CHARLES UNIVERSITY

FACULTY OF SOCIAL SCIENCES

Institute of Sociological Studies

Bachelor's thesis

2022 **Daniel Iormark**

CHARLES UNIVERSITY

FACULTY OF SOCIAL SCIENCES

Institute of Sociological Studies

Daniel Iormark

Assembling a Medical Condition. Adermatoglyphia Case.

Bachelor's thesis

Prague 2022

Author: Daniel Iormark

Supervisor: Martin Tremčinský

Academic Year: 2021/2022

Bibliographic note

Iormark, Daniel. *Assembling a medical condition. Adermatoglyphia case.*
31 pages. Bachelor's thesis. Charles University,Faculty of Social Sciences, Institute of Sociological Studies.

Supervisor: Martin Tremčinský

Abstract

The thesis addresses the adermatoglyphia medical condition. It used the theoretical framework based on the Foucauldian thought and ANT ideas as well as the mix of methods they suggest, in order to study how various actors and forces are enacted by scientists in their articles in order to assemble adermatoglyphia. The thesis revealed that a detour into the identification and authorization requirements, the description of fingerprinting, the figure of a healthy patient, the presence of biopolitial, technological and biomedical dispositifs as well as the equal treatment of both human and nonhuman actors are characteristic for the studied articles. The contingency of adermatoglyphia on the mechanisms of biopolitics and disciplinary power, fingerprinting technological solution and western biomedical science, the pathologisaion of people with adermatoglyphia, the problems of betrayal and translation were addressed in the thesis. It also contains a macro perspective of adermatoglyophia as well as the attempt to use the concept of extended phenotype in order to equalize technomachines and intellectual constructs.

Abstrakt

Bakalářská práce se zabývá zdravitním stavem adermatoglyfií. Použila teoretický rámec a metodologie založené na Foucauldově myšlence a ANT, které navrhují, pro zjištění, jak jsou různí aktéři a síly zapojený vědci ve svých článcích za účelem produkce adermatoglyfie. Práce odhalila, že pro prozkoumané vědecké články je charakteristická oklika k požadavkům na identifikaci a autorizaci, popis otisků prstů, postava zdravého pacienta, přítomnost biopolitických, technologických a biomedicínských dispositivu a také rovné zacházení s lidskými i nelidskými aktéry. V práci byla identifikovana podmíněnost adermatoglyfie na mechanizmech disciplinární moci a biopolitice, technologickém řešení snímání otisků prstů a západní biomedicínské vědé, patologizace lidí s adermatoglyfií, problémy zrady a překladu. Obsahuje také makro perspektivu adermatoglyfie a také pokus využít koncept rozšířeného fenotypu k vyrovnání technostrojů a intelektuálních konstruktů.

Keywords

Adermatogyphie, patalogie, norma, biopolitika, dispositif, aktér, otisky prstů

Klíčová slova

Adermatogyphie, patalogie, norma, biopolitika, dispositif, aktér, otisky prstů

Extent of thesis: 72002

Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague … **[02.05.2022]** **[Daniel Iormark and signature!!!]**

Acknowledgments

I would like to acknowledge my parents Ekaterina and Mikhail Iormark who provided me with financial and emotional support all through my studying process. I would also like to acknowledge by scientific advisor Martin Tremčinský for recommending literature and timely responses on my inquires. I would also like to acknowledge Vladimir Dneprovsky for his detailed responses on the questions concerning biological issues I faced with. Finally, I would like to acknowledge Tatiana Išková for her suggestions which improved the quality of my English.

Institute of Sociological Studies
Bachelor's thesis proposal

Termíny pro podávání projektů bakalářských / diplomových prací
bakalářské studijní programy SOSP, SOSA, SOC_SSS a SOC_SA
magisterský studijní program SOC

30. 6. Zaslání projektů na sekretariát Katedry sociologie (jana.vojanova@fsv.cuni.cz).
5. 9. Vyrozumění studentů o přijetí či nepřijetí projektů.
30. 9. Zaevidování projektů bakalářských a diplomových prací v SISu.

Postup při zadávání a schvalování projektu bakalářské / diplomové práce

1. Vyplňte následující formulář.
2. Soubor uložte pod jménem „studijní program_kód semináře_příjmení, jméno“ (SOSP_BCA_Černá, Jana; SOC_MGRB_Černý, Jan).
3. Soubor zašlete ze své fakultní emailové adresy na sekretariát Katedry sociologie ISS FSV UK: jana.vojanova@fsv.cuni.cz; v kopii projekt zašlete na fakultní emailovou adresu vedoucího vaší bakalářské / diplomové práce. Projekty zaslané z jiné než fakultní adresy a / nebo bez uvedení vedoucího práce v kopii, nebudou přijaty.
4. Po schválení projektu jej ve spolupráci s vedoucím práce zadejte do SISu. V případě neschválení projektu celý proces opakujte.

.....

Projekt bakalářské práce

Content

_TOC_250002

Chapter 1 Introduction

The most precise term one can use to describe Adermatoglyphia (ADG) is "medical condition". Some experts attribute it to genetic disorders (e.g. Sarfraz, 2019) or symptoms (Ibid.) while other scientists call it an "Immigration delay disease" (Burger et all, 2011). This very rare medical condition supposes certain peculiarities of skin on fingers disabling the affected people to create fingerprints. It poses an interest for genetics, dermatology and further biological and medical disciplines whose scholars have already undertaken some research in this area. Social sciences, however, seem to pay no attention to this medical condition. This thesis is aimed to fill this void.

Several things made ADG possible: contemporary medicine authorized to decide if a body or other considered object is normal or not, contemporary bureaucratic apparatus and governance techniques requiring the control over population and identification of particular individuals as well as various technologies designed for fingerprint identification widely accepted by authorities on different levels all over the world. Provided these factors had never existed, such peculiarities of skin constituting ADG would either be considered normal or no judgements over normal/abnormal body could be produced by medicine.

ADG is a medical condition which studying may be interesting for social sciences. Firstly, its study may better the understanding of how doctors and scientists decide over the normality or abnormality of the human body. Secondly, it may improve the understanding of how the biomedical knowledge is produced on the intersection of bureaucratic apparatus, technomashines and scientific practices. Finally, it may underscore the role of nonhumans (fingerprint identification technologies and genes) as the factors affecting the normality or abnormality of human bodies. The aim of the research is to undertake the study of publications concerning adermatoglyphia in order to better understand how different «social», «technological» and «biological» forces contribute to the construction of the medical condition.

This thesis has the following structure: The second chapter constitutes a literature review and will discuss theoretical approaches and their key texts which are useful to the studying of ADG. It will start with Foucauldian thought and will examine the insights into the problems of disciplinary power, population as well as western clinical medicine thinking in the normality versus abnormality categories. Some works of Foucault's successors will also be discussed, especially those dealing with a handicap concept. ANT will be the second major intellectual tradition discussed in the chapter. It will start with the major theoretical and methodological book "Reassembling the Social" (Latour, 2005). After introducing the dispositif concept in order to address possible theoretical controversies between Foucauldian and Latourian thoughts the further key ANT papers (Callon, 1984; Mol, 2003) will be discussed. Finally, the concept of extended phenotype (Dawkins, 1982) will be introduced. The third chapter will address the methodological aspects of the thesis as well as it will provide the information concerning the used data. The fourth chapter will report the results of the research. It will give information about how the authors understand ADG, introduce a healthy yet pathological person – a walking oxymoron inhabiting almost any text on ADG, and will describe three dispositive which were unidentified in the examined texts as well as investigate how authors treat human and nonhuman actors in their texts. The fifth chapter will embed the findings from the previous chapter into the theoretical framework discussed in the literature review. It will

show the contingency of ADG as the form of knowledge, consider the problems of normality and abnormality, address the interaction between humans and nonhumans and it will tell a new yet old story of translation and betrayal. The chapter also contains an attempt of equalising the technological and theoretical actors through the theoretical prism of extended phenotype concept as well as encompass the helicopter view on the ADG phenomenon. The sixth chapter is a conclusion and it will sum up this thesis as well as outline possible directions for the future research.

This chapter will discuss theoretical approaches and their key texts necessary to understand ADG. It will start with Foucauldian thought and will examine problems of disciplinary power, population as well as western clinical medicine thinking in the normality versus abnormality categories. Some works of Foucault's successors will also be discussed, especially those dealing with the handicap concept. ANT will be the second major intellectual tradition discussed in the chapter. It will start with one of its major theoretical and methodological books: "Reassembling The Social" (Latour, 2005). After introducing the dispositif concept in order to address possible theoretical controversies between Foucauldian and Latourian thoughts the further key ANT papers (Callon, 1984; Mol, 2003) will be discussed. Finally, the concept of extended phenotype (Dawkins, 1982) will be introduced.

Chapter 2 Literature review

2.1 Foucauldian thought

Relations between power, knowledge and the human body, questions of normality and abnormality, the emergence of population and its governance were thoroughly studied by Michele Foucault (2003, 2007, 2008, 2012). He wrote about the emergence of the disciplinary dispositif enabling the production of power-knowledge in the 17th-19th centuries. This disposition was based on the exam procedure and the notion of norm. This disposition manifested itself via a set of techniques, forms of knowledge and material objects.

According to Foucault (2007) discipline should be understood as specific practices, applied within specific discourses. The aim of such practices was the maximisation of productivity and effectiveness of individuals and organisations. Descending from monastic practices of obedience, those practices assumed human body as their object. The result of their application was the production of individualized docile bodies which were trained to abide laws, keep the order of the unfolding capitalist world and effectively enact material objects such as guns, machines and tools.

Foucault associated disciplinary practices with the special regime of knowledge – knowledge-power. A specialised infrastructure of analytical spaces (in schools, barracks, hospitals, manufactories, prisons, etc.) which enabled individualising, categorizing, surveying and controlling individuals, making them visible and gathering data about them was created in order to produce such knowledge. The producers of knowledge also developed the evaluation criteria to access the individualized bodies and behaviour from the norm versus pathology point of view which was essential for practising this form of power.

Foucault paid a special attention to the exam procedure as one which explicitly demonstrates the relations of power and knowledge. This practice demands the object of

power application to expose itself to the accessing gaze, the analysis of one who can decide over the normality of the object. The results of exams were thoroughly documented, which produced the knowledge concerning not particular individuals but enabling the gathering statistics concerning the entire population. Foucault also claimed that the power within disciplinary practices and policies started being exercised not over territories or subjects of law, but over living human who were perceived as controllable machines which simultaneously were biological bodies which were born, could become ill or die which contributed to the emergence of the biopolitics of population.

Another issue concerning the relations between power and body was the invention of population and security-based mode of governance. In course of lections "Security, territory, population" (Foucault, 2007) he introduced three governance regimes: legal-based which relied on the discrimination between legal and illegal, norm and pathology; disciplinary which relied on disciplinary techniques and the direct realm of sovereign and security which relied on the specific knowledge of governed objects as well as on sophisticated calculations of costs, benefits and risks on the population level. He provided a deeper look on the regime of security (which is based on the understanding of the nature of governed things and assumes precise and limited interventions) and its differences from legal regime (which governs by prohibitions) and disciplinary regime (which governs by prescriptions, obligations and regulations). He also addressed the problems of normalisation. Whereas in disciplinary approach the assumption of normality and abnormality precedes the contact with normalising objects, security mechanisms suggest applying empiric methods and deducing normality studying the object.

One of the crucial transformations was the shift from territory to population as the major object of application of state power. In order to increase the efficiency of governance techniques and policies authorities had to discover population and elaborate intellectual and institutional infrastructure for its studying. Thereby, emerged biopolitics – a new mode (aggregation of techniques, practices, strategies and tactics) of governance which dealt with the living people and tried to maximise their efficiency. On the one hand it dealt with population in general (the problems of population growth, famine, healthcare, literacy, etc.) while on the other hand within its institutions and practices of disciplinary power it distinguished, differentiated, analysed, disciplined, punished, measured and normalised individual bodies and people.

Foucault did not consider knowledge per se, but focused on the particular forms of knowledge. He assumed them to be situated in the context of its production (discourse, particular techniques and material objects). As he showed in "Madness and civilisation" (2003), the knowledge about sanity was shaped under the influence of Cartesian ideas which depicted madness beyond the realm of reason, which substantially altered the attitude to a madman, compared to the Medieval time when such person used to be sacralised. In the Classic era under the influence of protestant ethics a madman became a figure undermining social order along with the criminals, beggars and vagrants who also failed to integrate into the emerging capitalistic reality. It is curious that later the disruptors of social order were segregated based on their ability to work, so beggars and vagrants were moved to workhouses, while convicted criminals and madmen were left detained. This resembles the idea of handicap which will be addressed further in the text. Foucault showed how the detention of madmen into specific institutions enabled their observation which became one of the key factors shaping psychiatric science. Foucault concluded that the circumstances which enabled psychiatry were contingent and were evolving within a particular social and economic context, within particular practices and discourses and were affected by certain state policies. At the same time, Foucault argued

that the study of madmen enabled the subsequent emergence of social sciences as it showed how people can be viewed as objects of research.

A similar conclusion follows from "The birth of the clinic" (2012) where Foucault analysed the emergence of the contemporary clinical medicine. He showed how massive healthcare reforms which unfolded after the French Revolution entailed the emergence of the new paradigm: clinic which has substantively altered the landscape of both medical science and medical practises. Those reforms were the result of the governmental attention to the problems of healthcare, medicine, health of nation, industrialisation-induced pandemics, insufficient control of the quality of medical aid as well as insufficient medical knowledge taught at universities (and in a wider context can be analysed as the part of turn to population and policies). The medical status of a person became the matter of governmental, not family or community interest. Therefore, diseases received social dimension and especially in cases with pandemics became the object of public discussions. Reforms entailed the emergence of new medical practices and discourses. The dissemination of hospitals where patients were observed and treated by practice-oriented doctors enabled gathering even more relevant data about diseases. Scientific clinical knowledge was created based on the observations of disease which manifested itself in one's organism via the technique of medical gaze. Hence, people were reduced to their bodies, individual parts of which could be regarded to be normal or pathological. The latter denoted that a person was ill. The further changes identified by Foucault, concerned the shift in interaction between a doctor and a patient. Instead of listening to the latter, as it was in the 18th century, a doctor tried to gain objective knowledge by observing a patient via the medical gaze. Foucault argued that alike psychiatry, clinics also contributed to the emergence of social science as it legitimised a human person to be the object of its research.

A number of later works related with Foucault's intellectual heritage are worth mentioning.[1] Another useful concept I would like to invoke in the thesis is the concept of handicap. This concept suggests that "*Any physical, mental or situational condition which produces a weakness or trouble in relation to what is considered normal; normal is defined as the mean of capacities and chances of most individuals in the same society.*'' (Bloch-Laine, 1969)[2].

2.2 ANT

ANT is another intellectual tradition. I will invoke it in order to address the role of traditionally neglected nonhuman actants (Latour, 2012) in enabling adermatoglyphia as well as the source of valuable theoretical and methodological tools (Latour, 2005).

---

[1] Firstly, I would like to address an essay written by Petryna (2003) where she analyses how the knowledge of the effects of Chernobyl nuclear disaster on ones' body was produced in the context of regime transformation-induced poverty and limited abilities of social welfare system in Ukraine. Secondly, I would like to mention the paper by Tausig, Rapp and Heath (2003) where they write about the identity formation and practices of Americans with dwarfism who encounter various difficulties since their bodies are out of standard boundaries and thus lack necessary infrastructure. Their article cites another interesting paper by Starr (1991) where the author addresses the problem of having a non-standard body (being allergic on onions) within the phenomenology of standards. Finally, I would like to address an article by Beihl (2005). There she shows how the dissemination and performance of state institutions fighting against AIDS affected the chances of marginalised and affected by AIDS Salvadorian people to survive.

[2] The Citation is from Rabinow (2010)

Reassembling the Social (Latour, 2005) constitutes one of the key ANT theoretical and methodological texts. It criticizes the existing state of affairs in sociology. Latour returns to the 19th century and revitalizes the competition between two alternative projects: the project of sociology of society defended by Durkheim and the project of sociology of associations defended by Tarde. The former project constituted society as the object of research. Society was understood as sui generis which manifested itself in social facts which should have been studied. The latter project perceived the world as the world of associations between individual actors, which should have become the object of research. In this confrontation Latour supports the project of Tarde and encourages social scientists to reinvent sociology. He also criticizes the notion of social which was used as a substance from which the world is made. Latour insists, that in the proper working sociology the social should constitute its explanandum and not explanance (which it is in the sociology of society). He also delivers a special criticism towards critical sociology because of its totalisation of social factors and the negation of explanations, concerns and protests of studied people, which are regarded to be the additional proofs for their position as people are allegedly unable to bear the truth revealed by critical sociologists. Latour tries to liberate sociology from the spectre of nation-state (a political body) which was mistakenly used as an underpin for the constitution of a social body.

The first part of the book identifies uncertainties which were downplayed by durkheimian sociology. It unfolds them criticises the existing solutions which are regarded insufficient for dealing with the existing challenges. The 2nd chapter addresses the problem of groups. Latour claims that no groups exist per se. They are rather constantly constructed, reconstructed and reinforced in various practices of their members and external observers. In this chapter based on the theory of translation (see e.g. Callon, 1984) he also introduces the distinction between mediators (unpredictable forces which behaviour actants have to bear in mind as when they translate forces, they tend to transform them) and intermediaries (which are black boxes requiring no contemplation regarding their operation since they translate forces without any transformation). The 3rd chapter addresses the notion of actor which is one of the key for ANT. Latour defines actor as the force which makes others to act. The 4th chapter develops the idea of actor. The author argues that its notion can encompass nonhuman agents who also perform the functions of actors (mediators) as they are capable of transforming forces during the process of translation. The 5th chapter addresses the problems of constructivism in science. Latour argues that sciences construct, create the objects of their research but not reveal them. Instead of questioning if something is the truth or not, he suggests to wonder if the construction is solid, if it is well-constructed, will the association withstand or an actant will betray.

The second part of the book is devoted to reassembling sociology. Latour makes an attempt to create flat ontology without any privileged figures such as society or human actors. In order to achieve it, he suggests a number of theoretical tools and concepts. The first is the idea of oligoptycon. In contrast to panopticon, oligopticon enables observing only a small number of things, however, with a much better quality. Instead of a helicopter view on society or its structure in general, oligopticon enables to see things as constructed entities and follow the relations which constitute them insofar as they exist. In case with oligoptycon nothing is included to it, nevertheless, it provides scholars or its other users with translations of certain remote actors (which in sociology of social would be regarded as parts or particular cases of a greater notion or entity). The second tool is a panorama. In contrast with olygopticon, it enables to see everything. However, the view it provides has its own limitations. Firstly, it describes certain phenomenon or process but is unable to explain it. Secondly, it is always created ad hoc and cannot be used for any other

purpose (a map of New York cannot be used as a map of Tokyo). The third tool is constituted by articulators or localisators. They mostly concern material actants which frame, organise, enable, guide other actions, translate forces and assure the state of interobjectivity. The fourth tool is the notion of plugin which refers to the intellectual equipment which is used (by human actors) to process information, formulate strategies and access the outcomes of actions. Another important concept introduced in this part is the concept of plasma, which is used to describe the unmeasured, undescribed, unsocialised world beyond networks and assemblages.

There is a widely shared assumption of incompatibility of Foucauldian and Latourian theoretical frameworks as the former operated with non-material discourses or episteme while the latter used material actors and forces. The truth, however, is that they are not so different as both provide a critical analysis of scientific knowledge (Foucault, 2012) (Latour, 1987). Moreover, Foucauldian thought is not restricted to the non-material culture (Peltonen, 2004). Apart from considering the role played by material factors in the organization of the analytical space in hospitals or schools, one of the key objects of "Surveil and Punish" and a triumph of nonhuman action is Panopticon which is inconceivable without acknowledging its materiality. Its arrangement is what enables establishing power of an overseer over the observed convicted in a way that their personal traits play no role. Additionally, Foucault actively used the notion of dispositif, deployment or apparatus which he defined as

> A thoroughly heterogeneous ensemble of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions — in short, the said as much as the unsaid. Such are the elements of the apparatus. The apparatus itself is the system of relations that can be established between these elements. Secondly, what I am trying to identify in this apparatus is precisely the nature of the connection that can exist between these heterogeneous elements. Thus, a particular discourse can figure at one time as a programme of an institution, and at another it can function as a means of justifying or masking a practice which itself remains silent, or as a secondary reinterpretation of this practice, opening out for it a new field of rationality. In short, between these elements, whether discursive or non-discursive, there is a sort of interplay of shifts of positions and modifications of function which can also vary very widely. Thirdly, I understand by the term 'apparatus' a sort of — shall we say — formation which has as its major function at a given historical moment that of responding to an urgent need. The apparatus thus has a dominant strategic function. This may have been, for example, the assimilation of a floating population found to be burdensome for an essentially mercantilist economy: there was a strategic imperative acting here as the matrix for an apparatus which gradually undertook the control or subjection of madness, mental illness and neurosis. (Ibid, p. 213-214)
>
> It is thus understood not as a bundle of discourses or an illusion created by them, but something more heterogeneous and tangible. (Ibid, p. 216)

Foucauldian and Latourian thoughts are, hence, complementary. They work as the faces of Janus: Latour better sees the nonhuman and material actors while Foucault provides a focus on theories, concepts and discourses.

Another key ANT text was written by Michele Callon (1984). There he suggested that agency can be attributed to both humans and nonhumans. Moreover, both of them can be treated and described in the same terms. Both can betray their representative by

acting in the way one does not expect them to act. In that article Callon developed the sociology of translation and showed how scientists and politicians translate actants into the numbers and pictures on paper and speak on their behalf. These ideas were further developed by Latour (1987) where he wrote about translating - representing various actants via inscription devices transforming the objects into lines and numbers. Translated actants were then included networks and enabled their translated achieve to achieve one's goals and or acquire more power for the subsequent expansion of network.

A comprehensive review of the key texts in the sociology of medicine was provided in Mol (2003). There she revised the distinction between illness – social manifestation of patients' problems and the disease – how it is practiced in the Western medical science, the norm and pathology in the texts of Foucault (2003, 2007a, 2007b, 2013) and Canguilhem (2012). Another useful concept devised in her book was the concept of multiplicity, which Mol invoked to describe atherosclerosis. She envisioned it as neither single nor plural but multiple with different versions practised by different doctors who had to coordinate their efforts and understanding in order not to let things break apart.

2.3 The Extended Phenotype

There are several ways of thinking of the relation between institutions and technologies ("society" and "technoscience"). In my thesis I would like to equalize them by addressing all of them as a particular case of extended phenotype (EP). This concept was coined by Dawkins (1982) and refers to the effects of genes beyond their host organism. Both institutions and technologies can be considered general use (GUEP) and sometimes conventional extended phenotype (CEP). Dawkins (1982) emphasizes that some of the material objects created or changed by animals may positively affect the inclusive fitness of certain genes called the extended phenotype of these genes. This claim enables us to apply the EPC to material culture in such a way that all objects of material culture (i.e. tangible objects (and subjects), whose existence or form is the result of conscious, purposeful activity of the animals (including humans) that created or affected them.) can hence be considered within the EPC.

To address non-material[3] culture (intangible objects (and subjects), which exist or have form as a result of the conscious purposeful activity of the animals that created or affected them.) to two works of Jared Diamond (1999, 2011) will be invoked. One of the most crucial factors Diamond associated with the survival and thriving of human societies is the volume of food production (or just food production). Besides seeds and breeding pairs, specific skills and knowledge is required for successful farming. Therefore, these skills and knowledge (as well as technologies and know-how) may also be considered to be the human extended phenotypes.

Pandemics may serve as another example. Referring to the American continents, Diamond (1999, 211-212) writes that mortality "*In the century or two following Columbus's arrival is estimated to have been as large as 95 percent.*". Such a dramatic decrease in population could have been avoided provided the population of America had possessed the necessary knowledge and technological level to produce vaccines or had implemented quarantine measures. Less excess mortality means higher aggregated fitness of human genes. Therefore, it is justified to view objects and subjects of material culture

[3] It is, however, important to note that non-material culture nevertheless is stored on material carriers (brains, paper, memory sticks, building facades, etc.)

and some objects of non-material culture (technologies, knowledge, institutions and practices such as quarantine, etc.) as human EP. It enables the equal treatment to both knowledge which is one of the primary themes for Foucault and technoscience studied by Latour.

In contrast to the majority of other species, human is capable of creating a relatively complicated *general-use extended phenotypes* (GUEPs), such as block houses, airplanes, public goods, etc. The difference between the GUEP of human and other species is that the criterion of kinship is not necessary for contemporary humans in the creation of a sophisticated EPs. Moreover, in capitalistic economies people usually produce goods to be consumed by strangers.

2.3.1. Conventional Extended Phenotype

Empirical evidences suggest that human behaviour and actions which stand behind non-material culture is dependent on genes (e.g. microsatellite RS3 which affects the human propensity for love and care, empathy, and the number of social contacts (Donaldson and Young, 2008)). One could suppose that people with different alleles of this microsatellite would show different behaviour in various circumstances and differently perceive and adapt to various environments. It is also possible to assume they will have different attitudes to various political, social, ethical, etc. concepts that are likely to affect their electoral preferences.

The abovementioned differences are crucial in the creation (and decision to create) of a *conventional extended phenotype* (CEP), which is widely spread, borrowed, and unified due to the process of globalization. A CEP will be defined as a GUEP which has a certain number of alternatives and particular stable forms characteristic of (or which prevail within) a particular territory, time, and/or collective (e.g. wealth redistribution systems, production for right handers, legal systems). A more global and historic example, which is in fact a manifestation of the Baldwin effect[4] (Baldwin, 1896; Weber and Depew, 2003), is the consumption of animal-produced milk by humans. Several thousand years ago milk-producing domestic animals were included into the CEP in several places on Earth. This caused a significant decrease in the fitness of alleles whose carriers (due to other particular genes) were intolerant to lactose in those places (Durham, 1991). In line with that, one may expect people to (unconsciously) adopt such a CEP so as to improve their life chances, thereby facilitating the replication of their genes. This, thus, may bring a political aspect to human evolution and vice versa.

Theoretical approaches and their key texts necessary for understand ADG were discussed in this chapter. It started with Foucauldian thought and examined the problems of disciplinary power, population as well as western clinical medicine thinking in the normality versus abnormality categories. The works of Foucault's successors dealing with handicap concept have also been discussed. ANT was the second major intellectual tradition invoked in the chapter. Its discussion started with one of its major theoretical and methodological books – "Reassembling The Social" (Latour, 2005). The dispositif

[4] This effect (leading to niche construction and particularly the production of an EP) implies that if some behavioural pattern increases an organism's fitness, it increases the fitness of genes that are responsible for the manifestation of this pattern (and, correspondingly, decreases the fitness of genes responsible for alterative patterns).

concept was introduced in order to address possible theoretical controversies between Foucauldian and Latourian thoughts. Additionally, the further key ANT papers (Callon, 1984; Mol, 2003) have been discussed. Finally, the concept of extended phenotype (Dawkins, 1982) has been introduced.

Chapter 3 Methodology

This chapter will provide the information concerning the data corpus and will address the methodological approaches based on the mobilized data.

ADG is a very rare medical condition, therefore there is a limited scope of information on it. Hence, the research design and particular methods depend on the availability of sources. Six publications in scientific journals constitute the data corpus. Although, I initially planned to use only medical and biological journals, I discovered that forensic journals also contained articles about ADG. As studying of these publications provided a substantial amount of data, no further sources such as bureaucratic documents or media publications were used.

As the main method, I am going to use a discourse analysis. As Foucauldian thought was widely addressed in the previous chapter, it would be pertinent to remain consistent and invoke Foucauldian Discourse Analysis (FDA). In it discourses "*approximates the concept of 'discipline' in two ways: it specifies the kind of institutional partitioning of knowledge we find in medicine, science, psychiatry, biology, economics, etc. But it also refers to techniques and practices through which objects, concepts, and strategies are formed*" (Arribas-Ayllon, Walkerdine, 2017). As discourses are not restricted to the way of thinking but rather included practices and actors involved in them, they will rather be treated as dispositifs than as purely intellectual constructs.

Additionally, the notions and ideas from "Science in Action" (2007) will be invoked in order to identify actors and strategies mobilized by scientists and involved in the construction of ADG.

Chapter 4 Findings.

This chapter will report the findings of the research. It will provide accounts about how the authors understand and practise ADG. It will introduce a healthy yet pathological person – a walking oxymoron inhabiting almost any text on ADG, and will describe three dispositifs: biopolitical, technological and biomedical, which were identified in the examined texts. Finally, it will address how humans and nonhumans are treated in the examined articles.

Based on the examined texts, it is possible to infer that many scientists to a large extent understand ADG as a pathology caused not only by biological factors but also somehow related to the I&A procedures required by both authorities and private parties. Despite a number of exclusions, it is possible to conclude that the authors whose publications were in the forensic journals tend to pay more attention to the I&A requirements than their biomedical counterparts.

4.1 Fingerprinting and I&A detour

A common pattern for the majority of articles is starting with the description of fingerprinting which often includes the role it plays in the I&A procedures and

sometimes its history: *In the digital age, personal identification by fingerprints (epidermal ridges) has become more frequent and is often required for biometric passports.* (Burger et all, 2011. p 974). Starting a biomedical article with the detour into the history of technology neither responsible for a disease nor involved into the diagnostics or treatment processes is at least rare. It it, thus, possible to infer that the authors regard I&A requirements and fingerprinting technologies as relevant. Yet, their embeddedness in biomedical science prevent them from identifying such requirements to be the reason standing behind ADG. This is because these reasons are not regarded legitimate in contrast to the abnormal splicing or genetic mutations.

The article by Safraz (2019) provides especially detailed information concerning both dermatoglyphics

> (*Dermatoglyphics (from the roots "derma" for skin and "glyphos" for carvings) is the study of various integumentary ridge patterns that form on fingertips, toes, palms of the hands, and soles of the fee*t) (Ibid. p. 1)

and fingerprinting including the historical aspects

> (*Fingerprinting describes the technical aspects of recording the skin ridge pattern present on fingertips, establishing one of the key components of human identification. Sir Francis Galton discovered that these ridge patterns are astoundingly constant throughout the lifespan of an individual. Later, the term "dermatoglyphics" was introduced by Dr. Harold Cummins in 1936*). (Ibid.)

The author also gives a detailed account of the role fingerprinting plays in the I&A procedures:

> Fingerprinting is the most commonly utilized method for human identification and authentication (I&A). It is an integral component of a personal profile and biodata. Most government and private sectors seeking or involving personal biometric information require individuals to be fingerprinted to complete routine biometric record and documentation. Not only does fingerprinting concern the conventional domains of clinical medicine, forensic science, anthropometry, criminology, customs, and security agencies, its applicability has been incorporated into every so-called formal "security screen". The spectrum of its utility ranges from gaining access to sensitive computerized documents and handling transactions to checking-in for daily office work and unlocking mobile phones and electronic devices (Ibid.)

The following causal relation can be inferred from the article: the loss of fingerprints -> the inability to interact with fingerprint collection technology -> inability to be a subject to a I&A procedure -> individual has problems.

The same pattern can be viewed in Nousbeck et all (2011) which also starts with the introduction of epidermal ridges which are portrayed as "*almost unsurpassed identification tools*" (Ibid.) and in Kanchan and Krischan (2018) which in its abstract introduces fingerprint-based technological solution as a well-established one with an old history as well as provides a brief description of its advantages. The beginning of the article also narrates about the popularity of fingerprinting and how widely it is used. The problems people with the loss of fingerprints (which the authors equal to ADG) are deduced from the popularity of fingerprinting. By the end of the introduction, the authors shift to a normative mode and say that *It is desirable that medical practitioners and investigators are made aware of the medical conditions where in fingerprinting as a reliable method of identification can appear to be imperfect.* (Ibid, p.1)

Cook, Harrison and James (2021) also start their article with the description of fingerprinting and its embeddedness in various I&A practices. The authors, however, invoke a legal framework:

> While the term "uniqueness" has been a point of some debate <…>, fingerprints have been the subject of empirical study <…>, enshrined in the pragmatic view of US legislators: <…>If is acknowledged that fingerprints are unique and permanent, then the theory of fingerprints, that everyone has one which can be compared with unknown prints seems to be sound and not in need of testing." (Ibid, 202)

Mazza et all (2017) is not an exclusion The authors invoke a standard practice in order to show the relevance of having fingerprints.

> United States international airports fingerprint foreign visitors, that are matched against those of several hundred million visa holders and compared to a list of criminals. (Ibid, 284)

4.2 Healthy, yet pathological

Another pattern which is common for the examined texts is the figure of a healthy person with border crossing or other I&A problems which made the person to come to the authors' laboratories. They are

1. A 29-year-old healthy woman consulted us because of recurring trouble at entry to the United States with identity checks using computerized recognition of fingerprints. (Burger et all, 2011, p. 974)
2. A 59-year-old female patient showing fingers of both hands. This woman visited the dermatology department in July 2016 for medical evaluation. She realized the loss of her fingerprints when she was unable to renew her national identity card, requiring her to be ten-printed (i.e., all fingers and thumbs of both hands were scanned/printed). (Safraz, 2019, p. 2)
3. … a 66-year-old male patient showing thumbs of both hands. This patient presented in November 2017 to obtain a medical certificate to access his bank account. The bank accounts were being biometrically verified, and repeated attempts to scan his fingertips failed to record any discernible pattern. (Ibid, p. 3)
4. (A) European resident was unaware of the loss of his fingerprints, and was detained at the US airport for several hours (Kanchan and Krischan, 2018, p. 1)
5. (A one more person) who was detained several hours within the immigration services and was allowed to enter the USA after verification that he was not a security threat. He had until then not noticed the loss of his fingerprints. (Mazza et all, 2017, p. 284).

In all those cases it is said that I&A difficulties, not the medical problems were the factor which made those people to invoke the power of the laboratory science and its priests.

4.3 Three dispositifs

The texts are inhabited by numerous actants originating from miscellaneous backgrounds. Yet, it is possible to identify 3 dispositifs.

4.3.1 Biopolitical dispositif

The first dispositif is one encompassing the authorities and private parties imposing the requirements to undergo I&A procedures.

> In the digital age, personal identification by fingerprints (epidermal ridges) has become more frequent and is often required for biometric passports The more fingerprints are analyzed the more variants in their formation are documented. Individuals completely missing fingerprints as an isolated finding are extremely rare (Burger, et all, 2011, p. 974).

It is curious, that although humans are part of this dispositif they are rarely mentioned directly or explicitly. Usually, they are assumed on the background and are represented by generalised objects of I&A procedures.

> Fingerprinting is the most commonly utilized method for human identification and authentication (I&A) <...>. It is an integral component of a personal profile and bio data. Most government and private sectors seeking or involving personal biometric information require individuals to be fingerprinted to complete routine biometric record and documentation. (Safraz, 2019)

This dispositif is more characteristic for the texts in the forensic journals and it usually can be found either in the introduction of the texts or in the conclusion where policies are suggested.

> Therefore, specific guidelines or a substitute I&A system is recommended that can function globally, as a default program, facilitating I&A for patients suffering from irreversible adermatoglyphia. (Ibid, p. 8).

4.3.2. Technological dispositif

The second dispositif is the technological one. It encompasses mostly the nonhuman agents such as technologies, tools, equipment as well as the elements of human body (e.g. iris, finger, skin) involved in the I&A procedures (usually fingerprinting). Humans are either those who operate the machines or are the objects of activities performed by the former.

> The experimental subject's fingers and palms were coated with ink rolled across a copper plate and positioned on a standard fingerprint elimination form, providing a series of rolled and placed fingermarks. (Cook, Harrison, James, 2021, p. 205)

> The fingers of both hands of the adermatoglyphic subject were introduced to a pad of synthetic sebaceous material. The fingers were then applied to an acetate sheet, on which five repeats of each finger were placed in a depletion sequence, with each press of the finger depositing less synthetic sebaceous material than the previous one. As expected, the fingermarks deposited at the start of the depletion sequence produced the clearest outlines of finger impressions (Figure 6), with clarity decreasing as the depletion series moved along the grid. On both fingers 1 and 2 (The two prints shown in Figure 6), the pathological creasing of

> the pads of the fingers is visible. The speckled pore heads apparent in the Livescan images above exhibit as white speckling to the top of the fingermarks in Figure 6. (Ibid.)

Technological dispositif is common for both forensic and biomedical texts. It is invoked for describing the technological solution of fingerprinting or its alternatives.

> Radio-frequency identification (RFID) uses radio signals as a medium to transfer I&A data <…>. A small RFID device, usually a microchip, is incorporated into the desired object and emits radio waves detected by an RFID reader. The object can be a product, animal, or a human being, and given the diverse spectrum of its applicability, RFID technology has already penetrated multiple sectors of healthcare, security agencies, agriculture, and manufacturing industries <…>. These RFID tags accommodate data for purposes that range between storing an identification number to incorporating complex details about a product or a person. Electronic passports are an extension of RFID technology and contain stored personal biometrics. (Safraz, 2019, p. 7).

4.3.3. Biomedical dispositif

The third dispositif is the biomedical one and it is especially notable in the texts concerning the biological aspects of the ADG. It encompasses numerous actants, including scientists, patients, parts of patients' bodies, nonhuman actors such as genes, and epidermal ridges attributed to the patients' bodies or existing in the more abstract theoretical space, numerous inscription devices, methods, technologies and techniques used to translate the latter actors.

The colleagues of the authors and their texts also play an important role, especially in the literature review and discussion sections.

> Nevertheless, the patient of Limova´ et al8 had adermatogliphia despite developing normal rete ridges and dermal papillae, which suggests that other critical factors are necessary for the development of fingerprints. (Burger et al, 2011, p. 977)

Other notable actors in this dispositif are hypothesis and assumptions which are suggested, reinforced or refuted.

> Global gene expression analysis revealed a total of eight genes to be differentially expressed in the two sets of keratinocytes (Fig. 2b). Pathway analysis assigned all eight genes to three functional classes of direct relevance to ADG: epidermal growth factor receptor (EGFR) regulation,11 keratinocyte proliferation and differentiation, and psoriasis, a condition recently found to be associated with abnormal dermatoglyphs (Nousbeck et al, 2014, p. 1524).

> The full-length SMARCAD1 seems to control the expression of a large spectrum of target genes encoding transcript rational factors and histone modifiers as well as regulators of the cell cycle and development.16 It is tempting to speculate that the skin-specific isoform of SMARCAD1 might target genes involved in dermatoglyph and sweat gland development, two structures jointly affected in the present family and in additional disorders such as Naegeli- Franceschetti-Jadassohn and Rapp-Hodgkin (MIM 129400) syndromes. (Nousbeck et al, 2011, p. 306).

Sometimes, however, these dispositifs can merge as they do in the following example:

> A 29-year-old healthy woman consulted us because of recurring trouble at entry to the United States with identity checks using computerized recognition of fingerprints (Burger et all, 2011, p. 974).

The entire phrase seems to belong to the biopolitical dispositif, yet the word "healthy" which stems from the distinction between the norm (health) and a pathology (disease) applied by doctors, definitely belongs to the biomedical dispositif.

All the three dispositifs not only use a different set of actants and practise common actants differently, but they are often found in the different parts of the texts. In the biomedical articles each of dispositifs can have its own paragraph in the introduction. Then, the technological dispositif gains more attention in the description of methods. It is supported by the biomedical one in the "Results" section. The latter dispositif dominates in the "Discussion" sections and has a strong presence in "Conclusion" where it can be contested by the biopolitical dispositif especially if the authors propose a policy.

4.4 Humans and nonhumans

The texts constituting the data corpus provide an excellent example to the claims of ANT scholars about treating humans and nonhumans equally. The authors readily put them together letting both of them act and be enacted.

> A Thames Valley Police Detention Officer assisted the donor in depositing her fingermarks on the capture screen. Following an initial scan of the subject's hands, the Detention Officer decided that the hands of the individual were too dry (due to no sweat being produced) so a wet wipe was used in order to moisten the hands. The Livescan system returned a "Poor Detail" error, so hand cream was applied to the subject (Cook, Harrison and James, 2021, p. 205).

Both humans and nonhumans can be reliable allies and traitors, both can pose questions and provide answers.

The findings of the research were reported in this chapter. It was shown that the authors understand ADG as a pathological condition which is somehow related to the requirements of undergoing I&A procedures. This chapter has also introduced an emblematic figure of a healthy, yet a pathological person common for any examined text on ADG. The chapter has also provided the accounts of authorities and I&A-related, technological and biomedical dispositifs as well as discussed the example of their merge. Finally, it was shown that the authors treat humans and nonhumans similarly.

Chapter 5 Discussion

This chapter will embed the findings from the previous chapter into the theoretical framework discussed in the literature review. It will show the contingency of ADG as the form of knowledge, consider ADG related to the problems of normality and abnormality, address the interaction between humans and nonhumans and will tell a new, yet an old

story of translation and betrayal standing behind the ADG. The chapter will also contain an attempt of equalising the technological and theoretical actors through the theoretical prism of extended phenotype concept as well as will encompass an analysis of ADG from the macro perspective.

5.1 The contingency of ADG

The analysed corpus of data suggests that although there is a combination of different actors standing behind ADG, the way that ADG is identified, problematized and shaped is contingent on different factors. They can be unified under the umbrella of the contemporary Western medical science, which enables stating and verifying hypothesis, aggregating and sharing knowledge with colleagues via articles in scientific journals, judging on the normality or abnormality of studied objects and patients, having the technological capacities for research and a methodological apparatus for the interpretation of results. It regards ADG to be the matter of fact which has always existed and which precedes the emergence of I&A and fingerprinting.

The further actors enabling ADG are the authorities and private parties imposing the requirements of undergoing I&A procedures and the fingerprinting technological solution including technomachines and scientific knowledge as well as industrial capacities standing behind them, the knowledge and skills of their operators, and the alliances fingerprinting made with the authorities and private parties.

Without authorities requiring people to undergo I&A procedures, their alliance with the fingerprinting technology, no people would have any problems with leaving fingerprints for crossing a border. Without the contemporary Western medical science which operates with objectively studied diseases mostly neglecting the illness aspect of the phenomena, no research of the reasons standing behind the failure to leave fingerprints would be conducted. Additionally, the judging on the normality or the abnormality of body would hardly be possible as other categories could be applied. Therefore, practicing ADG as a pathology is a particular form of knowledge which became possible only as the result of actions of numerous actants.

5.2 Normality and abnormality

As it was stated by Foucault (2007), one of the defining feature of security mechanisms was the establishment of the normality and abnormality based on the empiric knowledge of the object of concern. This is the mechanism which designates the peculiarities of skin or genetics responsible for ADG abnormal.

> While the term "uniqueness" has been a point of some debate [1], fingerprints have been the subject of empirical study [2], enshrined in the pragmatic view of US legislators: [I] It is acknowledged that fingerprints are unique and permanent, then the theory of fingerprints, that everyone has one which can be compared with unknown prints seems to be sound and not in need of testing." (Cook, Harrison and James, 2021, p. 202).
>
> Global gene expression analysis revealed a total of eight genes to be differentially expressed in the two sets of keratinocytes Pathway analysis assigned all eight genes to three functional classes of direct relevance to ADG: epidermal growth factor receptor (EGFR) regulation, keratinocyte proliferation

> and differentiation, and psoriasis, a condition recently found to be associated with abnormal dermatoglyphs (Noucbesk et al, 2014, p. 1524).
>
> Abnormal splicing of intron 1 of the skin-specific isoform of SMARCAD1 has been previously shown to result in mRNA degradation and to lead to haploinsufficiency). (Ibid, 1523)
>
> The present data suggest that ADG is genetically homogeneous and result from perturbed expression of epidermal differentiation-associated genes (Ibid, 1521).

They are usually considered beyond normality not because of the negative consequences they have on the health of the examined people (although some patients had them, they were addressed and mentioned less intensive than the I&A-induced problems) and not only because do such people properly interact with commonly used technologies but also because such skin characteristics or protein splicing are uncommon for the majority of population.

> Epidermal ridges are characteristic features of the human skin <…> and have been used extensively for many years as a means of identification for security purposes (Nousbeck et all, 2014, p. 1522).

We can see how normality is established not only in relation to the ability of a person to perform work (properly interact with technomachines) but also based on the presence of particular characteristics in population.

5.3 Translation and betrayal

An article by Cook, Harrison and James (2021) is especially Latourian in its nature. It provides a detailed account of six unsuccessful translations (Callon, 1984) attempts. It reveals the technological aspects of fingerprinting and shows how the inscription devices (Latour, 1987) failed to translate the skin on fingers of a person with ADG into a graph, picture, sequence of numbers, etc. displayed on a list of paper or on a screen sufficient to perform the I&A procedure.

The article enables to infer that the normality and abnormality of a body is dependent on the capacities of particular inscription devices as well as on the consensus of their authorised users concerning the reliability and validity of their results; the normality or abnormality is established based on the ability of a person's skin to be translated by an inscription device.

It shows that the problems people face because the skin on their fingers is inappropriate for leaving fingerprints are the results of not only I&A practices or the fingerprinting technological solution but also of the "hardware" capacities of the inscription devices as well as the agreement of people responsible for the establishment of standards.

> Adermatoglyphia is a very rare autosomal-dominant condition that is genetically inherited and causes an individual to be born without conventional ridge detail on either their palmar or plantar surfaces (Cook, Harrison, James, 2021, p. 202).

Sometimes, the devices managed to produce some results, yet they were not accepted as invalid and unreliable.

> The Fingerprint Expert noted faint impressions evident from finger 1, with possible faint vertical ridges visible, horizontal creases visible to the right side of the mark. When trying to compare the creases disclosed in these marks with the adermatoglyphic subject's inked impressions, finger 1 and finger 2 seem to be more consistent with the creases visible in the subject's left forefinger (LF) and left middle finger (LM) rather than the right forefinger (RF) and right middle finger (RM); however, there is insufficient detail disclosed to form an opinion. Were these marks developed at and taken from a crime scene they would all be coded as "limited ridge detail," meaning there is insufficient detail disclosed in the mark for identification purposes. (Cook, Harrison, James, 2021, p. 205).

The article is an example of a double betrayal: on the one hand, the skin of fingers has betrayed the advocates of dactyloskopy as it refused to be translated despite their expectations, efforts and claims. On the other hand, they have been betrayed by various fingerprinting technologies and inscription devices who failed to perform the task delegated to them – translate the unique properties of skin on fingers into graphs or numbers upon which human actors/representatives can make a consensus. The article also allows to infer that the inscription devices were created based on the assumptions of the attributes of an average person's skin on fingers inferred from the corpus of medical and statistical data.

> The adermatoglyphic subject was asked to donate fingermarks on a sheet of A4 printer paper in a gridded depletion sequence similar to that outlined on acetate above. Five repeats of the four fingers of her right hand were taken, and the paper was then exposed to Physical Developer, to enhance any fingermark detail preserved in the sebaceous portion of the deposited latent mark. As with cyanoacrylate enhancement, the lack of any native sweat products in the fingerprints resulted in no fingermarks being deposited. The speckling that had revealed the presence of pore heads in Livescan imaging, cyanoacrylate fuming, and ninhydrin enhancement was not apparent in the physical developer enhancement (Cook, Harrison, James, 2021, p. 206).

It is curious that the fact of mass betrayal coupled with the forensic dispositif could have let the authors shift their focus from the biological to the technological actants as the major culprits.

> This issue of the failure of automated recognition systems is central to problems faced by adermatoglyphic individuals operating in a world secured by ever more biometric controls, whether at a national border, or central to security systems on smartphones and laptops (Cook, Harrison, James, 2021, p. 207).

5.4 Equalising knowledge and technomashines via an evolutionary perspective

Despite being used together and enjoying a rather egalitarian treatment, units of knowledge and technological agents were native to different dispositifs (knowledge units were more important for the biomedical dispositif while technomachines for the technological one). The application of evolutionary frame should show how these actants can be treated equally. According to the EPC, the fingerprinting technological solution can be viewed as both GUEP and CEP as it was entitled to be used by many mutually unfamiliar people and was the standard for performing the I&A tasks. Similarly, the knowledge created within biomedical dispositif can be considered to be at least GUEP because of the same reasons. The elements of the biomedical knowledge

which were consensually acknowledged as well as the standard procedures of conducting research can also be regarded as CEP.

The analysis of fingerprinting as the standard technology for I&A purposes from the evolutionary point of view, also allows to say that neglecting certain bodies while establishing the standard, made the bearers of such bodies and genes responsible for their formation less adapted for living in the world where this standard is applied. Provided I&A procedures had the higher role in human survival and reproduction coupled with the inability to produce the knowledge about the "immigration effect disease" a particular case of Baldwin effect (Baldwin, 1886) could happen.

5.5 A macro perspective

With the application of a macro perspective to the analysis of ADG and its construction in the scientific articles, the following sequence can be reconstructed: The discovery of population and the synthesis of security and disciplinary policies entailed the demand for I&A procedures. Social disintegration of the 19th century caused by urbanisation resulted in the growth of criminality. Police authorities under the pressure of high criminal rates and the demands for applying the better techniques of investigating and proving the guilt eagerly adopted the newly emerged dactyloskopy technology. Affordable and durable material objects, not too sophisticated to halt the dissemination of the technologies as well as the knowledge capable of legitimising the application of dactyloskopy let it disseminate and become a standard procedure. However, the technology was tested on a limited scope of people. With the increase of population mobility, people whose bodies were not assumed during the testing process became visible. Neither experts responsible for receiving fingerprints for I&A procedures, nor the authorities were capable of processing the failure of inscription devices to translate their bodies.

Therefore, biomedical science was invoked by "healthy patients" who suddenly learned about their handicap. The phenomena were embedded into the biomedical dispositif. People were transformed into patients and an "immigration delay disease" responsible for their problems was constructed. Upon obtaining the research object – the disease, scientists understood what to do. They examined their patients, performed medical tests, analysed their results and compared them with the corpus of biomedical knowledge. They published their outcomes in scientific journals thereby sharing them with the scientific community and contributing to the further research of this phenomenon. Some of them suggested alternative methods of I&A procedures to people suffering from ADG. Having an unknown problem redefined in terms of disease, patients received an opportunity to become handicapped people while authorities and I&A experts, aware of the nature of the problem, became capable of substituting fingerprinting with other technological solutions.

This chapter has embedded the findings from the previous chapter into the theoretical framework discussed in the literature review. It has shown the contingency of ADG as the form of knowledge which would have never appeared without biopolitics and disciplinary power imposing the I&A procedures, fingerprinting technological solution selected for these purposes and western biomedical science introducing the normality and abnormality categories. The chapter has also considered ADG related to the problems of normality and abnormality and addressed the interaction between humans and nonhumans. The article written by Cook, Harrison and James (2021) was analysed in

order to show how the mechanisms of translation and betrayal (Callon 1984) constitute one of the core elements of ADG. An evolutionary perspective based on the enchased ECP (Dawkins, 1982) was used in order to show how the knowledge and technomachines can be treated equally. The chapter was concluded with a macro cross disciplinary view on the ADG which embedded it to a wider context of interaction between social problems, power, mobility, technoscience and knowledge.

Chapter six Conclusion

The aim of the thesis was to study scientific publications concerning ADG in order to understand how scientists construct this medical condition invoking various actors such as patients, authorities, technomachines, theories, genes and parts of human body. The first chapter introduced the ADG phenomenon and outlined the structure of thesis. The second chapter presented the theoretical frame of this thesis. It started with discussing the Foucauldian thought and examined the problems of disciplinary power, population as well as western clinical medicine with the normality versus abnormality as one of its key categories. The works of Foucault's successors dealing with handicap concept have also been discussed. ANT was the second major intellectual tradition addressed in the chapter. Its discussion started with one of its major theoretical and methodological books – Reassembling The Social (Latour, 2005). The dispositif concept was introduces in order to address possible theoretical controversies between Foucauldian and Latourian thoughts. Additionally, the further key ANT papers concerning the problems of multiplicity as well as illness-disease distinction (Mol, 2003) and translation (Callon, 1984) have been discussed. Finally, the concept of extended phenotype (Dawkins, 1982) has been introduced. The third chapter described the used data and discussed why the mix of discourse analysis and ANT-based tools constitute the methodology appropriate for both the existing data corpus and aim of the research.

The fourth chapter reported a number of findings. The scope of the thesis did not enable to report all of them, therefore the most interesting, omnipresent and explainable by the selected theoretical tools patterns were chosen. The data suggested that the authors understand agd as a pathological condition which is somehow related to the requirements to undergo I&A procedures. The majority of their articles contain the figure of a healthy, yet a pathological person (or a person with a pathological body) common for any examined text on ADG. Finally, biopolitical, technological and biomedical dispositifs were identified. Their role in the articles as well as features were described. Additionally, the example of their merge was addressed. Finally, it showed that authors tend to follow ANT assumptions and treat human and nonhuman actors identically.

The fifth chapter has embedded the received data into the previously elaborated theoretical frame. It has shown how ADG as the form of knowledge is contingent on the I&A requirements imposed by the authorities, dactyloskopy technological solution adopted to perform the desired procedures as well as on the western medical and biological sciences dealing with diseases and operating within norm – pathology paradigm. The thesis has also shown how security mechanisms based on the establishment of empirically induced norm entail biomedical scientists recognise ADG a pathology and recognise people who have it as patients suffering from a disease. The sociology of translation was addressed. It showed how the inability of inscription devises to translate one's skin of finger with accuracy sufficient for the consensual agreement of their authorised users on its reliability and validity results in the pathologisation of such

skin, the factors and actants making it untranslatable and people possessing this trait. The chapter has also showed how intellectual products such as theories and concepts can be treated equally to the technomachines within the extended phenotypic evolutionary biological frame. Finally, ADG was considered from the macro and cross-disciplinary positions. It was shown how people who were betrayed by their bodies and therefore failed to comply with the requirements of undergoing the fingerprinting procedure imposed by the authorities and third parties invoked biomedical science and were redefined by it into patients suffering from an "Immigration-delay disease".

The scope of the thesis did not enable me to use all the findings from the gathered data. As regards for the further directions for research, the following can be identified. A more detailed analysis of the emergence of ADG with a focus on the temporal aspect. A more detailed paragraph by paragraph analysis of how ADG is created in the scientific texts. A comparative analysis of how ADG is being practised and constructed in forensic and biomedical publications as well as in publications where ADG is treated as an individual disease and as a symptom of another medical problem. An STS research of dactyloskopy; how it was developed, how it gained its popularity, which alliances its advocates made and why it was applied instead of alternative I&A methods.

Bibliography

Arribas-Ayllon, M., and V. Walkerdine. 2017. "Foucauldian Discourse Analysis." In The SAGE Handbook of Qualitative Research in Psychology, 2nd ed., edited by C. Willig, and W. Stainton-Rogers, 110–123. London: SAGE Publications Ltd. ISBN:9781526405555.

Baldwin, J. M. (1896). A new factor in evolution (continued). *The American Naturalist*, *30*(355), 536-553.

Burger, B., Fuchs, D., Sprecher, E., & Itin, P. (2011). The immigration delay disease: Adermatoglyphia–inherited absence of epidermal ridges. *Journal of the American Academy of Dermatology*, *64*(5), 974-980.

Callon, M. (1984). Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. *The sociological review*, *32*(1_suppl), 196-233.

Canguilhem, G. (2012). *On the Normal and the Pathological* (Vol. 3). Springer Science & Business Media.

Cook, H. I., Harrison, K., & James, H. (2021). Individuals lacking ridge detail: A case study in adermatoglyphia. *Journal of Forensic Sciences*, *66*(1), 202-208.

Dawkins, R. (1982). *The extended phenotype* (Vol. 8). Oxford: Oxford University Press.

Diamond, J. M., & Ordunio, D. (1999). *Guns, germs, and steel* (Vol. 521). Books on Tape.

Diamond, J. (2011). *Collapse: how societies choose to fail or succeed: revised edition*. Penguin.

Donaldson, Z. R., & Young, L. J. (2008). Oxytocin, vasopressin, and the neurogenetics of sociality. *Science*, *322*(5903), 900-904.

Durham, W. H. (1991). Cultural mediation: the evolution of adult lactose absorption. *Coevolution: Genes, culture and human diversity*, 226-285.

Foucault, M. (2007). *Discipline and punish: The birth of the prison*. Duke University Press.

Foucault, M. (2003). *Madness and civilization*. Routledge.

Foucault, M. (2007). *Security, territory, population: lectures at the Collège de France, 1977-78*. Springer.

Foucault, M. (2012). *The birth of the clinic*. Routledge.

Foucault, M., Davidson, A. I., & Burchell, G. (2008). *The birth of biopolitics: lectures at the Collège de France, 1978-1979*. Springer.

Kanchan, T., & Krishan, K. (2018). Loss of fingerprints: forensic implications. *Egyptian Journal of Forensic Sciences*, *8*(1), 1-2.
Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford university press.
Latour, B. (2012). *We have never been modern*. Harvard university press.
Mazza, C., Slimano, F., Visseaux, L., Ordan, M. A., Botsen, D., Grange, F., & Bouche, O. (2017). Capecitabine and adermatoglyphia: trouble in border!. *Journal of the European Academy of Dermatology and Venereology*, *31*(6), e283-e284.
Mol, A. (2003). *The body multiple*. Duke University Press.
Nousbeck, J., Burger, B., Fuchs-Telem, D., Pavlovsky, M., Fenig, S., Sarig, O., ... & Sprecher, E. (2011). A mutation in a skin-specific isoform of SMARCAD1 causes autosomal-dominant adermatoglyphia. *The American Journal of Human Genetics*, *89*(2), 302-307.
Nousbeck, J., Sarig, O., Magal, L., Warshauer, E., Burger, B., Itin, P., & Sprecher, E. (2014). Mutations in SMARCAD 1 cause autosomal dominant adermatoglyphia and perturb the expression of epidermal differentiation-associated genes. British Journal of Dermatology, 171(6), 1521-1524.
Peltonen, M. (2004). From discourse to" dispositif": Michel Foucault's two histories. *Historical Reflections/Réflexions Historiques*, 205-219.
Petryna, A. (2003). Science and citizenship under postsocialism. *Social Research: An International Quarterly*, *70*(2), 551-577.
Rabinow, P. (2010). Artificiality and enlightenment: from sociobiology to biosociality. *Politix*, (2), 21-46.
Sarfraz, N. (2019). Adermatoglyphia: barriers to biometric identification and the need for a standardized alternative. *Cureus*, *11*(2).
Starr, S. L. (1991). Power, technologies, and the phenomenology of standards: On being allergic to onions. *A sociology of monsters: Power, technology, and the modern world*.
Taussig, K. S., Rapp, R., & Heath, D. (2003). Flexible Eugenics. *Genetic Nature/Culture: Anthropology and Science Beyond the Two-Culture Divide*, 58.
Weber, B. H., & Depew, D. J. (Eds.). (2003). *Evolution and learning: The Baldwin effect reconsidered*. Mit Press.

MedlinePlus web-site. URL: https://medlineplus.gov/genetics/condition/adermatoglyphia/ Date of citing 25.06.2021

Bloch-Lainé, F. (1969). *Etude du problème général de l'inadaptation des personnes handicapées: rapport présenté au Premier ministre*. la Documentation française.
Rabinow, P. (2010). L'artifice et les Lumières: de la sociobiologie à la biosocialité. *Politix*, (2), 21-46.