

## ***Technological tattoo: in-between art and science***

Catarina Pombo Nabais<sup>1</sup>

### ***Abstract:***

The ancient practice of tattooing has been the object of a technical evolution, from the earliest rudimentary beginnings (scarification) to the most advanced procedures, from the manual perforation to the electric needle system.

However, parallel to the many meanings it may had, tattoo has always been associated with an artistic technique. Today we witness a new dimension of tattooing that makes us rethink its artistic status. Due to the fast technological evolution, we observe a movement of appropriation of the tattoo by medical or utilitarian purposes such as measuring the body temperature or the heart beats or giving instructions to the Wi-Fi devices to which the tattooed subject may be connected. Titled *Double Skin*, the tech-tattoo belongs to a new generation of flexible materials that is already revolutionizing our world.

This becoming of tattoo from an artistic practice towards technological procedure obliges us to rethink not only the relation between art, science and technology, but also the relation of the tattoo with the structures of political and economic power in a society that is increasingly controlling our gestures, customs and daily consumption.

**Keywords:** tattoo, technology, science, art, bio-politics, enhancement

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<sup>1</sup> Dr. Catarina Pombo Nabais is a FCT Post-Doc Fellow at the CFCUL – Center for Philosophy of Sciences of the University of Lisbon, where she is the Head of the Science-Art-Philosophy Lab (SAP LAB). Pombo Nabais is also Art Curator. [catarinapombonabais@gmail.com](mailto:catarinapombonabais@gmail.com)

The practice of tattoo is the more ancient practice of body's modification we know. Several archaeological findings (tattoo tools and preserved human skin) show that tattooing took place in ancient Greece, Persia, and among the ancient Britons and Gauls, in Africa, Americas and Asia<sup>i</sup>. But, besides its large extended reach, tattoo had different meaning in each culture. In Polynesia, tattoo is mainly a male ceremony testing resistance towards pain and fight skills. However, in ancient Egypt, it was mainly a female practice, transversal to all social classes, from women supposed to be prostitutes to the highest positioned women. In general tattoo practices were used with a social and political dimension, working as a proof of submission of the subject face to his master, a mark of penal sanction or ownership (of prisoners and workers). The Nazis tattooed Jews in the concentration camps as a sign of exclusion and punishment. On the contrary, in Central Asia, during the 4<sup>th</sup> and the 3<sup>rd</sup> century BC, tattoos were found mainly in elites, namely chiefs and warriors. In other cultures, tattoo may also be the sign of loyalty, of community membership, an ornament or a therapeutic practice made in the site of the pain to block or to facilitate the exchange of fluids.

However, these numerous meanings will slowly become reduced to a single point of view. With Christianity, a negative conception of tattoo as transgression will prevail. Even if, since the Neolithic times, tattoo was a religious ritual, a ceremonial practice, having a positive meaning from fertility to the affirmation of magic powers, yet, tattoo gradually became a symbol of transgressive habits, a practice of demoniac and negative character. A quote from a teaching in *Leviticus* leaves no doubt for the recrimination of the (now) forbidden practice: "You shall not make any cuts in your body for the dead nor make any tattoo marks on yourselves: I am the Lord" (19:28).

Only in the XV century, when Europe emerged from the Christian Medieval Era and entered an age of explorations and adventures, Europeans recovered a certain positive look upon tattoos, viewed as exotic and exuberant natural manifestations. Much later, during the Victorian era in Europe, tattooing becomes a fashionable popular practice in specific male communities, like sailors, and in America, during the civil war, it became a much trendy custom among soldiers. And today, the same positive view of tattooing turns it out to be not only a popular practice but a mainstream fashion<sup>ii</sup>.

**Two opposite explanations on tattooing.** Besides being a very controversial practice, the object of a positive and a negative use, tattoo is also crossed by another main opposition. On one hand, tattoo is a domination strategy for marking prisoners and slaves, a symbol of inferiority and obedience. But, on the other hand, it tends to emerge as a counter-practice among the submitted persons, an effective practice who guides the submitted individuals to assert their insurrectionist nature. How to explain such inversion? How to understand the fact that tattoo has become a marginal practice and the expression of a rebel spirit, a kind of universal language for criminals and prisoners to express their revolt?

Two opposite explanations have been put forward. According to Lévi-Strauss, the famous anthropologist who dedicated a huge part of his work studying several tribes in South America and New Zealand, tattoos are not

only ornaments, not only signs of nobility and symbols of social hierarchy. The individual who tattoos him/herself is practicing a spiritual lesson for his/her life, engraving in his/her body the long tradition of his/her ancestors. As Lévi-Strauss writes, "The purpose of Maori tattooing is not only to imprint a drawing onto the flesh but also to stamp onto the mind all the traditions and philosophy of the group"<sup>iii</sup>.

A completely different explanation was given, at the beginning of the XX century, by Adolf Loos (1870-1933), a famous Austrian architect, author of the much influential essay *Ornament and Crime* (1908), a kind of a *manifesto* against all forms of aesthetic decoration. Opposed to the *Art Nouveau* movement, Loos believed that everything that could not be justified by reason was superfluous and should be erased. In this perspective, if a building must be free of all kind of decorative elements, the skin of a body should also be determined only by reason, and there is no place for adornments<sup>iv</sup>. Every kind of tattooing is thus an effect of a degenerated individual. As he writes: "Tattooed bars are either latent criminals or degenerate aristocrats. If someone who is tattooed dies in freedom, then he does so a few years before he would have committed murder"<sup>v</sup>.

In line with Loos' puritanism, all along the Victorian Era, tattoos were viewed as immoral, as the sign of a rebel person who does not follow normative social habits. And, in Western culture, at the turn of the 20th century, this negative and pejorative judgment became the "institutional" point of view on tattoo. It led to a huge production of studies on Medicine and Social Sciences based on the hypothesis of a direct relation between tattooing and predisposition to delinquency. All over Europe, specially in France and Italy<sup>vi</sup>, in the attempted of finding a scientific justification for deviant behaviour, medical academies put forward the hypothesis of tattoo being the expression of personality disorders. This general assumption ended in the effective incarceration of the tattooed persons in correctional services<sup>vii</sup>. What is interesting to remark is that, in the end of this process, tattoo turned out to be useful for governmental purposes. Instead of being the sign of a degenerative and marginal personality, tattoo become a power device, an instrument for controlling individual's lives.

The next step in the history of tattoo, is due to the new possibilities put forward by contemporary technology. With the discovery of the nanotechnology and the flexible electronic components, it became possible to invent a tattoo that is an intelligent circuit connect to sensors that can be implanted in our body. This tattoo is a product of a flexible electronic revolution that has already gave birth to smart wearables, or software textiles, i.e., shirts, trousers, jackets and shoes that are made with computerized wearable materials. Flexible electronics are also present in the most recent curved screen smartphones and other flexible screens.

**Tech tattoo.** Made of nano-tech electronic components such as electro-conductive ink or fabric tape, bio-sensors, curvy wires, thermochromic ink and sometimes also imitation gold leaf metal inscribed over the skin, technological tattoo is exponentially expanding.

There are two kinds of tech tattoos nowadays. One is inscribed in the skin<sup>viii</sup>, as a traditional tattoo but with a special ink that is linked to Wi-Fi devices. A very famous example is a tattoo which can reproduce a sound that is previously memorized in the drawing. First, an audio clip is uploaded in a specific mobile app and then a certified artist will grave it in the skin as a traditional tattoo but with a conductive ink. It is called the *Soundwave Tattoo*<sup>™</sup> and it was invented in April 2017, by the tattoo artist Nate Siggard who shared his invention in a video on Facebook that immediately went viral (over 150million views in the first month). He then created the *Skin Motion* company, specialized in what he expresses as “personalized Augmented Reality Tattoos”<sup>ix</sup>.

The other kind is a tattoo that is glued over the skin and disappears by washing like the fake tattoos some kids use. Titled *Duo skin, Double Skin or Tech Tat*, these temporary tech-tattoo belong to a new generation of flexible nanomaterials that are already revolutionizing our world. The future perspective is that they will become a daily life’s device. In fact, due to the fast technological evolution and to their cheap and easy process of fabrication, we witness today a movement of appropriation of the tattoos for an enormous range of concrete purposes having direct impact in man’s life. At the same time, this new dimension of tattoos make more clear their political status. They may have utilitarian purposes such as providing a payment system, tracking individuals in space, or giving instructions to the Wi-Fi devices to which the tattooed subject may be connected. Or they may have a deeper bio-political dimension when, e.g. they make possible measuring the body’s temperature, the heart beats, the level of alcohol or the blood pressure, supervising fitness, computing sleep patterns, in a word, monitoring vital, bio-metric data.

What is at the same time amazing and frightening is the fact that this kind of tattoos, the “bio-wearable” tattoos, has the potentiality to enhance our bodies, to build a more quantified and perfect body, i.e., they turn us into digital cyborgs without any privacy, not even of the interior of our bodies, now transformed into a bio-tech smart and quantifiable canvas. A lot of research centres, allied with international companies, are already developing this kind of intelligent digital tattoo. They have a great value in military universe by detecting poisons in the air, by discovering pathogens in soldiers or by recognizing when soldiers are stressed or hurt.

This shift of tattoo from a simple artistic technique into an allied device of science and technology obliges us to rethink, not only the relation between art, science and technology, but also the relation of the tattoo with the structures of political and economic power. In a society that is increasingly in control of our gestures, customs and daily consumption, is tattoo still a subtle way that inflicts the desire of being safe or, on the contrary, do we become even more controlled through tech-tattoo that is inscribed in our surface skin?

How to explain that the academic, medical and governmental structure are all so committed, interested and working on tech-tattoos? How did tattoo has gained a new status? How to explain this shift of tattoo from a marginal (and sometimes even illegal) practice into a power device, funded and supported by governmental structures and economic enterprises?

Foucault, Deleuze and Guattari are the ones who let us better understand the Power's will of controlling the lives of individuals.

**Regime of signs: the coded body.** Gilles Deleuze and Félix Guattari worked out the problem of tattoo in their book *Anti-Oedipus*, mainly in the chapter "Savages, barbarians, civilized men". Here, tattoo is a "terrible alphabet" in the context of a "system of cruelty": "Society is not first of all a milieu for exchange where the essential would be to circulate or to cause to circulate, but rather a *socius* of inscription where the essential thing is to mark and be marked"<sup>x</sup>. Deleuze and Guattari are defining society, not as a system of exchange, as Levi-Strauss did, but by the mode of representation given by its machine of expression or "regime of signs" and not by its material relations of economic production and exchange. Now, the first form of inscription is the primitive inscription of the territorial machine and this involves tattooing, carving, sacrificing, mutilating, and so on: to inscribe the body into the collective investment of desire of the whole tribe.

In *Anti-Oedipus*, the world of savages is precisely the place of coding the fluxes: The primitive territorial machines codes flows, invests organs, and mark bodies. To such a degree of circulation – exchanging – is a secondary activity in comparison with the task that sums up all the others: marking bodies, which are the earth's products. The essence of the recording, inscribing *socius*, insofar as it lays claim to the productive forces and distributes the agents of production, resides in these operations: tattooing, excising, incising, carving, scarifying, mutilating, encircling, and initiating (...). This organization, which traces its signs directly on the body, constitutes a system of cruelty, a terrible alphabet"<sup>xi</sup>.

The tattoo inscription is a mode of encoding, a form of social inscription marking the individual's body. The *socius* is the tribal body which recognizes and authorizes the inscription, and the inscription has the effect of reinforcing the authority of the *socius*. Thus, the body becomes inscribed into the social body, the currency of which is a form of recognition which can dictate the social status.

**From discipline to control.** In the famous chapter of *Negotiations* "Postscript on the Societies of Control", Deleuze analyses the way in which Foucauldian **Disciplinary Society** of the XVIII and XIX centuries have turned out to be a **Society of Control in the XX century**. Deleuze took the term "control" from William Burroughs as best befitting this "the new monster"<sup>xii</sup>.

Each of these new regimes discovered sites of confinement, environments for enclosure within which they could practice their experimental pressure of control. Panoptic reformed schools, industries, hospitals, armed forces, and prisons functioned as an architectonic configuration corresponding to disciplinary societies. Now, in the societies of control, new devices are adopted. Deleuze seems to be terribly prescient: in the early 90s, prior to the sovereignty of the internet, he already understood that "Disciplinary man produced energy in discrete amounts, while control man undulates, moving among a continuous range of different orbits."<sup>xiii</sup>.

We know that spatial enclaves were crucial for disciplinary societies. But, now, in control societies they cannot operate as social regulation. Space has become an endless continuum, characterized by differential potentialities, and the distinction of interiority and exteriority can no longer be sustained. Foucault's examination of the individual's behaviour understood as part of the masses, is now surpassed by the continuous assessment of the "dividuals" which are the "dividends" (debt) of a mass that is now understood as data, market or bank which are controlled by piracy, hackers, and viral agents. Space is not a physical determination anymore. It is rather an immediate and virtual dimension where all data is shared and controlled.

Also, time has changed: the individual's time was divided in different architectural spaces: school, home, etc. Now, dividual's time is a continuum mass: no more space organizes time. On the contrary, it is time devoted to work or pleasure that organizes space: we can work everywhere, in an airport terminal, at home, at the car. So, basically: "We are taught that corporations have a soul, which is the most terrifying news in the world." The operation of markets is now the instrument of social control. Man is no longer enclosed. Now, man is in debt.

At present, this new kind of power, coming from molar architectural space-time to molecular and continuous space-time of the "dividual", has also changed the concept of body: the body is no longer the mute body shaped by discipline of space and time. In control societies, body is marked by a regime of signs as the inscription of debt inside the capitalist flux which, by digital data, has a perfect and total command of the body's life. Modern body has become the locus of constant social management, the satellite unit, even a control post without any difference between interior/exterior. Modern body is permanently connected to power structures (either – and perhaps mostly – in its free time). In a disciplinary society, when I am out of the factory, my time is my own, until I go back tomorrow, for another working day. In a society of control, while freedom seems to be increased on the one hand, the control of our activities expands on the other. Rather than Jeremy Bentham's **Panopticon**, with a centralized focal point from which activity is surveyed, we have now a diffuse matrix of information gathering algorithms. The

"Panopticon" now becomes a "Superpanopticon": we know that we are being watched but we are encouraged not to worry about it. And this normalization of *surveillance* has become intimate of the modern body.

**Conclusion.** Deleuze says philosophy is science fiction. However, we are living times where we think we are living a science-fiction because science-fiction became the current reality. Against the accelerated evolution in which power is trying so hard to impose as a regular and normative order in our bodies by the tech-tattoos, the "classical" tattoo appears as made by a different time, as a suspended slow time, as the affirmation of an aesthetic and a political dimension.

While an artistic body practice, "classical" tattoo may be seen as the construction of a new territory, as a way of resistance to capitalism that has used tattoo as a new way of domination. While an artistic body practice, tattoo can always be an affirmative expression, a singular mode of resistance. Further, as Deleuze and Guattari emphasize, while an artistic body practice, tattoo establishes a connection to this world through the intensification of our body and its surface. Thus, it can be the most profound connection to cosmic forces (the most profound because it is done *à la surface*).

Let us finish with an acute quotation from Deleuze: "Felix Guattari has imagined a town where anyone can leave their flat, their street, their neighborhood, using their (dividual) electronic card that opens this or that barrier; but the card may also be rejected on a particular day, or between certain times of the day; it doesn't depend on the barrier but on the computer, that is making sure everyone is in a permissible place, and effecting a universal modulation"<sup>xiiv</sup>.

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<sup>i</sup> Cf. Taliaferro Charles and Odden Mark, "Tattoos and the tattooing arts in perspective: an overview and some preliminary observations" in: Robert Arp (ed.), *Tattoos: philosophy for everyone: I Ink, Therefore I Am*. Oxford: John Wiley & Sons, 2012, 4.

<sup>ii</sup> For further details and developments, cf. - Pombo Nabais, Catarina, "The most profound is the skin" - the power of tattoos". Conference proceedings *Taboo-Transgression-Transcendence in Art & Science*, organized within the 10th Audiovisual Arts Festival. Honorato, Dalila & Andreas Giannakouloupoulos (ed.). Corfu: Department of Audio & Visual Arts - Ionian University, 2017, pp. 128-148.

<sup>iii</sup> Lévi-Strauss Claude, *Structural Anthropology*, transl. Claire Jacobson and Brooke Grundfest Schoepf, New York: Basic Books 1963, 257.

<sup>iv</sup> It is interesting to note that this thesis goes perfectly well in accordance with the fact that Loos was one of the first interior designers of modern times and he took much care of ornament inside the houses. The interior was the mirror of moral integrity and good manners.

<sup>v</sup> Loos Adolf, "Ornament and Crime" in: Ulrich Conrads (ed.) *Programs and Manifestoes on 20th-century architecture*, transl. Michael Bullock. Cambridge/Massachusetts: MIT Press 1971, 19.

<sup>vi</sup> That is the case of the French criminologist Lyonnais Alexandre Lacassagne (1843-1924) who, after making a huge research on more than three hundred soldiers as a military physician,

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emphasised that idea in his famous book *Les tatouages. Étude anthropologique et medico-légale* (1881). Cf. Pierrat Jérôme, "Le tatouage dans l'armée" in : Galliot Sébastien & Bagot Pascal (ed.), *Tatouers, Tatoués*. Musée du Quai Branly, 39; and Ellis Juniper, "How to read a tattoo, and other perilous quests" in: Robert Arp (ed.), *Tattoos: philosophy for everyone: I Ink, Therefore I Am*. Oxford: John Wiley & Sons, 2012, 14.

<sup>vii</sup> In France, as Jérôme Pierrat refers: "In 1831, a normative document on tattoos is sent to the directors of central (prison) houses and, in October 1849, a communication from the Interior Ministry states that tattoos can help in the identification of delinquents". Also, the English Government, in 1879, adopted tattoo as a way of identifying criminals. Cf. Ferreira Raquel, *Tatuagens: arte no corpo* in *Arte, Cultura, Mitologia, Pintura, Políticas Culturais*, 14/12/2011, <https://comartecultura.wordpress.com/tag/tatuagens/> (accessed 14/9/2016).

<sup>viii</sup> For now, this new forms of technological tattoo are still temporary because conductivity is lost through skin's natural resistance.

<sup>ix</sup> In *Skin Motion. Tattoos brought to life*, <https://skinmotion.com/soundwave-tattoos/>, assessed 10/05/2017.

<sup>x</sup> Deleuze and Guattari, *Anti-Oedipus*, 142.

<sup>xi</sup> Deleuze and Guattari, *Anti-Oedipus*, 144-5.

<sup>xii</sup> Deleuze, *Negotiations*, 178.

<sup>xiii</sup> Deleuze, *Negotiations*, 180.

<sup>xiv</sup> Deleuze, *Negotiations*, 181-2.

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