Law, religion and technology: the new "truth" on patient's body and the ethical ambivalence of the digital clinical gaze*

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Abstract

The implementation of new technologies is usually perceived as a vector for stimulating significant changes to the *status quo*, allowing individuals to operate more quickly and efficiently. Technological innovation has passed from a response to one or more perceived needs, to be part of the cultural identity of contemporary industrialised societies. Hence, it cannot only be seen as a social process, but it also refers to a peculiar "state of mind", which encompasses a huge range of positive feelings lying between the evaluation of the present and expectations of the future. This paper briefly retraces the history of technological innovation in healthcare, highlighting the bonds it holds with religion and spirituality on one side, and with law and normativity on the other. In doing so, it aims to show that the informatisation of medical practice and the digitalisation of healthcare delivery rest on an "ethical ambivalence" as they relegate some sources of knowledge to the background – those linked to the sensory perception of the doctor and the patient, as well as those deriving from the relational dynamics – while they create new forms of knowledge resulting from complex assemblages between material and virtual factors that unavoidably reshape medical practice and medical epistemology itself.

Keywords: Technological Innovation; Greek Mythology; Holism in Medicine, Standardisation; Doctor–Patient Interaction; Digital Health; Clinical Gaze.

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Resumo

A introdução de novas tecnologias costuma ser percebida como um vetor para estimular mudanças significativas no *status quo*, permitindo que os indivíduos operem com mais rapidez e eficiência. A inovação tecnológica passou de representar a resposta a uma ou mais necessidades percebidas, para fazer parte da identidade coletiva das sociedades industrializadas contemporâneas. Assim, ela não pode ser vista apenas como um processo social, pois também evoca um peculiar «estado de espírito», que engloba uma enorme gama de sentimentos positivos que se situam entre a avaliação do presente e as expectativas do futuro. Este artigo traça brevemente uma história da inovação tecnológica na área da saúde, destacando os vínculos que mantém com a religião e a espiritualidade, por um lado, e com o direito e a normatividade, por outro. Ao fazê-lo, pretende mostrar que a informatização da prática médica e a digitalização dos cuidados de saúde assentam numa "ambivalência ética" sendo que relegam para segundo plano algumas fontes de conhecimento – as ligadas à perceção sensorial do médico e do doente, bem como as que decorrem das dinâmicas relacionais – ao mesmo tempo em que criam novos saberes resultantes de complexos agenciamentos entre fatores materiais e virtuais que inevitavelmente reconfiguram a prática médica e a mesma epistemologia médica.

Palavras-chave: Inovação tecnológica; Mitologia grega; Holismo em Medicina; Standardização; Interação Médico-Paciente; Saúde Digital; Olhar Clínico.

Summary

1. Introduction; 2. From Greek mythology to Galen: the secularisation of medical practice; 3. The divine eye of the anatomists and the second death of Hippocrates; 4. Telemedicine and the tyranny of the virtual gaze; 5. Standardisation and normativity in medical practice; 6. Technological innovation in healthcare and the ambiguity of "clinical gaze"; 7. Conclusions.

1. Introduction

Technological innovation has been defined as "the process by which significant technological novelty is generated, developed and diffused in the world"[1]. Besides the great range of available definitions, scholars from a number of disciplines – economics, political theory, sociology, and anthropology among others – have shed light on significance of technological innovation in modern and postmodern societies. The introduction of new technologies in preexisting settings is usually perceived as a vector for stimulating significant changes to the *status quo*, allowing individuals to operate more quickly and more efficiently[2]. Moreover, technology also brings forth a peculiar aesthetic of the innovation processes. New technologies are indeed designed to be attractive and seductive to users'

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[1] F. Rossini, B. Bozeman, "National Strategies for Technological Innovation", *Administration and Society*, vol. 9, no. 1, 1977, pp. 81-110.

[2] P.H. Spies, "The Democratization of Innovation: Managing Technological Innovation as If People Matter", *World Future Review* vol. 6, no. 1, 2014, pp. 15–28.

eyes, which contributes a great deal to make them as objects of desire. In this context, it is possible to argue that technological innovation has passed from a response to one or more perceived needs, to be part of the cultural identity of contemporary industrialised societies. Hence, technological innovation cannot only be seen as a social process, but it also refers to a peculiar "state of mind", which encompasses a huge range of positive feelings lying between the evaluation of the present and expectations of the future.

It is hardly surprising that also in medical practice innovation processes have been primarily fueled by the introduction of new technologies, from the simplest technical artifacts to the most complex technological systems and devices. Hence, the main aim of this work is to briefly retrace the history of technological innovation in healthcare, highlighting the bonds it holds with religion and spirituality on one side, and with law and normativity on the other. The reconstruction proceeds on the assumption that innovation is usually preferred over resistance and conservatism[3], which also suggests that the introduction of new technologies – not only in healthcare – often passes as unquestioned because its value is considered as self-evident, and ensuing benefits are presumed under every circumstance. Disputing the extent of this pre-assumption represents a promising opportunity to understand how much the evolution of medical practice is driven by a "technological imperative", as well as to problematise the mechanisms through which technological innovation redefines and reshapes the social meaning of medicine.

2. From Greek mythology to Galen: the secularisation of medical practice

When talking of modern medicine, it should be clear that we are referring to "bio-medicine", which is only one of the countless epistemologies of the *ars curandi* known all over the world – though arguably a dominant one. As a distinguishing feature, bio-medicine mostly focuses on the analysis of visible alterations to the standard structure or functioning of the bio-psychic organism[4]. The origin of this epistemology goes back to the Greek mythology, especially to the figure of Asclepius, a semi-god educated by the centaur Chiron on how to cure humans. Even today, the rod of Asclepius, intertwined by a snake, is universally recognised as a symbol of health and healing[5], being currently used by several health authorities and medical and pharmaceutical companies all over the world. Asclepius had three daughters: Hygieia, personification of health, cleanness and sanitation; Panacea, the "cure-all" deity; Yaso, representing the healing process; Ægle, incarnation of beauty and grace; Akeso, who oversaw healing process. He also had two sons, Machaon and Podalirius, who both appeared in the Omer's Iliad as physicians of the Greek Army at the time of the Trojan war[6]. According to the myth, Zeus struck As-

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[3] L. Suchman, L. Bishop, "Problematising 'innovation' as a critical project", *Technology, Analysis and Strategic Management*, vol. 12, no. 3, 2000, pp. 327–333.

[4] T. Wilson., T. Holt, "Complexity and clinical care", *British Medical Journal*, vol. 323, 2001, pp. 685–688.

[5] At a certain point, nonetheless, the use of this symbol has been mixed with the rod of Hermes – god of the passage and the boundaries – which is interlaced by two snakes. In this regard, see S. A. Antoniou, G.A. Antoniou, R. Learney, F.A. Granderath, A.A. Antoniou, "The Rod and the Serpent: History's Ultimate Healing Symbol", *World J Surg*, vol. 35, 2011, pp. 217–221.

[6] J. Hart, "Asclepius: God of Medicine", *Canad Med Ass*, vol. 92, 1965, pp. 232–236; V. Kanellou, "Ancient Greek medicine as the foundation of contemporary medicine", *Tech Coloproctol*, vol. 8, 2004, pp. S3–S4.

clepius with a thunderbolt, being afraid that the prestige he acquired due to his healing powers could have threatened the supremacy of the gods over the humans[7]. Nonetheless, following his teaching, the descendants of Asclepius – also known as the Asclepiads – have prosecuted and further developed the practice initiated by their master. Among them, there was Hippocrates from Cos, also known as the seventeenth Asclepiad, whose teaching marked a turning point in the whole history of modern medicine. Indeed, with the emergence of the *Corpus Hippocraticum* between 5th and 4th centuries BCE, medical practice underwent a first, significant loss of ritualism and sacredness. Thanks to the School of Cos founded by Hippocrates, medicine was no longer considered as the initiating power of Asclepius, but as an array of interventions directed to stimulate the internal forces of the body towards the healing process: «Natural forces within us are the true healers of disease¬» (Hippocrates, 460-356 BC). Consequently, health and disease were no longer dependent on the will of gods, but resulting from the equilibrium established among the four bodily fluids identified by Hippocrates: blood, yellow and dark bile, and phlegm[8]. The relevance accorded to the physical examination of the patient's body and to the physicians' sensory-perceptions led to the *saltum* induced by the advent of the *Corpus Hippocraticum*. In accordance with Hippocrates' teaching indeed, physicians were commonly trained to use all the five senses to carry out the diagnosis: sight to identify external symptoms on patient's body; touch to palpate; smell for the exhalations; taste for the secretions; and hearing to auscultate the noises produced by the body and to listen to the patients' account of the symptoms they experienced.

This process of secularisation of medical practice on account of Hippocrates' teachings also coincided with a trend towards objectification of medical categories and interventions. This trend leads to an irreversible decline of the divine power of Asclepius, to the advantage of a new kind of power, based on the body, which becomes the only source able to reveal the truth about health and illness[9]. The prestige acquired by Hippocrates is also proved by the circumstance that his teaching was recalled during Roman Empire, especially with Galen. As a physician, Galen built on the Hippocratic perspective contributing to a more holistic view of health, which included also emotional and psychic states. According to Galen, the equilibrium among the four bodily fluids not only determined physical health, but also temperament and personality[10]. From a different standpoint, the architectural vocation of the Roman Empire also led to a significant improvement of the population's general conditions. This was due to the efforts made by Romans to improving sanitation and public health, providing urban areas with water aqueducts, sewage systems and public baths. Therefore, with the Roman Empire the conception of health underwent a significant shift, passing from an internal condition

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[7] W.L. Castro, U.C. Arias, "La medicina en la civilización griega antigua prehipocrática", *Gaceta Médica de México*, vol. 150, Suppl. 3, 2014, pp. 369–376, at p. 383.

[8] I. Badash, N.P. Kleinman, S. Barr, et al., "Redefining Health: The Evolution of Health Ideas from Antiquity to the Era of Value-Based Care", *Cureus*, vol. 9, no. 2, 2017, pp. 1–9, at p. 2.

[9] Here it is worthy to remind that this was the peculiar orientation adopted by Hippocrates and the School of Cos. The ancient Greece also knew other medical schools with slightly different orientations. Among the most famous besides Cos, there was also the School of Cnido, which used to focus more on the disease rather than the patient. In this regard, see W. L. Castro, U. C. Arias, cit., at p. 374.

[10] I. Badash, N. P. Kleinman, S. Barr, et al., cit., at. p. 2.

of the body to a wider state, also influenced by social and psychological factors.

3. The divine eye of the anatomists and the second death of Hippocrates

During Renaissance, with the advent of the study of human anatomy and the liberalisation of the dissection practices, scientists such as Berengario da Carpi, Leonardo da Vinci and Vesalio challenged the opacity of the body, even its sacredness. They aimed to discover how the "fabric" of the human being works, making visible what was hidden, covered by flesh and organs. Despite the relevance accorded to hearing in the sensory-hierarchy of medical practice, "to see" inside the body somehow represented the holistic visionary power of monotheistic gods. Thus, the bare eye of the anatomist into patients may also be seen as a sort of internalisation of the divine gaze[11].

The balance between mysticism and secularisation was broken by the scientific revolution of Galileo and Descartes, with the ensuing mathematic vision of the world[12]. It is well-known that Descartes intended his *Homme* as a "body-machine", and disease as a "damage" to be fixed through pharmacological or surgical interventions:

> The hope of bringing to medicine the elegance that Copernicus had given astronomy dates from the time of Galileo. Descartes traced the coordinates for the implementation of the project. His description effectively turned the human body into clockworks and placed a new distance, not only between soul and body, but also between the patient's complaint and the physician's eye. Within this mechanized framework, pain turned into a red light and sickness into mechanical trouble. A taxonomy of diseases became possible[13]

This conception will irreversibly mark the epistemology of modern medicine, which progressively turns into a bio-medicine in so far as it traces a clear line of distinction between the mind as *res cogitans* and the body as *res extensa*. Of course, this process of objectification will open the route to important discoveries for both the history of medicine and that of mankind. Nonetheless, the separation between mind and body will indeed contribute to put aside patients' subjectivity and the holistic vision intrinsic to the inheritance of Hippocrates[14].

Running corollary to the objectification process, technological innovation starts to plant its seeds in medical practice. For the purposes of this work, it is unavoidable to recall the invention of the stethoscope by René Laennec, which dates back to the 1816. As an innovation, this instrument conferred a new significance to the auscultation of the noises produced by the body, though paradoxically its use introduced a first physical distancing between patients and physicians. But the greatest upset in the history of medicine is arguably represented by the discovery of the electro-

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[11] T. Maldonado, "Corpo Tecnologico e Scienza", in Capucci P. L. (org.) *Il corpo tecnologico*, Baskerville, Bologna, 1994, pp. 77–98.
[12] G. Cosmacini, C. Rugarli, *Introduzione alla medicina*, Laterza, Roma, 2007, at p. 7.
[13] I. Illich, *Medical Nemesis. The Expropriation of Health*, Pantheon, New York, 1976, at p. 58.
[14] C. Botrugno, "Right to Health Dealing with Complexity: from the Crisis of Biomedical Paradigm to the Global Health", *Italian Journal of Legal Philosophyi*, vol. 3, no. 2, 2014, pp. 495–511, at p. 497.

magnetic radiation by Wilhelm Conrad Röntgen, at the end of the 18th century. These so-called "x-rays" disclosed the way to modern medical imaging, revolutionising diagnostic process and contributing to the definitive preeminence of the virtual gaze over the human sensory-perception. Together with the progressive appearance of molecular medicine in the 20th century[15], the advent of the modern technologies of diagnostics shifted the focus of medical practice from the patient as a whole to the single parts of his body or the single organic elements. This fragmentation of medical practice also had fundamental epistemic implications, which led to a micro-specialisation of medical knowledge and medical education[16]. In conjunction with this evolution, physicians started to become public functionaries, belonging to an organised body whose main aim was to administer healthcare as a scarce resource. Since health protection became a public interest, physicians progressively lose the possibility and the ability to interact with well-known patients, with whom they erstwhile maintained relations of intimacy and physical proximity. As public officers, they start to look to patients as a "number", and the whole administration of medicine is progressively framed into a system, which also means that doctor-patient relationship slowly turns into a provider-user one[17]. In a broader view, this mutation has been also described as a "second death of Hippocrates"[18], because patient ceases somehow to be the unavoidable point of reference of medical practice, being replaced by standardised data and new technologies, which pass from being a mere support of medical practice to be seen as complete diagnostic methods.

4. Telemedicine and the tyranny of the virtual gaze

In the middle of the 20th century, the process of technological innovation in healthcare led to a further significant transformation in medical practice through the emergence of "telemedicine". This term comes from the intersection of telematics and medicine and its advent dated to the first experimentations performed on behalf of the U.S. National Aeronautics and Space Administration with the intent of delivering remote healthcare to the personnel involved in orbital space missions, or to provide emergency support in case of natural disasters. After a first unsuccessful season of experimentations, telemedicine started to flourish in the 1990s, also due to an increased capacity of transmission and to a reduced cost of technological devices[19]. Telemedicine currently refers to:

> the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, re-

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[15] L. Pauling, A.H. Itano, S.J. Singer, I.C. Wells, "Sickle Cell Anemia, a Molecular Disease", *Science* vol. 110, 1949, pp. 543–548.

[16] N. D. Jewson, "The disappearance of the sick-man from medical cosmology 1770-1870", *Sociology*, vol. 2, n. 10, 1976, pp. 388–405, at p. 388.

[17] P. Donati, "Le trasformazioni del rapporto comunicativo nella relazione interpersonale medico-paziente", *Rassegna Italiana di Sociologia*, vol. 4, 1984, pp. 547–571.

[18] D. Da Gama, "La crise de la medicine contemporaine ou la second mort d'Hyppocrate", *Journal des Maladies Vasculaires*, vol. 5., no. 26, vol. 5, 2001, pp. 287–289, at p. 287.

[19] R. Bashshur, "Telemedicine Effects: cost, quality and access", *Journal of Medical Systems* vol. 19, no. 2, 1995, pp. 81–91.

> search and evaluation, and for the continuing education of health care providers, all in the interest of advancing the health of individuals and their communities[20]

Telemedicine promises to revolutionise the organisation of contemporary health systems, moving the main focus of medical intervention from hospital to home, thus reducing unduly transfers and avoiding unnecessary hospitalisations. Moreover, according to their proponents, the spread of telemedicine in daily practice would increase healthcare accessibility, especially to the underserved and rural population[21]. Nowadays, telemedicine has already reached a remarkable spread in the following areas: teleradiology, that consists of sending x-ray images from a peripheral site to a specialist centre which can make a report; telecardiology, that allows remote electrocardiogram and monitoring of chronic patients; telerehabilitation, which includes a set of videoconference treatments for rehabilitation purposes; teleneurology, that allows the remote assessment of patients' cerebral functions immediately after a stroke[22].

The spread of telemedicine seems to be able to profoundly reshape the space-time relationship that underlies conventional care-delivery process. Allowing remote access through user-friendly and anthropomorphised technological devices, telemedicine is contributing to the emergence of a new geography of healthcare[23], which promises to dissolve distances and overcome geographical barriers with the same power of telematics transmission. From a different standpoint, allowing the body to be represented, transmitted and evaluated "over the wire", telemedicine encourages further the objectification and the fragmentation of medical knowledge. Indeed, with telemedicine the body is converted into a series of visual signs and digital representations, which are further assessed and scrutinised elsewhere, in accordance with a complex array of medical specialties[24]. Consequently, the progressive spread of telemedicine in daily practice might significantly affect the quality of medical practice[25], eventually turning the current supremacy of visual diagnostics into a "tyranny" of the virtual gaze.

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[20] World Health Organization, "Telemedicine. Opportunities and developments in member states", Report on the Second Global Survey on E-Health, 2010 Geneva, available from: http://www.who.int/goe/publications/goe_telemedicine_2010.pdf, at p. 9.

[21] K. Zissman, I. Lejbkowicz, and A. Miller, "Telemedicine for multiple sclerosis patients: assessment using Health Value Compass", *Multiple Sclerosis Journal*, vol. 18, 2012, pp. 472–479; Hein, M. A., "Telemedicine. An important force in the transformation of healthcare", available at: http://ita.doc.gov/td/health/telemedicine_2009.pdf.

[22] In this regard, see C. Botrugno, "La diffusione dei modelli di cura a distanza: verso un diritto alla telesalute?", *Biolaw Journal*, vol. 1, 2014, pp. 161–177.

[23] C. Botrugno, La nuova geografia del diritto alla salute. Innovazione tecnologica, relazioni spaziali e forme di sapere, IF Press, Rome, 2020.

[24] It is worth reminding that despite the practical advantages associated to the use of telemedicine, available evidences on clinical acceptability and cost-effectiveness are still scarce and inconsistent. In this regard, see A. Steventon, M. Bardsley, J. Billings, et al. "Effect of telehealth on use of secondary care and mortality: findings from the Whole System Demonstrator cluster randomized trial", *British Medical Journal* vol. 344, 2012, e3874; M. Cartwright, S. P. Hirani, L. Rixon, et al. "Effect of telehealth on quality of life and psychological outcomes over 12 months (Whole Systems Demonstrator telehealth questionnaire study): nested study of patient reported outcomes in a pragmatic, cluster randomised controlled trial", *British Medical Journal*, vol. 346, 2013, f653.

[25] J.H. Osorio, "Evolution and changes in the physician-patient relationship", *Colombia Médica* vol. 42, no. 3, 2011, pp. 400–405, at p. 402.

5. Standardisation and normativity in medical practice

The whole evolution of modern medicine might also be seen as a process of selection (reduction) of the information relevant for the physician to carry out a diagnosis and formulate a therapeutic regime. In this regard, it is undeniable that the secularisation of medicine and the ensuing trend towards the objectification of medical categories has made it possible to reach levels of accuracy and efficacy that were certainly unknown in the past. Nonetheless, the progressive relevance acquired by this trend has also exacerbated the standardisation of medical practice. Consequently, the biomedical paradigm nowadays maintains an unsuspected bond with law and normativity since health and disease are in various ways measured and checked through a vast array of pre-established, quantitative criteria[26]. The following extract from the "Medical Nemesis" of Ivan Illich may contribute to give the sense of the subtle relation law entertains with medicine:

> In Latin norma means "square", the carpenter's square. Until the 1830s the English word "normal" meant standing at a right angle to the ground. During the 1840s it came to designate conformity to a common type. In the 1880s, in America, it came to mean the usual state or condition not only of things but also of people. In France, the word was transposed from geometry to society – *école normale* designated a school at which teachers for the Empire were trained – and was first given a medical connotation around 1840 by Auguste Comte. He expressed his hope that once the laws relative to the normal state of the organism were known, it would be possible to engage in the study of comparative pathology[27]

In this context, it is also unavoidable to recall the work of Georges Canguilhem, who disputed the line of distinction between the normal and the pathological, highlighting how much the physiological criteria represented by the "norm" still required reference to a "subjective", a non-absolute. Canguilhem rejected the conception of the disease as a mere deviation from established parameters. To the imposition of an anonym normativity that dissolves patient's subjectivity in the objectivity of medical knowledge, the philosopher opposed the innate and unique normativity of each human being. According to this perspective, humans feel themselves "healthy" not just because they are "normal", but because they are capable to establish new norms of life, going beyond the mere survival[28].

In 1948, the World Health Organization adopted his well-known definition of health as a state of complete physical, mental and social well-being, in contrast to the reductionist view of health as the mere absence of infirmity or disease. The introduction of that definition in a peculiar historical context – immediately after the end of the World War II – represented a significant attempt to mitigate the rigidity of bio-medical paradigm with the inclusion of the social determinants, which would have contributed to restoring a more holistic perspective in healthcare[29]. Nonetheless, within a few decades

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[26] A. Pagnini, Filosofia della medicina. Epistemologia, ontologia, etica e diritto, Carocci, Milano, 2010.
[27] I. Illich, cit.
[28] G. Canguilhem, *Le normal et le pathologique*, Presses universitaires de France, Paris, 1984.
[29] I. Badash et al., cit., at p. 3.

from its adoption, that definition too was found to be inadequate to satisfy the needs of protection posed by the complexity of contemporary societies[30]. In this regard, it is sufficient to consider the appearance of infra-pathological conditions or semi-healthy status, as a main consequence of technological innovation and the constant increase of chronic diseases[31]. In parallel to this, bio-medical research has led to the emergence of pharmacogenomics and precision medicine – the latter also designed as genomic or personalised medicine. The attempt to "personalise" medical practice by «tailoring medical treatment to the individual characteristics, needs and preferences of each patient»[32] may also be seen as an attempt to overcome the standardised features of the biomedical paradigm. Nonetheless, on one hand, despite the evocative promises associated to this new trend in medicine, we are still far from filling up the "evidence gap" surrounding the emergence of precision medicine[33]. On the other hand, it should be noted that – paradoxically – this is a kind of personalisation enacted without patients themselves. Building on the main vocation of biomedical paradigm, precision medicine focuses on visible and measurable gene factors, which leads to the exclusion – once more – of the significance of subjective and social factors in healthcare.

6. The ethical ambivalence of "digital clinical gaze"

The spread of digital health services fostered by the advent of the COVID-19 pandemic conferred new significance to the analysis focused on the effects of clinical gaze as performed by innovative technologies. It is worth reminding that digital health services increasingly "examine", evaluate and keep track of significant portions of users' daily lives, incorporating aspects, circumstances and elements that can be possibly unrelated to their healthcare needs. It is not surprising that scholars have referred to the ability of digital health services to "discipline and punish" in a sense that openly recalls the Foucauldian perspective. Despite this, an effective effort aimed at unpacking the deployment of the "surveillance-control" in the healthcare domain is still missing and many of the views proposed in this regard seem to be naïvely inspired by a dystopian Orwellian scenario.

Although briefly, here it is worth recovering the precious "disciplinary legacy" of Michel Foucault to assess to what extent it can be seen as a pertinent theoretical framework for the analysis of the surveillance-control that supposedly underlies the use of digital health services. This analysis proceeds from the assumption that at the bottom of the Foucauldian conception of biopower there is, essentially, a "principle of production", i.e. the generation of a utility. Indeed, the advent of the disciplinary society during the 18th century represented for Foucault the culmination of a strategy essen-

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[30] D. Callahan, "The WHO Definition of Health", *Hasting Center Studies*, vol. 1, no. 3, 1973, pp. 77–87.

[31] C. Botrugno, 2014, cit.; C. Botrugno, "Innovazione tecnologica in salute e commodification: verso un nuovo dovere di protezione dell'individuo?", *Jura Gentium*, vol. 17, no. 1, 2020, pp: 140-167.

[32] US Food and Drug Administration, "Paving the Way for Personalized Medicine The FDA's role in a New Era of Medical Product Development", October 2013 available from: https://www.fda.gov/downloads/scienceresearch/special-topics/personalizedmedicine/ucm372421.pdf., at p. 2.

[33] S.A. Adams, C. Petersen, "Precision medicine: opportunities, possibilities, and challenges for patients and providers", *C J Am Med Inform Assoc*, vol. 23, 2016, pp: 787–790

tially aimed at transforming the bodies, and therefore individuals, into a source of utility. Control as an end in itself was a privilege of the "classical age", to which few could have yearned. Conversely, the lowering of this threshold to the rank of the population – which is typical of the disciplinary society – contributed to transforming the intrinsic sense of control, converting it into a principle of utility-production[34].

The advent of digital health has meant that the frequency of healthcare surveillance can be highly extended, becoming possibly endless. From a Foucauldian perspective, therefore, the emergence of this new paradigm of control – which proceeds under the aegis of public health's protection – would consist in nothing more than a "threshold lowering", i.e. the extension of a privilege previously reserved to an elite, particularly, those who had the opportunity to continuously submit to medical scrutiny. The ambivalence inscribed in this form of "democratisation" can be better grasped when considering it inaugurates a new form of technology-driven medicalisation, one that extensively exposes patients' daily life to the clinical gaze.

Discussing technological innovation and identity in a feminist perspective, Donna Haraway has highlighted that a new material order shapes our lives, one pervaded by the «concept and metaphor of information»[35], where the body ceases to be «a stable map of normalized functions» to become a «highly variable terrain, composed of strategic differences»[36]. Applied to the healthcare domain, this new technological-informational order reshapes corporeity in ways that reveal a new sacredness of the body – a body disaggregated, virtualised and reduced in traces, signs and data. Such a sacredness seems to be inspired on a *noli me tangere*[37] (touch me not) that is antithetical to the background of practices, principles and values traditionally underlying the medical practice of Hippocratic derivation. The disaggregation of the body into a virtual-digital entity is also mirrored into the iper-specialisation and fragmentation of medical knowledge, which led to a proliferation of new medical specialties. However, such a fragmentation must be framed into the notion of "knowledge-power" as Foucault depicted it in *Discipline and Punish*[38]. From this perspective, power produces reality, produces fields of objects and rituality of truth[39]. In light of this, it becomes clear that the spread of digital health contributes to establishing more intense relations between people, technological artifacts, spaces and places. Digital health services are no longer a mere mechanism of collection of data taken from patient's body. Rather, they must be seen as a process – inspired by a principle of production – which aims at building new forms of knowledge, a process that irreversibly affects medical practice and its aesthetics, reshaping it from its epistemology.

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[34] M. Foucault, Discipline and punish: the birth of the prison, Penguin, London, 2020.

[35] S. Nettleton, "The emergence of e-scaped medicine", *Sociology*, vol. 38, no. 4, 2004, pp: 661-679, at. p. 666.

[36] D. Haraway, *Simians, Cyborgs, and Women*, Free Association Books, London, 1991; cited in S. Nettleton, 2004, at p. 668.

[37] The Latin locution *Noli me tangere* (touch me not) is attributed to Jesus in John 20:17. He would have pronounced it to Mary Magdalene as soon as she met him after his resurrection.

[38] M. Foucault, Discipline and punish: the birth of the prison, cit.

[39] Ibid.

For this paper, it is worth wondering whether and to what extent the disciplinary perspective can still be seen as helpful to analyse the implications posed by the digitalisation of contemporary healthcare systems. Deleuze's view on the work of Foucault sheds light on some aspects that take to see new technologies as a dispositive that allows to establish an "open and continuous control"[40]. The disciplinary project would be therefore outdated given digital health services do not foresee a "direct operation" on the body – as depicted by Foucault in the disciplinary society. Rather, their use must be ascribed to a domain that focuses on people's mobility or their possibility of movement[41]. Mobility indeed emerges as a fundamental dimension through which to read the iniquity of relations in post-modern societies[42]. If the disciplinary project rested upon the solidity and materiality of the "institutions", open control societies relies on the "extitution"[43], which can be defined as: «a surface impossible to geometrise, or rather, an amalgam of changing connections and associations. It is made of positions, neighbourhoods, proximities, distances, adhesions or accumulations of relationships»[44]. The extitutional project reveals a new kind of materiality, one pervaded by flows of data and information that structure the possibilities of movement of people that are embedded in these networks: «[i]n the extitution there are no numbers or marks that standardise or individualise the subjects, but rather codes and passwords that allow or deny access to information and mark movement trajectories. The relationship between supervision and open control does not occur through confinement in specialised establishments but operates starting from the creation of networks, that is, from the involvement of the subject in networks composed of multiple groups and institutions. [...] The subject remains free to move from one place to another, passing through establishments and institutions but, in any case, he will always find an archive with his updated data»[45]. In this regard, it must be kept in mind that, although panoptism was a project founded essentially on the physical allocation of individuals in space – an operation necessary for the establishment of a regime of "total centralised visibility"[46] – its ultimate goal was rather "the care of the spirit", *rectius* of the "soul" or, in other words, the production of a new subjectivity: «[t]he soul, this new surface, is very important for understanding how the body acts as a means of propagation of power. Indeed, contrary to what was usually thought, the soul has never been an individual matter, confined to privacy»[47].

From a Deleuzian perspective, therefore, control becomes something very different from the spatial confinement of disciplinary practices. This does not mean it ceases to

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[40] G Deleuze "Qu'es t-ce qu'un dispositif?", in *M. Foucault philosophe. Rencontre internationale*, Éditions du Seuil, Paris, 1989, pp. 185-195.

[41] F.J. Tirado, M. Domènech, "Extituciones: del poder y sus anatomías", *Política y Sociedad*, vol. 36, 2001, pp. 191-204, at p. 201

[42] See K. Hannam, M. Sheller, J. Urry, "Mobilities, Immobilities and Moorings", *Mobilities*, vol 1, no. 1, 2006, pp. 1-22, at p. 3.

[43] F.J. Tirado, M. Domènech, cit.

[44] Ibid., at p. 203.

[45] M. Domènech, F.J. Tirado, S. Traveset, A. Vitores, "La desinstitucionalización y las crisis de las instituciones", *Educación Social*, vol. 12, pp: 20-32, at p. 30.

[46] F.J. Tirado, M. Domènech, cit., at p. 195.

[47] Ibid., at p. 196.

be a "spatial" enterprise, as was the birth of the modern clinic. Conversely, it passes to penetrate the open space of the extitutions, thus evoking a colonisation of the movement and the mobility of individuals. What inescapably characterises extitutions – or open control societies – is precisely the valorisation of movement and displacement, which cease to be issues to deal with as they were in the conventional institutions and are converted into a resource, a source of "production". In other words, the passage from the logic of the disciplinary institutions to that of the open extitutions can be described as a shift from "making things happen" to "letting things happen". This shift can be also understood by recalling the notion of "nudging", which appears to be central in the functioning of the extitutions[48]. A nudge is a "gentle push" to which individuals find themselves imperceptibly subjected so that they act by the pursuit of objectives that others have paternalistically established in their interest. Ultimately, the functioning of societies inspired by open control rests on the belief on the part of individuals that they embody the "agent subject", the one who chooses, rather than the acted out, the one who is guided (driven) to choose. This is why the practices of open and continuous control differ radically from those of disciplinary control: no more physical-spatial allocation and surveillance, no more organisation of time and "visibility" regimes, no more conscious emotional participation in the control regime and use of their physical energies. The regime of open and continuous control typical of extitutions is essentially based on "monitoring", on the remote control, and therefore relies on movement, individual freedom, and above all, social interaction, which turns into a large field of knowledge on which to look, as well as in a potentially immense source of data production. In this regard, it has been highlighted that: «surveillance survives in the establishment. Based on movement, it requires no visibility and transcends physical barriers. It is based on the movement control of the user. The password, usual practice in the institutional context, allows the permanent localisation of its trajectory and the management of its layout. It transcends time, as can be seen especially in the ability to archive and consult the information contained in the database on which these new social forms are based»[49].

7. Conclusions

The informatisation of medical practice and the digitalisation of healthcare delivery rest on an "ethical ambivalence" as they relegate some sources of knowledge to the background while they create new forms of knowledge that result from complex assemblages between material and virtual factors – e.g. technology, values, spaces, places, norms, practices. The integration of these assemblages inevitably modifies not only medical practice and its aesthetics, but medical epistemology itself. In light of this, it would be too naïve to identify the roots of the assumed "dehumanisation"[50] of modern medicine in technological innovation processes. As shown by its millenary evolution since the

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[48] See C. Botrugno, *La nuova geografia del diritto alla salute. Innovazione tecnologica, relazioni spaziali e forme di sapere*, cit.

[49] Ibid., at p. 202.

[50] See C. Botrugno, "Information technologies in healthcare: enhancing or dehumanising doctor-patient interaction?", *Health J*, vol. 25, no. 4, 2021, pp: 475-493.

time of Hippocrates, the biomedical paradigm has always had an intrinsic reductionist vocation, which brought physicians to focus on some factors to the detriment of others. Current appeals to the perspective of complexity in health sciences and bioethics[51] prove the need to recuperate a dimension that has been largely neglected by the rigidity of the biomedical paradigm, too much conditioned by nosographic taxonomy and the binary logic of the normal and the pathological. As formerly highlighted, that logic also pertains to the sphere of law and normativity: the right and the wrong, the allowed and the forbidden, the standard and the deviated. Undeniably, the standardisation in medical practice has been also fostered by the overwhelming ascent of technological artifacts, particularly modern technologies of visual diagnostics and, more recently, digital health services. These technologies indeed provide physicians with powerful means to scan, inspect and scrutinise bodies as if they were transparent. Meanwhile, as a kind of Nemesis – to recall Ivan Illich's masterpiece – physicians have mostly lost the ability to look at the patient as a whole – as an *olos* – going beyond flesh, organs and molecules. Hence, it is hardly surprising that the technological imperative that sustains the innovation process in contemporary health systems also brings the risk of a new wave of mechanisation and dehumanisation of medical practice[52]. With the significant exception of mental health, which has been appointed to a separate specialty, this imperative is shifting ever more the core of medical practice towards the informatics and the statistical sciences[53], setting aside patients' feelings, cultural attitudes, moral beliefs, and socio-economic conditions. The historical perspective adopted in this work sheds light on the significance of these factors which, although escaping from the evidence-based and the "measurable", cannot be seen as a mere ornament or a folkloristic aspect of medical practice. Rather, they represent a fundamental part of the disease and its evolution[54] in so far as they enclose the efforts made by patients to make sense of "technical facts" such as the experienced symptoms and the nosographic classifications.

To reverse the tyranny of the technological imperative and the assumed supremacy of the measurable and the quantifiable, it seems appropriate to go back to thinking of medicine in terms of an *ars*, which does not mean leaving medical practice to witchcraft or physicians' free will. Rather it evokes the need to value and protect the subjectivity of the patient and the experience of the doctor, who both can mitigate technological hubris and enrich the accuracy and powerfulness of the digital clinical gaze.

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[51] T. Wilson, T. Holt, cit.

[52] For further considerations, please see C. Botrugno, "Towards an Ethics for Telehealth", *Nursing Ethics*, vol. 26, no. 2, 2019, pp: 357-367.

[53] D. Callahan, *False Hopes: Overcoming the Obstacles to a Sustainable, Affordable Medicine,* Rutgers University Press, New Brunswick, 1999; E. Kluge, "Ethical and legal challenges for health telematics in a global world: telehealth and the technological imperative", *International Journal of Medical Informatics*, vol. 80, no. 2, 2011, pp: e1-e5.

[54] T. Richards, M.V. Montori, F. Godlee, P. Lapsley, D. Paul, "Let the patient revolution begin", *British Medical Journal*, vol. 346, 2013, f2614; C.L. Cazzullo, and F. Poterzio, *Paziente e medico: fenomenologia e prassi della relazione terapeutica*, Edizioni internazionali, Roma, 2007; J.A. Clark, E.G. Mishler, "Attending to patients' stories: referencing the clinical task", *Sociology of Health and Illness*, vol. 14, 1992, pp. 344–372.