design the new nose. His work was one of the first to describe in detail this operative procedure[12].

The term "plastic surgery" was introduced only in the nineteenth century by Edward Zeis (1807-1868), another German surgeon. Zeis wrote *Die Literatur und Geschichte der plastischen Chirurgie* (1863) which was the most complete account for literature on plastic and reconstructive procedures available before 1860[13]. The reconstructive part of surgery had not been a separate field of research until the twentieth century, and it had always been part of a surgical procedure for something else, but not for the sake of beauty alone. The idea of cosmetic surgery existed even during the Renaissance, particularly for nose changes or harelip. But these procedures were not widespread because the focus of surgery

at the time was upon anatomy and/or healing. Moreover, the lack of knowledge of anesthetics and post-operative care makes it hard to imagine anyone willingly undergoing such torment.

The sound operation basics -anesthetics, anti-septics, and proper wound treatment- in the twentieth century allowed surgeons to experiment with the aesthetic aspects of operations in order to reconstruct more effectively wounded body parts and also the damage stemming from the surgical procedure itself. From reconstructive surgery new branches developed, and plastic and cosmetic surgery became recognized fields. This development allowed for new possibilities to attempt a certain perfection and regulation of the body, in particular the female body.

"The cultural obsession with the female body 'makes women the bearers of a whole series of preoccupations with sex and health"[14] During this century, the concept of beauty has developed as something that can be bought and attained through work on/with the body. The concept of beauty, of course, is attached to cultural values and varies across cultures. The development of Western standards of beauty are, like the concept of health, intertwined with the overall cultural and scientific perceptions of the body. Before Darwin, the images of Greek and Roman beauty ideals set the standards by which beauty was measured. Darwin in the nineteenth century linked beauty to fertility, and the more fit for reproduction were believed to be more beautiful[15]. His assertion was perhaps only spelling out the unspoken association of beauty and fertility, or rather sexual desirability, within a vertical hierarchy in which men desire actively and women are desirable. During the nineteenth century,

"beauty" was something that was sought in many fields, and found a particular articulation in the newly appearing magazines which portrayed images of women and thus began to spread images of how a woman (middle-class and white) was encouraged to look[16].

Changes in the nineteenth century regarding hygiene and beauty rituals, closely linked, had become widely integrated at the beginning of this century and neither beauty nor cleanliness was something that was reserved for the rich only. More and more sections of the population gained access to the products and norms emerging from a wider application of technology and through social-democratic trends to make formerly elite things accessible to all. During this century, outward ugliness became associated with unhealthiness and disease -- it was to be overcome with all the new inventions and modern possibilities to alter or 'cure' imperfections. Gustav Mahler once said (1910): "All people have only one duty --to be as beautiful as possible in all ways before god and mankind. Ugliness is an insult to God[17]".

Alongside the technological advances in plastic surgery, women were encouraged to undergo beauty operations in order to feel better about themselves -in the spirit of 'if you look good you will feel good'. But the rise in numbers of women undergoing these operations was not a trend of the rich of the twenties and thirties which was to disappear during the war; increasingly, this technology and medical area became more available to the masses and today, most women can afford minor changes, some are even covered by health insurance since they can be medically justified. In fact, more

and more it is possible to justify such operations with medical reasons which are often linked to the overall well-being of the "patient". The concepts of health and beauty have come to be closely linked in recent years, and they are being experienced in, on, and through the body. It is not a new concept that the healthy body is beautiful and the ill body is ugly. But in recent years the sense of responsibility has shifted; the more active and independent woman has to take more responsibility for her looks. Ann Braithwaite relates health and beauty to a new sense of responsibility for oneself, whereby to be beautiful is linked to caring for oneself and taking responsibility for oneself, and the not stereotypically beautiful are left in double agony of being ugly and diseased, and even worse: unwilling to try anything to help herself like for example through cosmetic surgery[18].

Cosmetic surgery, as part of medicine, is easily associated with the healing of the body (and the soul) since the general association with medicine is that of healing. Over the past centuries, medicine, and especially surgery as a separate field, had not always the primary goal to heal or to prevent disease, but to manipulate the body according to pre-conceived ideas about the role of the body. Since the Renaissance, when the body became the center of attention in science and art, the body was responsible for holding secrets about life and truth while at the same time continuously presenting death and disease to the dissectors. During the seventeenth and eighteenth century, the rationalization of the scientific method had lead to the preoccupation of research with the body astray. Although medical research was being done on and with

the body, the attention was on abstracted concepts about the body; the literal body had been split from the then more important abstracted concepts of the body. In the nineteenth century, the significance of the fleshy body became more central in research, and philosophy and science attributed new depths to the flesh which were to reveal hidden truths. So for example Freud found new ways of studying the body and the invisible signs which he found on the surface of the flesh (for example he interpreted hysteric symptomatic as surfacing in somatic illnesses). Underlying the development of the study of the human body and, since Freud, the psyche, was lurking the age-old desire to attain an idealized form of life in the body, but not necessarily through the body alone. Science and technology were in the service of the motivations behind the research and also shaped the course which the scientific development took. At the turn of the century, the desire for perfection in many ways (connected to an ideal form/race of life) was able to materialize from the image-world into the flesh through means of technology.[19]

Today, there are two main fields of plastic surgery: reconstructive surgery and cosmetic surgery. Reconstructive surgery works on "damage" done through accidents, illnesses, or other surgery, and cosmetic surgery is more a matter of aesthetic endeavor: "reconstructive surgery is more associated with the resortation of health, normalcy, and physical function, cosmetic surgery is said to improve self-esteem, social status, and sometimes even professional standing.[20]" The scale of measurements against which the body of an applicant to plastic

surgery is judged against finds its roots in classical images of people who have the perfect proportions it features. Anne Balsamo found that some medical textbooks even encourage the surgeons to study classical art theory to familiarize themselves with an "esthetic sense" and are better prepared to alter the face according to the scientific determination of perfection.[21] The guidelines for a perfect face and body date back to images from Ancient times, and the methods of determining the measurements developed within the framework of scientization.

The technological possibilities for predicting the outcome of bodily alterations through surgery permit the client/patient to refashion her or his body according to a more or less precise image of what the new body is supposed to look like. Although such operations will not make the client look exactly like any beauty symbol, they claim to enhance the body to an approximation towards the ideal. Visualization technologies offer a before-and-after comparison in which the promise of the alteration can be materialized before any blood is spilled. By fragmenting the body and changing certain features, the body is presented in interchangeable units and as an image; a preinvented image which precedes the actual embodiment of the client. The surgical process materializes the image in the body, brings to the surface invisible dreams and desires about a body which until then was trapped in the occurrence of a naturally imperfect body.

The computer is increasingly used in cosmetic surgery to show patients the outcome of a possible operation. What is often overlooked is that these electronic images can be very deluding and

cannot be understood as exact representations of the body. "Computers can't predict soft-tissue changes", says plastic surgeon Darrick Antell, M.D., D.D.S., attending staff in plastic surgery, St. Luke's Roosevelt Hospital-Columbia University Medical School in an interview with Shirley Lord for Vogue Magazine. He says that it is possible to predict bone changes such as the chin or the nose in a fairly exact manner, but electronic imaging cannot and does not account for how the skin is going to drape in that area, and the end result can be disappointing. While it is possible to alter even soft tissue areas on the screen, they are not in direct correspondence with the operation and the actual face.

But the electronic authority on beauty has also already moved into the highly accessible shopping malls where mini-computers at cosmetic stands will suggest how and where the face of the client needs improvement. By entering skin color, color of the hair, shape of eyes and face, the computer will respond by suggesting which colors should be used in which part of the face in order to create the impression of a more perfect face -naturally compared to the data that has been programmed into the machine based on the measurements of top models. But with these, the alterations to the face are not surgical but encourage the use of a specific make-up brand whereby the client has no input as to what she would like to change, rather, the computer is telling her what needs to be changed. In the surgeon's office, the patient has at least the chance to say which part she wants altered and how.

Looking at the image on the computer screen before the operation is also a step towards shedding the old body, and a new

life with a new body can begin. Through visualization, perhaps for the first time the old body takes on the desired new features and the possibility of change virtually happens on screen. Although presenting an image of oneself, the surface of the monitor is not like the one of a mirror which reflects the face how it is, the screen throws back a picture according to the desires of the client, with a better nose, younger looking eyes, or more sensual lips. The computer image is an image-on-its-own, before the operation still "other" and not integrated in the appearance of the body .

In cosmetic surgery, the surface of the body is fragmented and altered in such a way that the old body is reassembled, at times with the help of implants or with the loss of some body tissue, and the image is injected into life. In cosmetic surgery, the invisible dream of a particular look is made possible, is made visible through this process. The history of surgery is closely linked to desires of making an invisible depth visible or at least observable. Bodies were cut open to reveal invisible secrets of life, health, and beauty, and they were materialized in images (from paintings to computer images). In all the messiness, uncleanness, and ugliness of human anatomy, was never found the perfect ideal for which Vesalius and many after him were searching. With plastic surgery, the already existing image can be planted in the body, or rather it can be materialized on and in the body by "curing" the pathology of the natural body.

The underlying desire for bodily perfection takes on very literal form in cosmetic surgery which attempts perfection and health by eliminating that which is referring to decay: disease and

ugliness. Many beauty operations seek "to eliminate the signs of age", because youth in Western culture, is a sign of life and a sign of health. Age and ugliness are signs of decay, and with them, the body reveals its mortality.

The interconnectedness of life and death, health and disease, beauty and ugliness are fundamental to the fear of death. Of course scientists have been working on dead and diseased bodies for centuries. But they were able to separate health and beauty from such bodies; the study of disease associated with death encouraged the possibility of eliminating death from healthy bodies, as if there was such a thing as a sanitary, healthy, beautiful body, all clean, all perfect. By separating disease from health and life from death, disease can be eliminated or avoided, and so can death and ugliness, which medical procedures can cure.

With cosmetic surgery, "the transformation from illness to health is inscribed on the body of the patient[22]". But no operation can abject death to a distance because after a short while, its lurking reality resurfaces on the decaying and aging skin, and the secret held inside the body is no longer that of life (as DaVinci thought) but that of covering up for death and disease underneath an immaculate seemingly solid surface which protects both the outside from being exposed to the pathology of the body and the inside from disruptive influences.[23]

[1] According to this model, atoms are defined by change of states, consisting in a change from one to another, whereby while the atom is in one of these states, it is absolutely unchangeable; the humbler of these possible states was defined by Planck's quantum. The fewness and permanence of these states while they existed completely explained the paradoxical stability of matter. Based on this Newtonian science, the continuity principle was derived from the study of properties of bodies whose size is comparable to that of the observer. Changes on such larger bodies are aggregates of very large numbers of small quantum changes, and accordingly have the appearance of being continuous, and may be treated as such for practical purposes. When it became possible to study the motion of very small particles, such as electrons, it was found that they did not obey the laws that had been derived from the study of larger objects.

[2] Crowther, J.G. The Social Relations of Science. (1941) p.595.

[3] Hulme, T.E. Speculations: Essays on Humanism and the Philosophy of Art. p.56.

[4] Hermann, Armin. Heisenberg (1976) p.64.

[5] Comar, ibid., p.90.

[6] Comar, ibid., p88.

[7] Nonetheless, the study of medicine is based on such exacting pictures. The more basic the understanding of the body the more detailed and focused are the pictures that represent and explain the body. The more sophisticated, the less obvious are the pictures and the more is open to the interpretation of the specialist.

[8] Sheets-Johnstone, ibid., p.150.

[9] Sheets-Johnstone, ibid., p152.

[10] Latour insists that the inscriptions only became so powerful during the past century because of how they were put in relation to the world. "Something has to be done to the inscriptions which is similar to what the inscriptions do to the "things", so that at the end a few elements can manipulate all others on a vast scale." (Latour, p.48) He says that inscriptions allow conscriptions, and force all other things in a particular place and relation. Technology fuels the stress on inscriptive tools and perspective because it accelerates the displacement of the body to a materialized form without revealing the process of displacement and transformation. Just as little as the naked eye can see the inside of the body, as little it can "see" the process of displacement.

[11] Rutkow, ibid., p.388.

[12] Rutkow, ibid., p.142.

[13] Rutkow, ibid., p.392.

[14] Spitzack on Rosalind Coward, ibid. p.39.

[15] Naomi Wolf writes that Darwin himself was not convinced by his own explanation that beauty resulted from a sexual selection. Wolf, ibid., p.12.

[16] Wolf explains that it was during the mid-eighteenth century that the first images of "beautiful" women were published in magazines and that fashion plates, daguerreotypes, tintypes, and rotogravures showed women how they should look like. Wolf, ibid., p.15.

[17] I translated this passage from the German where it reads as: "Jeder Mensch hat also nur eine Pflicht, vor Gott und den Menschen so schön als möglich zu sein in jeder Weise. Häßlichkeit ist eine Beleidigung Gottes!" (Alma Mahler. Gustav Mahler. Erinnerungen. (Main: Fischer) 1992.

[18] Paper given at Screensites, McGill University, April 1994.

[19] Of course throughout all technological/scientific history, parallel to an idealized dream of perfection through technology was the monster-vision and fear that eventually science will be overpowering and destroying the world.

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[20] Balsamo, Anne. "On the Cutting Edge: Cosmetic Surgery and the Technological Production of the Gendered Body." in: Camera Obscura 28 (1992) p.210.

[21] See Balsamo, ibid., p.210.

[22] Spitzack, ibid., p.39.

[23] In a skin cream commercial, the voice-over announces that the product will "seal beauty in", solidifying the unpredictability of life and promising the user that death is something outside herself and she can protect herself from this intrusion. This of course assumes preexisting beauty.

5 - Plastic Surgery and Performance Art

"For Orlan, [...] the body is an imaginary place, its surfaces clothed in fantasy." [1]

Science benefited from art to construct the empirical image of the body; now art looks to science to deconstruct the empirical image of the body, precisely to reveal the art behind body building.

Since the late 1960s, body art and performance art in general which focuses on the body, have brought new spaces and dimensions to art; working with the living flesh is both scary, because the safe distance between subject and object is eliminated, and at the same time vivitalizes the art world by relying on the unfixed medium, the body. Experiencing art, both as performer and as spectator dissolves a boundary between a fixed art-object and the observer.

Orlan, a French performance artist, challenges the physical and cultural boundaries of Western science with her performance "La reincarnation de St. Orlan". Her concern with Western esthetic female beauty ideals and religious (Catholic) icons inspired her to undergo a series of surgical interventions in which she takes her own body as the site of reincarnation and reference of five famous Western beauty images stemming from the Renaissance and post-Renaissance: she takes the nose from Fontainbleau's sculpture of Diana, chosen because she was an aggressive, adventurous goddess who did not submit to men, the mouth of Boucher's Europa, who looked to another continent, the forehead from DaVinci's Mona Lisa, because of her androgynous look, the chin of Bottichelli's Venus,

because of her connection to fertility and creativity, and the eyes of Gérome's Psyche, because of her need for love and spiritual beauty[2].

The performance/operations are set up by the artist who directs even while being operated on. During the operations, she reads poetry and answers faxes and calls from people who are watching the performance broadcast around the world. The entire performance is highly theatrical, even in light of the serious medical undertakings. The "actors" -including the surgeon and all those assisting in the operating room- are dressed in especially designed costumes (Paco Rabanne designed the clothes for the first operation). The operating room is decorated with pictures of Orlan from former performances, as well as crucifixes and plastic fruit or flowers. During some operations, dancers perform. Every aspect of her performance has been thought through, the room, the costumes, the surgeon, and her operations, even the locations that will receive the performance broadcast live. Orlan sets up her performance with great effort and expense, and the spectacle lacks nothing in intensity, even when watching her only on the screen and not in person. The mediation through video technology creates a spatial distance, of course, but the violent reality of the live transmission of her body being 'reworked' connects the viewer to her nervous system. The experience of her operation is felt inside one's own flesh.

Embodying limits and possibilities of a wide-spread preoccupation with beauty, Orlan challenges perceptions about the most sacred space of identity by refiguring it: the face. "I firmly wish that my Face reflecting the intimate pains of my Soul, the

suffering and love of my Heart, be more honored! Whoever gazes upon me, already consoles me...[3]". Orlan is working with and within the Christian cultural context in which the body and the face of Christ is a symbol for the invisible suffering of people while at the same time embodying the also invisible eternal love and beauty of God that is said to reside in every person. In this belief, the sacrifice of Christ's body opened up the door to eternal life of the invisible soul. Orlan also wants her face to express her invisible interior and she too sacrifices her flesh. The wounding itself is an act which engages the outside into her invisible reality and at last, attention is given to what has until then be ignored: her interior.

Particularly since the nineteenth century, the belief emerged that the eyes are a window on the soul and the face expresses the hidden self. "Orlan disarticulates the ideology that forced the body's inside into correspondence with the outside[4]". Her repeated slogan under which she performs is "the approximation of the outer appearance to the inner sentiment". In her view, the outer appearance does not necessarily express the inner sentiment, but one does not have to accept the appearance as a given fixed reality; one can change it, for example, through surgery. By changing her surface appearance she is approximating her outer surface to her inner experience, and her slogan almost hints at a split reality whose boundary is the skin. On the outer surface of the skin, there is one reality and on the inside of the skin is another. By cutting through the skin and by reassembling, perhaps adding or taking out a few things, it is possible to make them correspond more accurately. The cutting and opening of the skin permits the sides to merge and

themselves on the other side. The act of surgery ruptures the ambiguous sentience of inside and outside which makes visible the invisible depths of the body. Orlan's inside is expressed through the rupture of her surface existence which occurs in her surgery and invests the invisible inside images of herself with life by bringing them to the outer surface of material reality, where they will visibly grow with her, where all beauty images of ageless icons will suddenly age with her, in her, and through her, because she acts as the medium which brings them to life.

The images of beauty and perfection resist materialization because once brought to the surface, they take on the properties of human imperfectability and they age or become distorted in the process of life. "The materialization of the private interior into public image vacates a space but falls immediately back into it[5]". But Orlan is not and does not pretend to be Mona Lisa or any of the other famous women; she is externalizing the beauty images of Western culture in which she grew up and which she has internalized, but which, until the operations, were invisible. These images are already inside her and she is making them seen, instead of planting completely alien images into herself. "By turning herself into a receiving set for signals sent by men to women for millennia, she absorbs and acts out the madness of a demand for an unachievable physical perfection[6]".

Orlan studied the Indian Cult of Kali in which sacred texts describe the body as a sack or costume to be shed[7]. This image of the shedding of the body is present throughout her performance, and appears even in the poetry which she is reading while undergoing the

operations. Reading from a French poet, she says that "...the old and useless body will shed away, and the new body will emerge...[8]", while the surgeon is injecting more anesthetic substance through a serringe into her cheek. She is correcting her appearance and approximating it to her sentience, her inner, invisible sense of herself; the body is not incorrigible and can be changed in order to correspond better with the invisible images she carries inside.

She alters her surface appearance in order to make it correspond to an interior which remains somewhat mysterious: the changes are superficial and do not affect her genetic code. Thus, Orlan is, to a large extent, still the same while her appearance is altered, bringing herself to the surface of perception by borrowing the physical reality of the body. But in the process of externalization, her interior is not fading into the exterior where it is lost, she is not abjecting it, but instead the merging of inner and outer reality bring her closer to herself and closer to her own objectification. "Skin and body tissues have themselves been recreated to experience themselves in term of their own objectification[9]". Perhaps it is not always necessary to undergo radical surgery in order to bring these closer together, but forms of wounding the body and thus altering it find in many practices a way of catharcting identity while dividing the obvious surface of skin. The revised version of skin embodies the invisible and links it noticeably to the exterior reality.

Orlan's disturbing act of the reimbodiment of beauty is superimposed over the invisible omnipresence of beauty images, and the act of transformation is the focus in her performance, not the

outcome. In the end, her mosaic surface appearance will not correspond to fashionable beauty images of today. The face that is not Mona Lisa nor Venus, Psyche, Europa or Diana, yet partially all of them creates an ambiguity about the person behind the face, the face which, in her own words, can not reveal the hidden self of the person. Her embodiment is a momentary expression of her sentience in which she articulates the presence of these beauty icons inside of her, but this is not all that Orlan is and it is only a fraction of her invisible sentience. Orlan is not mirroring images of beauty but rather she acts as a site of performance, offering her flesh in order to re-emerge, to reincarnate ghostly images and also herself. In the process of remaking herself, a former self disappears and "[...] the after-effect of disappearance is the experience of subjectivity itself[10]".

The disappearance of herself also happens during the operations in the state of anesthesia, when her sensation, her nervous system, her sentience are temporarily put into a death-like state of anesthesia. Her body is present, and the violence and gore through the surgery makes her body all the more present to the viewer, but she does not feel her externalization, and the outside world comes into contact with her fleshy inside without necessitating her response. Laying open on the operating table almost in an out-of-body situation, she is reading poetry while her body is "some place else". The local anesthetic splits the body from the self; for as long as this numbness lasts, her body is seemingly responseless and her flesh takes on the characteristics of an inanimate object. At the same time, she is demonstrating integrity

of herself, thus a high sense of subjectivity by disengaging from the action and the gaze of the television camera. She is a decentered self; her detachment alludes to the possibility of there being many Orlans. Her entire performance is an intersection of aspects, even opposite aspects of her physical self. Orlan is subject and object at the same time and establishes the meaning of exterior and interior by transgressing this boundary, by disintegrating and reintegrating her surfaces and flesh, and by displaying herself to the viewer while engaging directly with voyeuristic power.

> *"If desire brings the two parties [the self and the other] too close together, then the self may become indistinguishable from the other."* [11]

We experience Orlan as an image --in the same way she is experiencing herself. We experience her dislocation, displacement, her body at a distance. The broadcasting technology translates Orlan into a disembodied camera image which reaches under the skin of the viewer while she is materializing beauty images in her own skin.

The lens of the camera and through it the eyes of the audience are closely looking into the depths of Orlan's flesh when she herself is in a most vulnerable position. Vulnerable, because her life is in danger and vulnerable because she is exposed to the eyes of the audience which she cannot see. She can hear them over the phone and she can speak into the camera, but her audience still remains more anonymous to her than she is to them, because she is exposed to them with all the privacy of her intimate interior. The audience can participate in the performance by sending faxes and calling in to

speak with her, but even the fax has to be sterilized and the most immediate connection that the viewer can have with Orlan is the one which is felt by reciprocity in the body by watching her performance.

The viewer is implicated in a painful way without being able to take voyeuristic pleasure. The mechanics of this performance do not objectify Orlan in any simple way. The mediating presence of the camera does not allow a safe distance for the voyeur; indeed, the viewer here has little power because Orlan maintains a strong integrity even while she is being operated upon. She is awake and continues directing the performance, and she is, at all times, in control of what is happening, even while her flesh is disintegrated and reassembled. She is not just being worked upon, but she is actively taking part in the operation and in the sensations evoked in the viewer. The voyeur sees no suffering to complement the blood trickling down on the side of her face as the surgeon is cutting and working her flesh. Orlan feels no pain; she turns away from the camera to read poetry. It is not suffering that accompanies the physical violence of the operation but literature and philosophy. One has a sense in which the body can simply be overcome. The dissecting quality of the camera and the gaze of the viewer lose the power of control over the situation. Orlan is not suffering during the operations, as she reports in an interview with Markus Weiland (fall 1994); she is only suffering during the cutting of the videos afterwards, because "the cutting of the tapes stand for the cutting with the knife[12]".

Cosmetic surgery brings an outside into the self; Orlan is embodying the outside by inserting implants and images of beauty under her skin. Images, which have for centuries been the cultural embodiments of beauty. When the camera looks into her flesh that is cut open and that reveals her interior body, the outside touches her interior on a much deeper level than skin, on a depth that has become a surface and that is gruesomly trenched in blood. If beauty images are created by the exterior object world (versus the interior world of senses and self), inserting it under the skin into the flesh blurs the boundary between the "sides". But perhaps this boundary has never been as rigid as it might appear, and the exterior might already exist inside of Orlan before the actual operations; after all, skin is semi-permeable and the interior is not sealed in, and the senses respond to external desire as well as desiring this outside. The proximity to the exterior is maybe not what threatens the integrity and will of the self, but the desire for it, inside or outside may well be one, for when desire sets in, the boundaries become irrelevant and neither conventional concepts of spatial divisions, nor language can adequately account for this transgression. Her 'new face' and surface do not reveal Orlan's *hidden self* since there is always a part of her that is invisible --there has to be.

Orlan maintains integrity within the outside that reaches into her body during surgery. Her poetry reading prevents her from losing herself to the dynamic of her environment since through this act she remains unavailable. Her performance never quite establishes a clear political or ideological position; she cannot stand with the male spectator and his desires -because her art is a critique of patriarch

power relations, nor with the feminist who wants to do away with beauty stereotypes -because the horrific aspects of her performance repeats the male spectation. Rather, she inhabits both positions at once, embodying all without declaring herself in solidarity with either, she does not take a side. In this sense, she brings together each side and her position is formed in their coexistence. During surgery, Orlan is transforming and actively changing, despite the anesthetic, but when the skin is sown back together and the cameras turned off, when she has healed and the scars are not visible, she disappears in the banality of everyday reality in which her new face is no more spectacular or articulate than anyone else's. "The disappearance of the object is fundamental to performance; it rehearses and repeats the loss of the subject who longs always to be remembered.[13]"

The surgery is enacting a unique artistic experience -a performance- which alters Orlan permanently and most likely also the spectator (See Appendix I). The gore of the operating room exposes the wound induced by the desire for beauty; her alterations express her re-appropriation of beauty in herself and will stay with her forever, and she will always also embody the partial loss of herself preceding "Orlan". In every stage of her transformation, what was present from the beginning is being sustained and amplified. What was invisible before, which was lacking presence in the outer appearance is being pulled into the strong presence of the visible through its embodiment. Her authenticity emerges through the act of self-experimentation which effaces the aesthetic distance and a

distance upon which the objectification of scientific procedures depends.

By staying awake and thus in control, and by being the director who also gives instructions to the surgeon, Orlan challenges traditional medical power relations. She does not suffer during the operation, but the audience who watches does. In this grotesque theater of surgery, she challenges all power relations based on an subject-object divide, for example relations between the surgeon and the patient, between the spectator and the performer, and between the one who has beauty and another who enjoys it by looking at it.

Orlan also plays on the suffering of women for beauty through plastic surgery, and "the sculpting or carving of the body sets up an intentional parallel between religious martyrdom and the contemporary suffering for beauty through plastic surgery[14]". The cutting of her body in which skin acts as a threshold between the inside and the outside as well as a threshold for the suffering for beauty, Orlan embodies the limits and possibilities of preoccupation with beauty. By cutting the skin, the border between inside and outside, the painful pressure of the impossibility of eternal life, health, and beauty are released. When she 'resurrects' from the operating table, her face swollen and still bleeding, she is anything but beautiful, she is horrific.

Another practice that concerns inside-outside relations of the body's surface and that has gained popularity over the past years, is skin art such as tattooing and piercing. In the creative process, body

surfaces are reversed and are being worked as a surface for mimesis. This type of reworking is a voluntary act and the individual is aware of how the modifications are changing the body. Flesh that has not been tattooed or pierced is just as much a cultural phenomenon as the flesh which has been voluntarily modified. Donna Haraway in "A Cyborg Manifesto" stresses that bodies are never innocent and that cultural (and technological) processes, formerly viewed as separate from ourselves in an outside reality, are part of ourselves.[15] This does not mean that all is one and the same and that there are no boundaries, but "we are responsible for boundaries; we are they"[16]. Haraways conception of the body, a network body, which is woven into its environment and takes actively part in it, is a radically different understanding which separated the soft flesh from, for example, the hard technology. A piercing is a very literal unification of hard material and soft flesh.

Whatever motivating force lies behind the act of modification, whether it is a celebration or a form of mutilation, it is a form of replication of the interior self that does not find itself in the exterior object world defined by traditional science. Taking on the shape of the exterior through an act of abjection, the boundaries are diluted since the object c' 'tains the interior and is at the same time exterior texture.

Michel Taussig in Mimesis and Alterity elaborates on the significance of the relation between copying and contact. The mimesis of an interior state in form of materialized articulation puts the outside into visible contact with the interior of the other person. Hence, it is at least a "[...] two-layered notion of mimesis

that is involved--a copying or imitation, and a palpable, sensuous, connection between the very body of the perceiver and the perceived."[17] The connection to the senses of the perceiver taps into the deeper level of perception of that person while presenting itself in a materialized form.

The mimesis is one of the inside but also one of the exterior by means of taking on the form of an object. The altered self is one that contains the outside world through the materialization of the wish for response to its interior sentience. Elaine Scarry writes on the materialization of pain in exterior objects that "[...] the human being who creates on behalf of the pain (whether their own or others') may remake themselves to be those who create out of pleasure (whether their own or others')."[18] Sentience is copied and altered in the process of exteriorization. The object can be deceptive to the outside since it appears as a stoppage in the process of the development of the subject while it is only partaking instead of an identity in itself. The shape of the artifact does not necessarily reveal the exact features of the sentience that it contains. "A person's story can totally undercut what might appear as a lousy tattoo, because it upends the cliched aesthetic exalting form itself."[19]

The materialized expression of subjectivity reveals the subject and remakes it at the same time. This alteration of the self re-engages the exterior with the interior while the subject is being altered. There is a continual multiplication of the self in the realm of objects that "[...] expresses the continuing excess of self-revision that is occurring at the original sentient site of all creation."[20] The

modification expresses a former self which is altered by the expression itself. What is perceivable is the excess of what was the self.

The excess is everywhere and it is shocking because it reveals the properties of the body and the self which do not fit into the stability of the scientific image of the body. A modification, on the other hand, puts people more at ease, because modification as an excess is often more acceptable when contained within the logocentric framework. An expressive excess on its own and without the mediation of wanting to explain something that is underneath (inside) and without instrumental use, but an excess that is in itself and perhaps not in accordance with the logic of the outside, is terrifying because it is painfully immediate and intimate; it is too close to the very own personal vulnerability and sentience.

Marking the body as an articulation or inscription is a social act and one of the earliest in history. "The unmarked body is a raw, inarticulate, mute body."[21] Through marks it becomes an active part of the social body and engages the outside with the inside. A piercing ring, for example, literally reaches through both skin layers, the inside and the outside, is an object in itself that embodies sensorium and demands responsiveness, and is part of an act of subjective creation. Although modification is articulation (a language on its own) and as acceptable as it is becoming, logos prevails -the language of the scientific logic still prevails and people demand a verbal or written explanation of the scar, piercing, cut, tattoo. In this sense, the modification is an expression of an excess of the self which cannot articulate fully and hence needs and

desires the modification, as a supplement to itself. But supplements do not simply add on to what is there, they call attention to a lack (in this case perhaps the lack of the self to articulate effectively).

But it seems that the object-orientation of this creative act still operates within and for the objective world, whereas the focus of performance art (especially by women) is mostly on involvement and the relation between the "sides". In this particular type of work the boundaries are much less clear and definable. Artists such as Karen Finlay, Diamanda Galas, or Orlan use their bodies and skins in an act of engagement that is expressive and inscriptive, yet beyond a binary relation. By blurring the sides and boundaries, even the skins, mediation becomes unnecessary since an understanding is gained through the involvement of the nervous system which needs no explanation or narration of any form.

Like skinart such as tattoos and piercings, it engages the outside/audience in a sensory response, but the artifact, such as paint or materials on the skin, is not at the end of the act but is only a part of a larger dynamic or even a prerequisite for the performance.

Karen Finlay, for example, wants to express her feelings on stage in a most "raw" way -how it comes to her without much mediation. This can be through screaming or throwing water across stage, etc. The intensity of the experience of her performance involves the audience through the senses. In an interview with Andrea Juno she explains that she really wants to tap into the feelings of people by expressing how she feels in a society that she perceives as repressive of feelings. Performing naked, she wants to strip herself

of societal codes that could provide preliminary assumptions. She is showing her inside by eliminating possible interpretations about her. "And when all the artifice is done away with you're just supposed to be seeing the soul now...there's the body up there, but you're going to see the *soul*."[22]

Smearing chocolate all over her naked body (representing how people are treated like shit), the material itself is not an object of representation of her interior or of anything else. Only on her skin and through her performance, a more complex connection is established that cannot be broken down into smaller units without loosing the intensity of her interior creation. The subjectivity that she creates in the process is hers and is not lumping behind in time with her experience, because she is expressing her feelings of the moment. The alteration is a means for her subjectivity-in-progress and the audience is aware of this because later in the performance she washes it off. With a tattoo, on the other hand, the perceiver may well regard it as an end of a process because it is a more definite creation.

US. performance artists like Karen Finlay, Annie Sprinkle, or Diamanda Galas do not feel that their experiences, however painful, need to "be helped", although they express that there is a certain element in their performing that serves as a sort of therapeutic release. What makes such a performance so stunning and "different" is the intensity created by the bodily involvement, both the performers and the audience (the reciprocity is probably necessary for the creation). Diamanda Galas' voice resonates in every fiber of my being and I have the most intense sense of immediacy of her

through me. It is like meeting her in me and vice versa, whereby I cannot say where she ends and where I begin. My skin is not the sack that holds my flesh and bones together, but a living texture right about where my space reaches into the texture of air. Skin then is where the inside and outside merge and become a-space-beyond the politics of subjectivity through difference, -not because all becomes one as it might seem, but because the emerging subjectivity is inclusive of its environment which it experiences in creation and in immediacy.

The organic properties of this form of art have the capacity to instill fear in the audience because it inhabits the noncorporeal space of language with the articulation of, in, through, and with the body. A temporal and spatial disjunction, rehearsed and practiced by the scientific attitude, is overcome when the flesh is articulating without necessarily knowing itself any better either, and the fear emerging from the uncanny familiarity of the body challenges the viewer's lack of presence (disembodiment) in a moment of loss of control which makes it impossible to define exactly where one is and where one's boundary, the skin, begins and ends.

Radical performance artists like Orlan are shocking. It is shocking to see her face cut open, her blood trickling down to the floor, her flesh being reworked. She is over the top, out of control, and excessive in her performance. Orlan's art is provocative because this form of body modification cannot be justified within the framework of a scientific purposefulness that fits into the elaborately controlled (by a plurality of institutions, in a Foucauldian sense) context of our society. Surgery is a practiced,

controlled, willed authorized form of body modification which is based on a long history of dissecting, removing layers to discover depths from a scientific, safe distance.

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[1] Greenblatt, Catherine. "Fashions of Address" in Camerawork Vol.21, No.1 Spring /Summer (1994).

[2] Barbara Rose lists the different icons from which Orlan is taking various parts. (Barbara Rose, p.85)

[3] From "The holy face of Jesus", pamphlet distributed by The holy Face Association Montreal.

[4] Greenblatt, ibid., p.32.

[5] Scarry, Elaine. The Body in Pain (1985) p.60-61.

[6] Rose, Barbara. "Is It Art? Orlan and the Transgressive Act" in Art in America Vol.81, Feb. 1993, p.86.

[7] Rose, ibid., p. 86. Apparently Orlan will be reading from these texts in her next performance in 1996 in Japan, when she will have her nose changed.

[8] Quote from videotape.

[9] Scarry, ibid., p.255.

[10] Phelan, Peggy. Unmarked. (1993) p.148.

[11] VanAlphen, Ernst. Francis Bacon and the Loss of Self (1993) p.123.

[12] Markus Wailand. "Knifestyle im Selbstversuch" in: Der Falter 49 (1994) p.28.

[13] Phelan, ibid., p.147.

[14] Rose, ibid., p.84.

[15] Haraway, ibid., p.180.

[16] Haraway, ibid., p.180.

[17] Taussig, Michael. Mimesis and Alterity (1993) p.21.

[18] Scarry, ibid., p.324.

[19] Vale in an interview with tattoo artist D.E. Hardy, in: "Modern Primitives", RE/SEARCH (1989) p.62.

[20] Scarry, ibid., p.320.

[21] Levi Strauss, David. in: "Modern Primitives", RE/SEARCH (1989) p.158.

[22] Finlay, Karen. in: "Angry Women", RE/SEARCH (1991) p.49.

CONCLUSION

Words end bodies go on and something small and wet and real is exchanged.[1]

In the course of the history of surgery, the flesh has posed fundamental questions about life and death and about further possibilities in technology and science. But it has also proven partially resistant to attempts at fixing it into absolute systems of functionality.

From the cutting of the skin with a knife to the seemingly gentler penetration of skin through modern technology, scientists and philosophers, as well as artists have sought to explore the hidden depths of human existence and have tried to capture it in representations such as paintings and computer images. In this process, the definitions about surfaces and depths, inside and outside changed over time as layers of human existence were crossed. Today, we are no more closer to knowing any deep secret about life or death than four hundred years ago. The constant shifting of the many sides and depths (as well as surfaces) of the human being/body have been problematized in the last century when both the internalization of cultural forces into the body and the externalization of the inner have been recognized as continuous processes.

Marshall McLuhan wrote that we are increasingly moving toward the technological extension of consciousness, the technological network outside is an extension of our nervous

system[2]. The boundaries between an external world and a contained identity are not solid, and popular culture theorists have discussed many forms of internalization of the outside and their effects. At the same time, we "translate ourselves into ways of expression that exceed ourselves[3]", using technology and increasingly our bodies to externalize an inside which is otherwise invisible and inarticulate with the available modes of understanding, dominated by scientific, hard information.

What the body could not express about disease or health, life and death, medical science tried to find and translate into the language of representation while at once inscribing its codes into the flesh and leaving visible traces. In the act of changing the body, the means and ends of the process have also changed since these act upon one another. For the body, one can say that "skin and body tissues have themselves been recreated to experience themselves in terms of their own objectification[4]".

But the wounding of the body in order to explain its invisible interior and to materialize it on paper has also another function other than to simply bridge the communication gap between the outside and the inside; "injuring in its second function is relied on as a form of legitimization because, though it lacks interior connections to the issues, wounding is able to open up a source of reality that can give the issue force and holding power[5]". As such, it serves as a source of legitimization and validation, since invisible speculations can be brought into the reality and certainty of the visible.

The culture of visibility has been, especially in the second half of this century, widely criticized for dominating perception, and some texts might suggest that the world could have perhaps been a better place if sight were not so overrated. The problem is perhaps more that vision, sight, the eye continue to be understood as a separate sense organ which, when stimulated, means that all other senses, in fact the rest of the body, is shut down and dominated by the visual. Skin perceives. When watching a particularly horrifying event some may have goose-bumps others may turn pale or have other reactions. When seeing something especially beautiful and pleasant, skin smoothes out perhaps even flushes the surface with warmth --skin sees, and the eye/sight/vision would be better understood as part of a larger network of perception (of course that is exactly what current theorists are beginning to do).

To escape the still prevalent binary oppositions imposed on the body, such as inside/outside, nature/culture, mind/body, man/woman, subject/object, etc., and to perceive boundaries not as dividing surfaces but as a working space on their own, it would be useful to start understanding the notion of the body "as a discontinuous, non-totalizable series of processes, organs, flows, energies, corporeal substances and incorporeal events[6]". The body (and skin as its most visible surface) is not an encoded material that expresses any form of hidden interior depth; that is why Orlan's grotesque performance through which she wishes her skin to articulate an otherwise invisible depth is only a partial expression of herself; there will always be a body-image of Orlan that will resist being materialized. In this sense, her undertaking draws

attention to the limits of language and to the possibilities for the body to be expressive on its own without translation. As long as one operates within the framework of binary opposites, there will always be another invisible depth, there has to be by definition.[7]

During the Renaissance, surgeons perceived skin as the ultimate boundary to an invisible depth, the inside anatomy. When it was extensively documented and the scientific (and binary) way of thinking had developed even further, another invisible depth was "found", the unconscious; in the future it might be a virtual personality in cyberspace. In the history of medicine, the body was increasingly perceived as an assemblage of exchangeable parts. From this perspective the individual parts seemingly function in a somewhat separated way from the rest of the body. This is why sight can be understood as a single dominant sense which paralyzed the rest of the body. If the body was understood in a different way, namely, as Elizabeth Grosz puts it, as a "series of surfaces, energies, and forces, a mode of linkage, a discontinuous series of processes, organs, flows, and matter[8]", all sides would already exist (coexist) with different intensities and degrees at different times.

The boundaries are by no means as clear as they are being made out to be in many scientific explanations, so for example, skin is not a clearly definable surface whereby one knows exactly where one ends and begins or what was before or after. The sensation towards skin stimulation is felt about 1-2 centimeters underneath the surface where one is being touched and can endure longer than the actual touch. Skin as a boundary is ambiguous about its coordinates and extends well into the existence of others, and into the

environment. As such, the body is a continuous winding of sides and partial realities which have no clearly definable boundary. In this conglomerate exists a certain unity and connectivity which makes up the body, but it must not be understood in a way which effaces differences and identities, but in an inclusive mode of recognition and awareness which can be experienced with immediacy in one's own body, in one's own skin.

New trends in research and virtual reality open up questions about the body, surface, depth and identity in new ways, and concepts about the body and its meaning, as well as its history (the recent one) are at a turning point perhaps as radical as when Freud introduced the theory of the unconscious which reshaped the perception of identity. With the cultural and technological contexts changing, a need for a more precise way of understanding identity and embodied experience is necessary since previous understandings cannot not account for the current and increasingly important influences which are shaping the production of identity today. Donna Haraway suggested that we understand ourselves as a "network body". In the information age, this notion might come to replace the "production identity" that had clear borders around itself.

Borders are dissipating on the political, intellectual, and physical level, and reveal the interconnectedness of the body and its cultural environment. At the same time, new borders are defined according to new parameters; former nation states are separating in order to form countries around individual nations while larger formations are effacing former economic borders; interdisciplinary

studies reach across intellectual boundaries within the University; and virtual reality offers possibilities for redefining physical boundaries. Without wanting to suggest that there is or should be *one* fixed concept of truth or understanding, quite the opposite, it is important to understand how identity is constructed and given truth in the changing environment and how it contributes to the partial, embodied experience of the individual who is a participant in the larger environment.

The body as a site of culture is always taking on new forms of articulation in the rapidly changing, nowadays technology-oriented, environment. The Cyborg body is perhaps for the first time materializing the merging of sides (the hard outside scientific world and the soft inside fleshy side) and thus calling for a new perception of identity. "The Cyborg is a kind of disassembled and reassembled, postmodern collective and personal self"[9].

The blurring of the boundary between the technological world and human existence, and the emerging ambiguity around the identity of individuals cause a new fascination with the body, both in theory and in practice. The body is participating in the cultural environment and is not simply circumscribed by it. Inscriptions on the body, such as body art (i.e. tattooing, piercing, scarrification, branding) are cultural marks which both isolate the individual through authenticity and engage the individual in the dynamics of visual culture.

The high level of abstraction which developed in the course of past centuries creates sides and separateness, and asserts relations of power and domination. At the core lies the distinction between

public/private, clean/dirty, healthy/diseased, life/death, man/woman, inside/outside, anything ambiguous and uncontrollable is abjected in order to justify the privileged position of the hard, solid, rational, scientific, predictable attitude. One unified image of what life, the body and health are supposed to be (-clean, hygienic, beautiful, and definitely not in any way reminding of the inevitable pathology and messiness of the body), is what has come to dominate. In this thesis, I have attempted to explore how the history of surgery intersects with the history of the body. The attitude towards bodies, health and disease, and life and death have developed within the cultural context of its times, and today's practices have their roots in this development. "When plastic surgery, genetic splitting, and electric prosthetics are possible, the body begins to seem less a product of organic destiny than of technological choice".[10] One is born into a body and, until now, one could never fully escape oneself. The notion of escape, of leaving history and the body behind is one of the most pressing problems for cultural and political theory today.

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[1] Piercy, Marge. from: "Walking into Love" in: Hard Loving. 1964, p.12.

[2] McLuhan, Marshall. Understanding Media: The Extensions of Man (1964), p.57.

[3] McLuhan, ibid., p.57.

[4] Scarry, Elaine. The Body in Pain (1985), p.256.

[5] Scarry, ibid., p.124.

[6] Grosz, Elizabeth. Volatile Bodies. (1994) p.164.

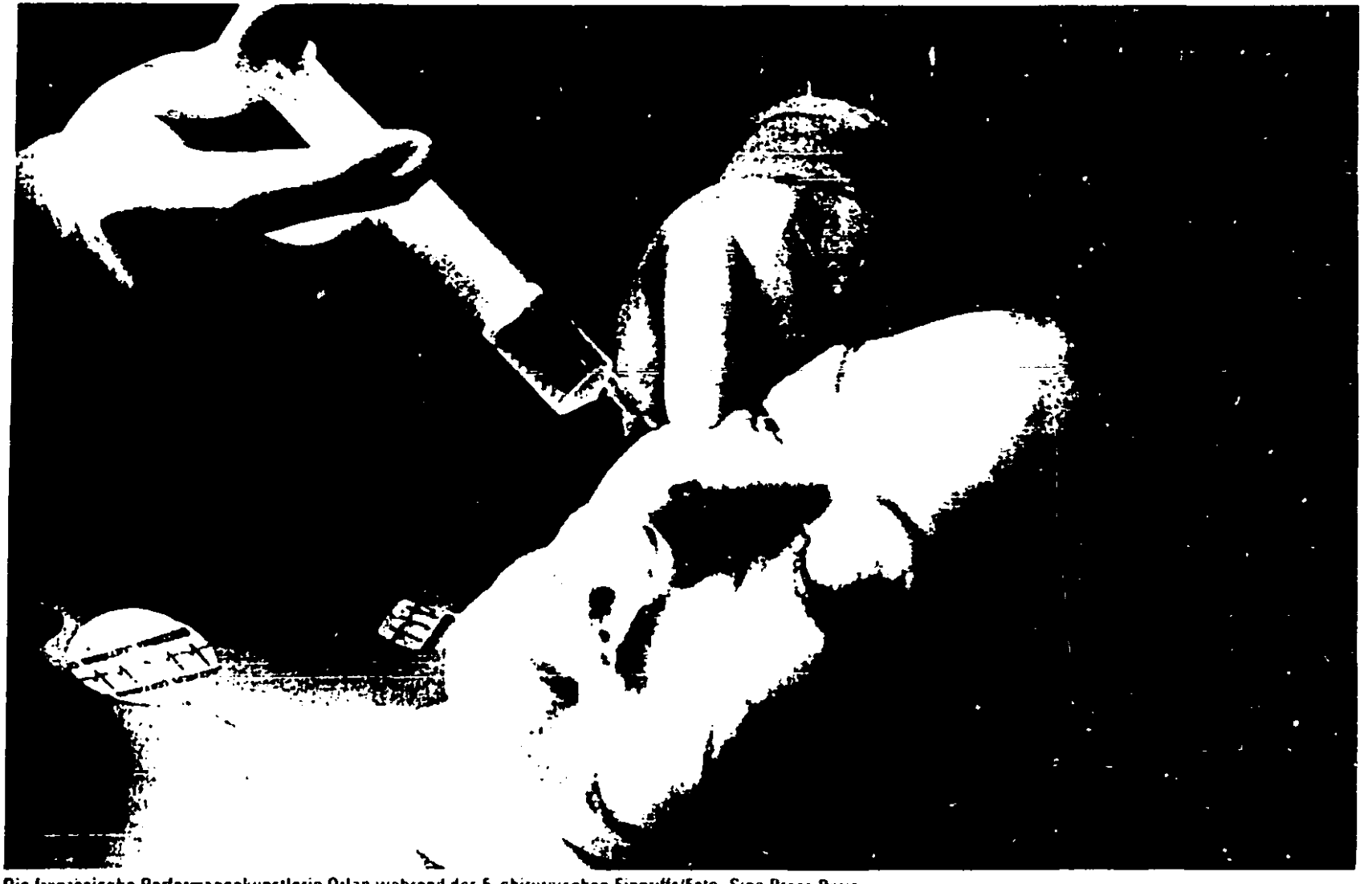
[7] Yet in this simultaneous experience the boundaries of Orlan and of interior vs. exterior are blurred, especially during surgery. Her confusing message may reveal an ambiguity about a sense of self. Her ambiguity deplores dualisms that remind of an "either-or"-logic which serves as the basis for wanting to bring them together. As well, her continuing referencing to a soul residing in a body which does not reflect the interior appropriately, and the possibility to shed the body in order to reincarnate a more accurate version of it raises the question of whether she is creating the context of her performance in order to make the omnipresent Western Christian culture visible, or if she is not working within these parameters and thus reenacting this logic and really not being radical at all. Her living art (after the surgery) seems more like an re-enactment and less transgressive, which again leads to an ambiguous aspect of her performance. The surgery seems more transgressive that the rest of her performance.

[8] Grosz, ibid., p.120.

[9] Haraway, Donna. "A Cyborg Manifesto" in Simians, Cyborgs, and Women. (NY: Routledge) 1980 p.163.

[10] Everett-Green, Robert. "Imagining the Body" in The Globe and Mail (Toronto) May 25 1995, p.C1.

Appendix I: pictures of Orlan's surgery



Die französische Performancekunstlerin Orlan wahrend des 5 chirurgischen Eingriffs/Foto Sipa Press Paris

The French performance artist whose assumed name is Orlan has embarked on a campaign of self-transformation through plastic surgery. The photo-documentation of her operation/performances furnishes both the imagery and the financial support for her art. Below, the author grapples with the many issues raised by a body of work that gives new meaning to the term "cutting edge."

BY BARBARA ROSE

uriform photomontage with five images of Orlan. In the central image she is undergoing surgery.

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