

Cite this article:

Moya-Diez, I., Vagelli, M. Georges Canguilhem on sex determination and the normativity of life. *HPLS* 44, 60 (2022). <https://doi.org/10.1007/s40656-022-00544-5>

Georges Canguilhem on Sex Determination and the Normativity of Life¹

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Abstract

Our goal in this paper is to reassess the relationship between norms and life by drawing on the philosophy of Georges Canguilhem, particularly some of his unpublished lectures about teratology and sexual determination. First, we discuss the difficulties Canguilhem identified in the introduction of life and sexuality as objects of philosophical reflection. Second, we reassess Canguilhem’s understanding of normativity as rooted in life and the axiological activity of the living. Third, we analyze how Canguilhem drew from past and contemporary teratology to conceive of the notions of anomaly and abnormality. Finally, we reconstruct Canguilhem’s analysis of a case of hermaphroditism, highlighting how he presented it as evidence that sexual determination is the result of a normative choice. One of the key contributions of the paper to scholarly literature on Canguilhem is a better understanding of his notion of choice, which was considered not the conscious and intentional act of a subject but rather an axiological activity of the living. We conclude by positioning Canguilhem’s concept of normativity and his belief that norms are produced by the living in relation to the naturalist/normativist divide in medicine.

Keywords: Biological normativity, vital norms, sexuality, sex determination, sexual perversion.

1. Introduction

The debate over norms and their origin, existence, and function is currently seeing renewed interest in both the analytic and Continental philosophical traditions (Pinkard, 2012; Brennan et al., 2013). In the biomedical sciences, the problem of norms is particularly relevant, as it is implied in the definition and treatment of pathological conditions. In these fields, the longstanding tension between “normativists” and “naturalists” characterizing philosophical debates about the origins and functions of norms takes on a specific meaning.² Some scholars conceive health and sickness as expressions of subjective preferences and perceptions (Margolis, 1976; Engelhardt, 1976;

¹ The authors are named alphabetically, since the work on the paper was shared equally. Author 1 wrote sections 2, 3 and 5 Author 2 sections 1, 4 and 6. The authors want to thank the anonymous reviewers for their valuable comments and suggestions.

² Here we sketch out only the two main camps of the debate. More detailed reconstructions of this debate can be found in Kingma, 2014 and Giroux, 2016.

Nordenfelt, 1995, 2007), while others aim to define them as objectively (or at least statistically) given (Boorse, 1977; Ananth, 2008; Hausman, 2012, 2014; Schwartz, 2007; Garson & Piccinini, 2014). Thus whereas normativists claim that a disease is a condition we disvalue, naturalists normally attempt to assess disease in a “non-value laden” fashion and “without respect to the implications for the bearer” (Ruse, 1997, p. 143). The last few years have seen ongoing efforts to develop more nuanced and value-sensitive forms of naturalism in the philosophy of health (Giroux, 2016; Sholl & Okholm, 2021).

The question of the source and status of norms, the way they intersect definitions of health and sickness, and their relation to life are at the center of these debates. Taking this theoretical context as our point of departure, our goal in this paper is to address the conceptual problems surrounding the notion of norms by drawing on the philosophy of Georges Canguilhem. Canguilhem’s still much neglected philosophy of norms constitutes the heart of both his medical dissertation and the “new reflections” he developed twenty years later (Canguilhem, 1991 [1943/1966]). Reflection on normativity not only largely underpins Canguilhem’s “biological philosophy” (Canguilhem, 2008) but also structures his work as a historian of the medical and life sciences (Canguilhem, 1968, 1987). References to Canguilhem in Anglophone scholarship interestingly locate him in both the normativist and naturalist camps. On the one hand, he is criticized for holding an untenable subjectivist position that defines health exclusively based on the individual preferences of the subject (Boorse, 1975; Matthewson-Griffiths, 2017). On the other hand, he is recognized as providing support for naturalist interpretations (Wolfe, 2015; Sholl & De Block, 2015) and even for anticipating organizational approaches to normativity, which naturalize the production of norms by presenting it as a key feature of the biological function of organisms (Mossio et al., 2009; Saborido & Moreno, 2015; Saborido et al., 2016). These approaches, usually referred to as “organizational accounts,” generally identify the teleological and normative aspects of functions as an expression of the self-determination of biological systems (Moreno & Mossio, 2015, p. 70). We will argue that Canguilhem’s position is interesting precisely because he sees norms as produced by the living through axiological activity that is not merely subjective. In this sense, while the qualifications “anti-reductionist naturalist” (Giroux, 2010) and “surnaturalist” (Sholl, 2016) can both correctly be applied to Canguilhem, we suggest that the term “normative naturalism” better characterizes the specificity of his position.

In order to clarify Canguilhem’s stance, we outline the specific angle he adopts in some unpublished lectures on teratology and medical decision-making that address sexual determination. As we shall see, in these neglected discussions of sexual perversion, Canguilhem considers hermaphroditism as a case illustrating the normative nature of sex determination. What Canguilhem’s analysis highlights is how rooting norms in life might avoid implying they are natural in the sense of being objectively given or suggesting they represent the conscious choice of a subject. Rather, Canguilhem suggests that rooting norms in life means they are the objects of normative choices rooted in axiological activity that characterizes living organisms as such. Our paper aims to clarify the kind of normative choices of which norms are products and how this normative activity is based in Canguilhem’s characterization of living organisms.

Our paper is divided into four parts that reconstruct Canguilhem’s arguments about sexuality and the normativity of life. In section 2, we discuss Canguilhem’s interest in life and sexuality within the context in which it emerged: French, prevalently rationalist, philosophy. In section 3, we introduce Canguilhem’s concept of biological normativity and the idea that norms are produced by the living. In this respect, we examine Canguilhem’s definition of norms in relation to what he calls “value judgments”. Using this latter concept, Canguilhem claims that what gets

defined as normal is the result of the constant axiological activity of choice and preference performed by living organisms. In section 4, we address how Canguilhem drew from the period's research on embryology to conceive his ideas of anomaly and abnormality. Experimental teratology, in particular, grounds Canguilhem's thesis about the ontological a priori equivalence of all living forms. It is in the context of his interest in teratology that Canguilhem took up the problem of sexuality and perversion during his preparatory work for *Le normal et le pathologique*. In section 5, we evaluate the case of hermaphroditism that Canguilhem used to demonstrate that sex, despite being constrained by biological limits, is a normative choice. Our aim is to show how this case illuminates Canguilhem's views on normativity and norms as *produced by* the living and not simply "found" in life. Building from these points, our conclusion discusses Canguilhem's conception of normativity and his notion of normative choice, and redefines Canguilhem's positioning with respect to the naturalist/normativist divide in medicine.

While specific attention has already been dedicated to Canguilhem and biology (Gayon, 1998; Braunstein, 2007; Morange, 2000, 2008; Schmidgen, 2014; Loison, 2018; Méthot, 2020), an extended examination of his views on sexuality in the context of his philosophy of norms is lacking. Addressing this gap in the literature constitutes one key contribution of this paper. We hope that this synoptic account of Canguilhem's philosophy of norms, biological philosophy, and views on sexuality will offer a useful set of conceptual tools for meaningful engagement with current debates in different philosophical traditions.

2. Life and sexuality as "disturbing objects"

In June 1951, Canguilhem was the vice-president of the committee governing the eligibility exam (*agrégation*) for high school teachers in France. In 1948, he had been appointed the "Inspector General" of high school education and, in that role, had undertaken a modernization of the oral part of the exam. Through this initiative, he managed to introduce "sexuality" as a new exam subject – though not without resistance from the other members of the committee – by arguing that "they [the students] all read Freud. And they do not talk about anything else anyways" (Eribon, 1989, p. 70). Michel Foucault, who had failed this exam the year before, in 1951 was found to have the third-best performance on the oral exam. Upset at not being first, he angrily reproached Canguilhem for having chosen such an unusual topic (Eribon, 1989, pp. 70-71).

In addition to being an interesting episode in the path that would lead Foucault to develop a four-book project on the history of sexuality, this anecdote is meaningful for at least two reasons. First, because the subject of sexuality was not an arbitrary choice on the part of Canguilhem but rather reflected a long-held interest of his which this paper aims to explore. The general recognition that Foucault has received for introducing sexuality and its history as philosophical subjects has in part overshadowed this earlier interest exhibited by Canguilhem. Besides being developed in unpublished notes for his lectures, as we shall see, Canguilhem also included the topics of "sexuality", "sexual life", "sexual impulse," and "sexual instinct" in the 1952 collection of readings *Besoins et tendances* ("Needs and tendencies") he prepared for secondary school students in his role as General Inspector of Public Education. Though the volume consists only of extracts from both ancient and modern sources, with no original contribution by Canguilhem, it attests to Canguilhem's intention to introduce topics related to sex and sexuality (at that point still considered the territory of psychoanalysis) into the standard curriculum for philosophy – an effort that has been largely neglected in existing Canguilhem scholarship. Second, the resistance expressed by

Canguilhem's colleagues exemplifies the deep contempt for life and sexuality as objects of reflection exhibited by French, prevalently rationalist, philosophy.

In 1947, Canguilhem denounced the marginal position of what he called "biological philosophy" in France and explained some of the obstacles hindering its development (Canguilhem, 1947). On that occasion he argued that, since Descartes, or more precisely "because of Descartes", life and sexuality were not considered objects worthy of metaphysical speculation.³ Indeed, with the exception of Bergson – who was never able to secure a position at a university – no French philosopher had given much attention to life, unless to scorn passions and the body and emphasize the superior position of thought. Bergson's philosophy met with considerable opposition precisely because it granted philosophical dignity to life. This contempt for life grew even stronger when life became an object of philosophical inquiry on the other side of the Rhine: "it was enough that German philosophy, especially in the nineteenth century, expressed more complacency for life than French philosophy since 1870, for biological philosophy to appear to us as a shady outgrowth over positive science, capable of serving the less admissible political or social purposes".⁴ The term "biological philosophy" afterwards became the label for "an aberration to be situated somewhere between mysticism, romanticism and fascism, a kind of naive, unhealthy or criminal speculation whose typical representatives are called, as the case may be, Hegel, Nietzsche, Bergson or Hitler".⁵

This philosophical dismissal of life was explained by Canguilhem in terms of the difficulty French rationalists experienced in accounting for indeterminacy: "Life is not a very reassuring object of thought for reason. Reason is lucidity and rectitude. With respect to reason, life is disturbing (*trouble*); from the light of reason, life is fleeting. Reason is regular like an accountant; life, anarchic like an artist".⁶ Despite his own aversion to explanations of thought based on social or environmental determinism, Canguilhem identified "certain anatomical and physiological characteristics of French society" (Canguilhem, 2015 [1947], p. 315) that helped explain this contempt for life expressed by French philosophers, who were "individuals participating in a given social *milieu*" (Canguilhem, 2015 [1947], pp. 312-313). Such disdain for life was even more explicit with regard to sexuality, which was completely absent from the French education system:

In secondary education in France, the biological sciences program only covers the phenomena of reproduction in plants. So life is not just a troubling object [*objet trouble*],

³ Canguilhem (2015 [1947], p. 311): "A cause de Descartes, plus exactement que depuis Descartes, la philosophie biologique est chez nous un genre de spéculation assez suspect. La vie, dans le système cartésien, ne se voit accorder aucune originalité ontologique. (...) De même que chez Descartes, dans la philosophie d'Alain, de Brunschvicg, de Sartre, la vie n'est pas reconnue comme objet métaphysique propre. Ne parlons pas naturellement des biologistes, pour qui le vivant n'est rien qu'un objet physique dont le déterminisme ne fait pas questions". Unless otherwise stated, all translations are our own.

⁴ Canguilhem (2015 [1947], p. 313): "il a suffi que la philosophie allemande, surtout au XIXe siècle, ait montré plus de complaisance à la vie que la philosophie française depuis 1870, pour que la philosophie biologique apparaisse chez nous comme une louche excroissance sur la science positive, apte à servir les desseins politiques ou sociaux les moins avouables".

⁵ Canguilhem (2015 [1947], p. 313): "une aberration à situer quelque part entre le mysticisme, le romantisme et le fascisme, un genre de spéculation naïve, malsaine ou criminelle dont les représentants typiques ont le nom, selon le cas, Hegel, Nietzsche, Bergson ou Hitler".

⁶ Canguilhem (2015 [1947], p. 313): "La vie est un objet de pensée peu rassurant pour la raison. Raison, c'est lucidité et rectitude. Au regard de la raison, la vie est trouble, au cordeau de la raison, la vie est fuyante. La raison est régulière comme un comptable ; la vie, anarchique comme un artiste".

it is a disturbing object [*objet troublant*]; it is not just an ambiguous object, it is a scandalous object. The French generally do not like the metaphysics of sexuality, having the habit of speaking more lightly or coarsely about things of love.⁷

For Canguilhem, this absence of sexuality as a subject for education and reflection thus illustrated the extent to which life constituted a disturbing object (*objet troublant*) for rationalist philosophy. In sections 4 and 5, we will assess what it might mean for philosophy to fully account for subjects such as life and sexuality by analyzing the medical and epistemological implications of Canguilhem's concept of normativity in light of some of his unpublished lectures concerning life and sexuality as "disturbing objects". First, however, we will clarify some of Canguilhem's more general conceptual distinctions concerning the relation between the production of norms and value judgments.

3. Canguilhem's concepts of biological normativity and value judgement

Canguilhem's medical thesis – defended in 1943 and published the same year with the title *Essay on Some Problems Concerning the Normal and the Pathological* (hereafter referred to as *Essay*) – can be understood as an attempt to introduce life as a subject for rationalist philosophy. In this work, Canguilhem famously criticizes the positivist thesis that pathological states can be distinguished in simple quantitative terms or by statistical variation from normal conditions. Tracing the emergence of this positivist position back to 19th century debates and locating it in authors such as François-Joseph-Victoire Broussais, Auguste Comte, and Claude Bernard, Canguilhem also argued that this thesis underpinned the medical theory and practice of his own time. Arguing against this stance, Canguilhem attempted to move away from a definition of health as statistical "normality" and instead conceived of it as fundamentally connected with "normativity" – or rather, with the activity of establishing norms he considered a defining trait of all living organisms.⁸ By "biological normativity" Canguilhem meant the positing of "norms" *qua* "values" by life itself, "not only in the environment but also in the organism itself" (Canguilhem 1991 [1943/1966], p. 227). In this respect, Canguilhem saw health and disease not so much as facts that can be expressed in quantitative terms but rather as norms expressing values. From this perspective, he would seem to side unambiguously with the normativist stance outlined in section 1 and stand in stark contrast to naturalist biostatistical theories, which instead consider health a distinction between the normal and the pathological that is factual and objective (Boorse, 1977). Arguing that it is impossible to avoid axiological references in the definitions of medical concepts such as normal and pathological, Canguilhem in fact seems to provide theoretical grounds for normativist approaches. Indeed, in the normativist framework, disease is defined as "a bodily or mental process which is such that it tends to cause an illness (understood as a state of suffering or disability experienced by the subject)" (Nordenfelt, 2007, p. 8). Canguilhem is thus often read as a partisan of the normative camp.

⁷ Canguilhem (2015 [1947], p. 316): "Dans l'enseignement du second degré en France, le programme des sciences biologiques comporte les phénomènes de reproduction chez les végétaux exclusivement. Ainsi la vie n'est pas seulement un objet trouble, c'est un objet troublant, ce n'est pas seulement un objet ambigu, c'est un objet scandaleux. Les Français n'aiment en général pas la métaphysique de la sexualité, ayant la coutume de parler de façon plus légère ou plus grossière des choses de l'amour."

⁸ On the historical emergence of the naturalized notion of "normality" across the 19th and especially 20th centuries against which Canguilhem argues, see Cryle & Stephens (2017).

However, Canguilhem did not want the definition of health or pathology to rely on a merely subjective perspective, as the normative approach often suggests, by conceiving of medical concepts as the products of the conscious decisions made by some subjects. This seems to us the most significant contribution his philosophy offers to current debates about normativity. To better understand this contribution, we need a better grasp of the relation between Canguilhem's concept of biological normativity and the notion of "value judgements" (*jugements de valeur*). Indeed, his *Essay* is an attempt to root the definitions of normal and pathological in the value judgments performed by the organism itself. In other words, the value judgments involved in defining the concepts of both health and disease do not result from a conscious decision performed by a rational agent but rather from the living *organism* itself, which precedes any sort of subjectivity. By "normal", Canguilhem argues, "we seem to assume that value can be attributed to a biological fact only by 'him who speaks,' obviously a man". In contrast to this view, which restricts the attribution of values to humans as beings capable of linguistic expression, Canguilhem wants to point out that

[The] fact that a living man reacts to a lesion, infection, functional anarchy by means of a disease, expresses the fundamental fact that life is not indifferent to the conditions in which it is possible, that life is a polarity and thereby even an unconscious position of value; in short, life is in fact a normative activity (Canguilhem 1991 [1943/1966], p. 126)

Thus, when Canguilhem discusses the value judgements made by individuals, he is not referring exclusively, or even primarily, to conscious human subjects. As Gayon (1998, p. 317) points out, this definition of individuality constitutes one of the main challenges presented by his biological philosophy. For Canguilhem, the best candidates for consideration as "individuals" are cells and organisms.⁹ Normative activity and the making of value judgments characterize living organisms even before or independently of their consciousness. By showing how normativity in this sense inheres in life, Canguilhem gets remarkably close to proponents of the organizational account of biological functions. Indeed, various organizational accounts identify in organismic mechanisms of self-determination "the relevant emergent causal regime in which the teleological and normative dimensions of functions can be adequately naturalised" (Moreno & Mossio, 2015, p. 70). From this perspective, physiological functions are normative, since they both indicate and determine how the organism *ought* to function in order to continue to exist. Indeed, for Canguilhem organisms are entities endowed with self-regulating mechanisms ensuring their continued existence and maintenance (Canguilhem, 2012). This link among homeostasis, internal mechanisms, and finalism recognized by Canguilhem is also upheld by proponents of organizational accounts. Finalism, in particular, is a recurrent theme for Canguilhem, who generally underscores the significance of its rediscovery by the biological thinkers of his era.

As has been widely noted, for Canguilhem "individuality does not describe a being, but a relation" with a "wider being": for a cell, this relationship is with the organism; for an organism, it is with the external milieu, or rather, the "complex web of organic and inorganic beings endowed with a certain significance for the organism" (Gayon, 1998, p. 319). Since for Canguilhem an organism's individuality therefore is not limited to its organic borders but also entails its relation to its environment, his conception of norms cannot be identified solely with internal mechanisms

⁹ More precisely, Canguilhem considers individuality a kind of relation between an entity and its environment. We shall return to this point later.

or the functions put in place by a given organism. Norms instead arise and are modified in the relation between the organism, as a biological individuality, and its environment (Lecourt 1998). In this sense, Canguilhem's views on normativity do not entirely overlap with those put forward by organizational accounts, which risk focusing exclusively on the normativity of the regulating functions of fixed biological organizations that are considered independently of their relation to this context.

Canguilhem instead considered the concept of *Auseinandersetzung* developed by the German neurologist Kurt Goldstein (Goldstein, 1995 [1934]) to be a confirmation of his understanding of the organism as a totality oriented toward the establishment of norms through confrontation with its environment (Moya-Diez, 2018). For Canguilhem, this normative activity represents the trademark of all living organisms and distinguishes them from inert matter. All living beings, even the most elementary or primitive in form, are primarily characterized by their axiological activity and production of norms: "To live is to value [*valoriser*] the objects and circumstances of one's experience; it is to prefer and exclude means, situations, movements. Life is the opposite of an indifferent relationship with the environment" (Canguilhem, 2015 [1973], p. 808). For Canguilhem, there is no such a thing as "biological indifference" (Canguilhem, 1991 [1943/1966], p. 129), strictly speaking, and regulatory mechanisms express this axiological activity. It is in this sense that Canguilhem states that one could not explain "the essential normativity of human consciousness, if it did not in some way exist *in embryo* in life" (Canguilhem, 1991 [1943/1966], p. 127).

We shall return to the role of functions in Canguilhem in section 5 below, where we compare his stance to organizational approaches. What is important to stress here is that, for Canguilhem, considering norms as what characterizes organisms does not imply that norms and values are given as facts. On the contrary, the active, continuous *production* of values and norms by the organism as it confronts its environment is precisely what distinguishes Canguilhem's concept of biological normativity.

Canguilhem's extensive reflections on the nature and function of value judgements have largely been neglected by scholars. Recently, the ongoing publication of Canguilhem's complete works, together with better access to his unpublished manuscripts, has allowed for better identification of how Canguilhem grounds his philosophy of norms in the elaboration of a "philosophy of values". This work on value judgements emerged out of Canguilhem's early interest in German *Wertphilosophie* (Schmidgen, 2013), as well as from his reading of the French traditions of reflective philosophy (Roth, 2013) and early-20th century axiological philosophy (i.e., Dupréel, 1939; also see Braunstein, 2000 and Limoges, 2015). In his early writings, Canguilhem discusses the Kantian-inspired distinction between judgements of value and judgements of fact in order to argue for the irreducibility of human freedom – which he saw expressed in the human capacity for reflective judgement – and to disavow the determinism underwriting disciplines based exclusively on judgements of fact.¹⁰

The distinct features of Canguilhem's philosophy of values were introduced later, while he was preparing his medical thesis on the problem of the normal and the pathological—the text in which he first put forth the idea that value judgements are immanent to life. Canguilhem developed

¹⁰ On Canguilhem's early philosophy of value judgements, see in particular Canguilhem (2011 [1927]), the unpublished *Manual of Philosophy* written between 1929 and 1932 (Canguilhem, 1932), and the recollections of Canguilhem's high school student, Jacques Piquemal (Piquemal, 1985). We shall return to the question of determinism (in relation to Canguilhem's concept of freedom) later, in section 5.

this idea in the course on “Norms and the normal” that he taught in Strasbourg in 1942-1943, while also preparing his thesis. The course offers a blueprint for Canguilhem’s thesis, large portions of which are taken directly from his lecture notes. However, the course concluded with a “Draft of a theory of values as the foundation of a theory of norms” (*Esquisse d’une théorie de valeurs comme fondement d’une théorie de normes*) which was not included in the medical thesis. In this *Esquisse*, Canguilhem finds the polarity of value judgements in the vital activity of the organism – or, more exactly, in the activity of the living being confronted with obstacles in its environment (*milieu*) while trying to satisfy its needs. In this sense, Canguilhem argues that all values – vital, but also aesthetic, religious, ethical, scientific, and philosophical – are products of the activity of living beings in conversation with their environment. In this respect, Canguilhem affirms Nietzsche’s anti-ontological take on values, which states that values do not simply “exist” as givens, and that even truth is a kind of value produced by a particular (and ephemeral) kind of living beings, namely, humans. It should be noted, however, that unlike Nietzsche, Canguilhem considers truth a value produced by living beings for the benefit of life; in other words, it does not diminish life.¹¹

This axiological perspective is further developed in his medical thesis, where Canguilhem goes on to characterize all vital activity as “polarized”. This conception of polarity builds off the notion of negative values developed by Heinrich Rickert and Robert Reininger in the context of German *Wertphilosophie*, which, as mentioned above, Canguilhem examined extensively during the preparation of his thesis. From Reininger Canguilhem draws the idea that all our experiences are axiological, in that all ways of approaching and coming to terms with the world or our environment involve evaluation and taking a position, and thus—results in the establishment of some kind of values. Canguilhem goes even further, claiming that what characterizes the living is not only the production of values *per se* but the activity of evaluating of which values are the product.

It is from Rickert, however, that Canguilhem takes the idea that there is no such a thing as a negative reality: negative values still imply a form of evaluation. Indeed, as we shall see, it is his analysis of “monstrosities” that leads Canguilhem to apply this concept of polarity to all vital activity. The sheer existence of “ill-formed” living beings, once deemed monsters or errors of nature, could be thought as proof of the existence of negative values. Drawing especially from the embryology of his time, Canguilhem instead attempted to establish that a so-called monster is not characterized by a negative existence in ontological terms, i.e., monsters are not a negative reality; rather, the negative values attributed to them are the axiological product of life confronting its environment.

In the next section, we will assess the importance of the study of teratology, as well as of some cases of sexual perversion, to the formulation of Canguilhem’s concepts of biological normativity and the polarity of life. It is through teratology and the study of monsters that Canguilhem developed the discussion of perversions and sexuality that will be addressed in section 5. Outlining these aspects of his thought will enable us to reassess Canguilhem’s position, especially with respect to contemporary forms of refined naturalism.

4. The science of monstrosities

In his *Essay*, Canguilhem analyzes the history of teratology to prove the impossibility of completely eliminating value judgments from the identification and treatment of “monstrosities.” He takes as his point of departure the definitions and classifications of anomalies put forward by I. Geoffroy

¹¹ On the German sources of Canguilhem’s philosophy of values, see Schmidgen, 2013.

Saint-Hilaire in *Traité de Tératologie* (1932-1937).¹² For Saint-Hilaire, the term “anomaly” refers to a deviation from a given type or from the generality linking a set of cases. Moving from this premise, Saint-Hilaire develops a classification of anomalies according to their degrees of complexity and gravity. He distinguishes i) *Varieties* – which are simple in appearance and not serious, i.e., do not represent any obstacle to the performance of functions – from ii) *Structural defects*, which are simple in appearance but serious, iii) *Heterotaxy*, which is complex in appearance but not serious, and iv) *Monstrosity*, which is complex in appearance and serious. In attempt to be objective in his analysis, Saint-Hilaire employs two criteria of classification: complexity and gravity of variation. However, he states that “the criterion of the gravity of the anomaly lies in the *importance* of the organ as far as its physiological or anatomical connections are concerned” (Saint-Hilaire quoted by Canguilhem, 1991 [1943/1966], p. 134, our emphasis). Indeed, Canguilhem points out that “for the naturalist importance is an objective idea, but it is essentially a subjective one in the sense that it includes a reference to the life of a living being, considered fit to qualify this very life according to what helps or hinders it” (*Ibid*). To address this issue, Saint-Hilaire thus introduces two further criteria of identification for monstrosity: one which is physiological and consists in “the relationship between anatomy and the exercise of functions,” and one which is “patently psychological” or introduces “the idea of a harmful or disturbing influence on the exercise of functions” (*Ibid*; Canguilhem, 2008 [1965], p. 126). Thus despite his aim for objectivity, Saint-Hilaire cannot avoid using terms that evoke subjective values, such as “the idea of a *harmful* or *disturbing* influence on the exercise of functions” (*Ibid*). It is worth noting that, especially in light of his thinking on biological individuality, Canguilhem’s use of the term “subjective” in this context should not be understood as reference to the activity of a conscious subject. Rather, his use of the term aims to highlight that what is subjective expresses value judgments made by a being that, because it is living, *is affected*, regardless of whether it is conscious of being so.¹³

Saint-Hilaire’s classification thus ultimately relies on the way in which the individual is affected, understood in the very same sense. Canguilhem points out that, within this framework, “the anomaly is ignored insofar as there is no manifestation of it in the order of vital values. Thus, even a scientist acknowledges that an anomaly is known to science only if it is first perceived in the consciousness, in the form of an obstacle to the performance of functions, or discomfort or harmfulness” (Canguilhem, 1991 [1943/1966], p. 135). Yet for Canguilhem, “because there are anomalies which are experienced or revealed as an organic disease, there exists first an affective and then a theoretical interest in them” (Canguilhem, 1991 [1943/1966], p. 136). If Canguilhem does not find consciousness a necessary condition for values, he does nonetheless frame it as a necessary condition for science to have knowledge of them. In other words, though establishing values does not require consciousness – as organisms can and do evaluate without necessarily being aware of doing so – for medicine to be able to qualify a given state of the organism as pathological, it is necessary for that state to have been consciously experienced as implying disease (i.e., as a form of “discomfort” or “harmfulness”) by some organism.

This part of Canguilhem’s *Essay* is based on the lecture “On Monstrosity” (“De la monstruosité”) belonging to his aforementioned 1942-1943 course on “Norms and the normal” (Canguilhem, 1943). The lecture, however, represented a much broader analysis than the portions

¹² On the importance of this work in the history of teratology, see Wolfe, 2005.

¹³ Also see our discussion in the previous section of Canguilhem’s notion of biological individuality.

Canguilhem decided to include in both his medical thesis and his *Essay*.¹⁴ In the lecture, Canguilhem explains the causes of the anomalies discussed by Saint-Hilaire and his son Isidore Saint-Hilaire, who both present them as the result of arrested intrauterine development – meaning that “anomaly is a *morphological fixation to a transient foetal aspect*”.¹⁵ In this regard, monstrosities derive from the normal, and “we are led to define the anomaly not as an absence of normality, but as an ill-timed normality. The abnormal of today is the normal of yesterday”.¹⁶ This is also the explanation taken up by Étienne Wolff, an embryologist at the University of Strasbourg who was central to the development of experimental teratology in the 1930s. Wolff’s work supports the above-mentioned explanation of anomaly with experimental evidence, thus more precisely determining its conditions (Vagelli, 2019). Canguilhem refers to Wolff in his lecture to foreground the view that

anomaly is an arrested development reflecting the influence of the external environment. It can only occur if the lesion or the influence acts at a precise moment in the ontogenetic outline (*ébauches ontogénétiques*), neither too early nor too late. We can cause anomalies at will, but not at the wrong time.¹⁷

Canguilhem also uses Wolff’s work to highlight the distinction between anomaly as an anatomical fact and designation of the pathological, which unwittingly attributes value to this fact.

It could be pointed out here that the teratogenic interpretation of teratological characteristics, and better yet their teratogenetic explanation, allow the placement of the anomaly’s appearance in embryological development and give it the significance of a disease. Once the etiology and pathology of an anomaly are known, the anomalous becomes pathological. Experimental teratogenesis provides some useful insights here. But if this conversion of an anomaly into disease makes sense in the science of embryology, it makes no sense for the living being whose behavior in the environment, outside of the egg or uterus, is fixed at the outset by its structural characteristics. (Canguilhem, 1991 [1943/1966], p. 139)

From Canguilhem’s point of view, explaining anomalies as expressions of a fixation or arrest of development is therefore insufficient to explain how organismal anomalies are assigned value outside the uterus. While in both the *Essay* and his medical thesis Canguilhem quickly turns to another subject after making this point, in his lecture he expands upon it and briefly considers an alternative explanation of anomalies, which he interprets not as cases of arrested development but as asynchronous developments of different parts of the embryo. This claim shifts our understanding, since, as Canguilhem remarks in his lecture notes, it suggests that “*in a living being there can be no stop to or lack [of development]*. Everything it presents has positive biological

¹⁴ The lecture is also the blueprint of a talk Canguilhem held in 1962 in Brussels, which was later published as “La monstruosité et le monstrueux” (“Monstrosity and the Monstrous”) in Canguilhem 2008. While retaining the main ideas of the 1942/1943 lecture, this latter essay provides a more complete historical account of teratology.

¹⁵ Canguilhem (1943, p. 79): “l’anomalie est une fixation morphologique à un aspect fœtal transitoire”.

¹⁶ Canguilhem (1943, p. 79): “on est conduit à définir l’anomalie non comme une absence de normalité, mais comme une normalité à contre-temps. L’anormal d’aujourd’hui c’est le normal d’hier.”

¹⁷ Canguilhem (1943, p. 79): “l’anomalie est un arrêt de développement traduisant l’influence du milieu extérieur. Elle ne peut se produire que si la lésion ou l’influence agissent à un moment précis de l’ébauche ontogénétique, ni trop tôt ni trop tard. On peut provoquer des anomalies à volonté, mais pas à contre-temps”.

value. All life is pushed, strained towards the future, and must be interpreted as such. Nothing can be explained in relation to the past”.¹⁸ Here Canguilhem should not be taken as making the general claim that the current state of an organism is unrelated to its past development. Rather, he argues, more specifically, that no pathological condition can be explained simply in terms of the fixation of some of its constituent parts in an earlier stage of development. As an anatomical blockage of a moment of intrauterine development, an anomaly can be evaluated as pathological by the living being only with respect to intrauterine life. However, while from the point of view of teratogenesis, fixation can be considered a sort of arrested development, it can be considered a potentiality from the perspective of the living being, which does not recognize any sense of arrest, since it is always oriented towards the future.¹⁹

However, what both explanations of anomaly – as either arrested or asynchronous development – confirm for Canguilhem is the fundamental idea that “there is not in itself an *a priori* ontological difference between a successful living form and an unsuccessful form” (Canguilhem, 1991 [1966/1943], p. 31). This is Canguilhem’s main takeaway from teratology: the difference between forms qualified as monstrous or pathological and those qualified as normal is axiological and cannot be defined by reference to any ontological *a priori*. For Canguilhem, this is not only because, as Wolff would later claim, “the monster is built upon a normal *plan d’ébauches*, and it is healthy *ébauches* that usually build malformation,” implying that “a monster has been normal, before being abnormal” (Wolff, 1948, pp. 237-241). Rather, for Canguilhem it is more fundamentally because “*there is no fact which is normal or pathological in itself*. An anomaly or a mutation is not in itself pathological” (Canguilhem, 1991 [1943/1966], p. 144, our emphasis). We cannot speak of “unsuccessful living forms” as such, for Canguilhem, since no lack can be identified in a living form “*as long as the nature of its obligations as a living being have not been determined*” (Canguilhem, 1991 [1966/1943], p. 31, our emphasis). In the next section, we will address how this idea plays out in the specific case of sex determination.

5. Sex determination: a case of medical decision-making

In his lecture, Canguilhem turns from the etiology of monstrosities to the specific case of perversions, raising a series of philosophical questions about the polarity of living beings: “What is the nature of perversions? Is there perversion when there is reversal of the senses of a polarized activity? Is it only when there is polarity that there is perversion?”²⁰ Focusing on cases involving the inversion of polarity, Canguilhem points out that such cases do not necessarily entail perversion, pointing as evidence to the inversion of polarized actions such as left-handedness (*gaucherie*) or dextrocardia. Other inversions, however, such as coprophagy and sexual inversion, are instead conceived as some sort of perversion. With regard to the latter, Canguilhem focuses in his lecture specifically on “sexual inversions”, and, in particular, on hermaphroditism, intersexuality, and homosexuality.

¹⁸ Canguilhem (1943, p. 79): “beaucoup d’embryologistes modernes pensent que chez un être vivant il ne peut pas y avoir d’arrêt ou de manque. Tout ce qu’il présente a une valeur biologique positive. Toute vie est poussée, tension vers l’avenir et doit être interprétée par là. Rien ne peut être expliqué par rapport au passé.”

¹⁹ Teratology confirmed Canguilhem’s views about the link between organic irreversibility and totality through the notion of organic regulation (Vagelli, 2019, pp. 261-262).

²⁰ Canguilhem (1943, p. 80): “Quelle est la nature des perversions ? Y a-t-il perversion lors de l’inversion des sens d’une activité polarisée ? Est-ce seulement lorsqu’il y a polarité qu’il y a perversion ?”

Drawing on the scientific knowledge of the time regarding sexual differentiation, and particularly on the discovery that the endocrine glands produce the same hormones in both sexes but in different quantities, Canguilhem remarks that “the difference between the sexes is not an absolute distinction in the histological or humoral traits. In the body of an individual of a given sex there is no humoral nor cytological condition susceptible to hindering the development of the opposed sexual gland”²¹. He thus frames sexual polarity as having the particular characteristic of not constituting a polarity of exclusion but one of complementarity: unlike the poles of the other polarized functions, the two sexes do not mutually exclude each other; rather, they are “complementary tendencies that appear, at most, in any individual. Biologically speaking, there is no sex or there is only sexual ambivalence, undifferentiated sexuality.”²²

This complementarity raises the problem of knowing how to determine the normality of sexuality: “are we sexually normal by form? By function, and which (internal/external), [or] by choice of behavior?”²³ Canguilhem saw these questions as central for medicine, because they establish the sense of normality that gets “re-established” in cases of sexual perversion. These were, in fact, cases in which physicians were called upon to determine the individual’s purported “true sex”.²⁴ At the time that Canguilhem held these lectures and wrote his thesis, no conceptual distinction between biological sex and gender identity had yet been developed.²⁵ For Canguilhem, the question of biological sex was synonymous with the question of sexual identity. He did not make any relevant distinction between the two and thus considered the determination of sex a question for the clinical practitioner.

To address this issue, Canguilhem analyzed a case of gynandroid hermaphroditism²⁶ reported by surgeon Louis Ombrédanne (Ombrédanne, 1937), at the time Professor of Infant Clinical Surgery at the Medical School of the University of Strasbourg.²⁷ Ombrédanne’s report details a case involving a boy who presented the external genital organs of both sexes – a usable penis and a vagina not viable for sexual intercourse but manifesting regular menstruation. Though aware of his infertility, the boy intended to marry a woman and wanted to stop his menstruation. In an exploratory laparotomy, Ombrédanne reported discovering a uterus just below the average size and a large polycystic left ovary with a Fallopian tube. The boy’s internal organs were thus female, while only his external male organs were usable. Reflecting on this case, Canguilhem thus highlighted what for some constituted a philosophical question but was a practical one for the physician: does sex have to be determined by the shape of the organs? Is it the shape of their internal

²¹ Canguilhem (1943, p. 81): “La différence entre les sexes n’est pas une distinction absolue des caractères histologique ou humoraux. Il n’existe dans le corps d’un individu de sexe donné aucune condition humorale ou cytologique susceptible d’empêcher le développement de la glande sexuelle opposée”.

²² Canguilhem (1943, p. 81): “des tendances complémentaires qui se manifestent à la rigueur toujours chez n’importe quel individu. Il n’y a pas, biologiquement parlant, de sexe ou bien il n’y a qu’une ambivalence sexuelle, une sexualité indifférenciée.”

²³ Canguilhem (1943, p. 81): “est-on sexuellement normal par la forme ? Par la fonction et laquelle (interne / externe), par le choix de comportement ?”

²⁴ In his lecture, Canguilhem does not invent this term but rather quotes it from a medical report we will now analyze. The debate over “true sex” was longstanding in the 19th century; its relevance was beginning to wane during the period in which Ombrédanne was working (Le Mens, 2006; Mak, 2012).

²⁵ For a historical perspective on John Money’s introduction of the concept of gender in the 1950s, see Diamond (2004), and, for the French context, Raz (2015).

²⁶ “Gynandroid” means that the subject was considered histologically male but with apparent female traits.

²⁷ Ombrédanne authored *Les hermaphrodites et la chirurgie* (1939, Masson et Cie), the first medical treatise on the surgery for hermaphroditism in France. The text demonstrates how intersexuality was treated medically in the interwar period. On Ombrédanne’s role in the history of pediatric surgery, see Androutsos (2003).

or their external organs that decides the “true sex” of the individual? Should sex instead be determined by the function of these organs?

In his report, Ombrédanne outlined two prevailing perspectives from which the decision about sex could be made in this case: one religious, the other legal. For Ombrédanne, the religious perspective, which locates the determination of sex in its alleged end, i.e., procreation, was of no use in this case. He maintained that in the event of a gynandrous subject whose vagina is usable, the religious perspective could be considered, but in the case of a non-usable vagina, such as the one he presented, the only option derivable from the religious perspective would be a sort of celibacy. On the other hand, Ombrédanne noted that, from the legal point of view, the subject had been declared male; he was thus legally a man. The marriage could be susceptible to annulment on the basis of the husband’s concealed infertility if the surgeon declared having conducted a laparotomy, but this was not actually possible, since the latter was professionally obligated to uphold confidentiality.²⁸ Having thus rejected both prevailing perspectives as irrelevant, Ombrédanne argues in favor of prioritizing function over morphology and decides to castrate the subject’s female genitals, reporting that “despite its paradoxical appearance, this seems right to us” (Ombrédanne, 1937). His decision turns out to be in line with the patient’s desires, but this is not because Ombrédanne intended to adhere to the patient’s wishes; rather, it is because, having excluded the other perspectives, he concludes that the functional capacity of sexual intercourse should be privileged from a medical point of view. He closes by arguing that

an already long experience of gynandroid surgery has led us to consider as true sex not the one that could be deduced from the shape of the intra-abdominal organs, but the one that is capable of manifesting itself in action; in our opinion, the function should take precedence over form.²⁹

Two years later, Ombrédanne (1939) would systematize this “functional approach” to the surgical treatment of hermaphroditism, which prioritizes sexual function over morphology, by highlighting that “there is no such thing as a true sex. True sex is a word that only hides errors of appreciation” (Ombrédanne, 1939, p. 35).

After having taken stock of Ombrédanne’s analysis, Canguilhem concurred with his rejection of both the religious and legal perspectives and pushed this analysis even further: “what Ombrédanne calls a *function*, it is not a function in the physiological sense of the word”; it is, instead, “the chosen polarization of a form and a function in a behavior”.³⁰ In other words, he argues that Ombrédanne’s use of “function” refers to the manifestation of the sex organ in action – something that is not physiologically determined but instead results from a choice of behavior produced by axiological activity. Canguilhem therefore concludes that the determination of sex corresponds to a choice of behavior, which, in this case, represents the locus of the establishment of the norm:

²⁸ These societal and legal worries surrounding hermaphroditism were the main perspective through which the phenomenon had been addressed since the 19th century. On this point see Mak 2012, which also provides useful information about the process of medicalizing hermaphroditism at the turn of the 20th century.

²⁹ Ombrédanne (1937): “une expérience déjà longue de la chirurgie des gynandroïdes nous a amené à considérer comme sexe vrai non pas celui qu’on pourrait déduire de la forme des organes intra abdominaux, mais celui qui est capable de se manifester en acte ; la fonction devant à notre avis primer la forme”.

³⁰ Canguilhem (1943, p. 83): “ce qu’Ombrédanne appelle fonction ce n’est pas la fonction au sens physiologique du mot, c’est la polarisation choisie d’une forme et d’une fonction dans un comportement”.

With respect to sex,	the form provides an indication the function provides an orientation the choice is normative
In the majority of the cases,	the indication is so clear the orientation so imperious that the normative choice goes unnoticed both by the subject herself and by others
When, on the contrary,	the formal indication is simply an outline of the functional orientation the functional orientation is simply an inducement (<i>sollicitation</i>)
When	ambiguity appears through the form ambivalence through the function <i>Then the importance of the choice becomes clear</i> ³¹

In the case of hermaphroditism, Canguilhem stresses that what is normative is neither the form nor the function but a behavioral choice. The normative character of this choice becomes noticeable only when there is no clear correspondence between the chosen behavior on the side of the organism and the organ's anatomical form or physiological function. In other words, alleged cases of perversion are precisely what reveal the normative character of sex. As Canguilhem also concluded in his thesis, it is the infraction that reveals the character of a norm.³²

The practical consequences of the conclusions to which this point leads are not limited to cases of hermaphroditism. Canguilhem aims to underscore that sex determination for any subject is a normative choice by the organism that cannot be reduced to its anatomical, physiological, or functional determinations. Not only does the choice of behavior prevail over form and physiological function, but, Canguilhem also argues, the physiological rigidity of sexual polarity can to some extent be conceived as a by-product of this normative choice:

³¹ Canguilhem (1943, p. 83) (our emphasis):

“En matière de sexe,	la forme est une indication la fonction est une orientation le choix est normatif
La plupart du temps	l'indication est si nette l'orientation si impérieuse que le choix normatif est méconnu du sujet lui-même et d'autrui
Quand au contraire	l'indication formelle est simplement une esquisse l'orientation fonctionnelle est simplement une sollicitation
quand	l'ambiguïté transparaît dans la forme l'ambivalence dans la fonction alors toute l'importance du choix apparaît”

³² Canguilhem further developed this idea in subsequent reflections added to the 1966 edition of the *Essay*, which argue that norms do not properly exist in themselves: it is only the valuation of a given infraction that provides an occasion for establishing the norm. In this sense, infraction precedes the norm itself: “the biologically normal is revealed only through infractions of the norm” (Canguilhem 1991, p. 118).

There is no unilateral and univocal conditioning of the psychological sense of the exercise of an activity by physiological functions or morphological structures. There is also morphological hardening (*durcissement morphologique*) and functional specialization through the psychic decision. Without this decision, morphological delimitation and functional rigidity would not be understood. In the end, it is psychic integrity (*rectitude psychique*) which engenders anatomico-physiological rigidity.³³

Again, this kind of decision should not be conceived as the conscious act of a rational subject. To the contrary: Canguilhem seeks to de-subjectivize concepts such as choice, decision, or value and to redefine them as products of the axiological activity of living, in this case human beings. Even for human beings, however, this “psychic decision” is not conceived as the product of conscious and rational human agents but as an axiological product of life. Canguilhem moreover noted that endocrinological studies on homosexuals show they “have all the characteristics of their sex; [and] that endocrine medications enhance gross genital appetite without directing it and therefore have no effect of rectifying”.³⁴ What Canguilhem therefore highlights is that the orientation of the sexual behavior of any individual cannot be rectified by medical intervention. Indeed, it is shaped by a normative choice.

It is the choice which fixates the individual – for herself and for the others – within a function and a form (shape). It is the choice which defines the outline (*arrête les contours*), inhibits the different, and even opposed virtualities. The individual stabilizes by normalizing herself, she normalizes herself by dreaming of herself (*se normalise en se rêvant*); she makes herself the way she sees or shapes (*dessine*) herself.³⁵

After discussing Canguilhem’s position on the normative character of sex choice, it is worth pausing a moment to elaborate his reflections on the nature of that choice. Canguilhem does not conceive of this normative choice as a conscious one. On the contrary, he argues that sex choice is not free in an absolute sense – as if we could change it at any time with a simple conscious decision, like we do when we change clothes. Yet it is also not exclusively biologically determined.

³³ Canguilhem (1943, p. 83): “Il n’y a pas [de] conditionnement unilatéral et univoque du sens psychologique d’exercice d’une activité par les fonctions physiologiques ou la structure morphologique. Il y a aussi durcissement morphologique et spécialisation fonctionnelle par la décision psychique. Sans cette décision la délimitation morphologique et la rigidité fonctionnelle ne se comprendraient pas. Finalement c’est la rectitude psychique qui fait la rigidité anatomico-physiologique”. Canguilhem’s idea of “functional plasticity” (Canguilhem 1991, p. 174) has aroused the interest of some scholars (Rand 2011). Sholl (2016, p. 86) has compared this notion to the concept of allostasis, understood as the achievement of physiological viability through change. According to Sholl, Canguilhem emphasizes the “responsiveness” by which “organisms alter their behavior and morphology to meet changing demands”. In the case under consideration, however, Canguilhem seems to suggest something which is both similar and one step removed from this understanding of plasticity. As we have seen, in this context Canguilhem refers to the potential for a behavior to influence both the morphological and the physiological dimensions of the organism.

³⁴ Canguilhem (1943, p. 83): “ont tous les caractères de leur sexe ; [et] que les médications endocriniennes renforcent l’appétit génital brut sans l’orienter et par suite n’ont pour effet aucune rectification”.

³⁵ Canguilhem (1943, p. 83): “C’est le choix qui fixe l’individu – pour lui-même et pour les autres – dans une fonction et une forme. C’est le choix qui arrête les contours, inhibe des virtualités différentes et même opposées. L’individu se stabilise en se normalisant, il se normalise en se rêvant ; il se fait tel qu’il se voit ou se dessine”.

When talking about sex choice, one must acknowledge that it is not the choice according to a freedom of indifference (*liberté d'indifférence*). The choice is already burdened by all sorts of social influences, imitations, etc. But where there is a renunciation of some possible contrary (*mais là où il y a renoncement à quelque contraire possible*), there is choice. From the moment in which there are multiple senses of determination, a determination is a choice³⁶.

These reflections on the possibility of sex choice and its limits must be understood against the background of Canguilhem's earlier problematization of freedom. In his early writings, Canguilhem considered the situation of the human as one of inherent bias (*parti pris*), meaning that, in making a choice, one does not by the same token also choose one's standpoint. Rather, one finds oneself always already "engaged", in the sense of always being already confronted from the outset with a given positioning. In 1930, during his first year as a lecturer at the Sorbonne, Canguilhem qualified his philosophy as "a philosophy of bias" (*une philosophie du parti pris*), distinguishing it as such from the idea that freedom is grounded in the interiority of the subject – as was upheld by Victor Cousin and other French spiritualists (Bianco, 2015). In contrast to the classical opposition between absolute freedom and determinism, Canguilhem argues "that the human situation is biased, that no matter our desire for harmonious totality we are and will always be partial because we are first of all partial, and that therefore our freedom consists in living a little better in this world of mud. The action is both conditioned and free"³⁷. In this sense, he does not consider determination the opposite of freedom but rather maintains that one always enacts choices within a plurality of determinations.

In the case of sex, this choice is not explicitly presented as such, because what the subject wants or aims for coincides in the majority of the cases with both social influences and expectations, on the one hand, and the physiological body, on the other. The sex choice thus remains implicit. It is only when there is misalignment between what the subject desires and their biological and social determinations that the normative character of the sexual choice becomes clear. The normative choice of sex can therefore present itself either without obstacles – and in this case, its normality is not called into question – or with physiological and/or social obstacles which put the normality of sex into question. Once again, it is only in cases of "infraction," or the non-coincidence of sex choice and biological and social determinations, that the problematic normative character of sex is revealed. This represents not a choice of physiological function but of sexual behavior, what one does *with* the body, and for Canguilhem this choice is what should prevail over form and physiological function.

6. Canguilhem's *normative naturalism*

³⁶ Canguilhem (1943, p. 84): "Quand on parle de choix du sexe, il faut bien entendre que ce n'est pas un choix selon la liberté d'indifférence. Le choix est déjà alourdi de toutes sortes d'influences sociales, d'imitations, etc. Mais là où il y a renoncement à quelque contraire possible, il y a choix. Dès qu'il y a plusieurs sens de détermination, une détermination est un choix". In his lecture, Canguilhem briefly points out how Freud's work has shown that the choice of sex is not conscious and instead implies a difficult process that takes place during childhood, during which one excludes the possibility of being the other sex. Canguilhem seems to employ this rather isolated reference to Freud to support his argument, without adding anything to it.

³⁷ Canguilhem (1932, p. 196): "il faut répéter que la situation de l'homme est un parti-pris, que quel que soit notre désir d'harmonieuse totalité nous sommes et serons toujours partiels parce que nous sommes d'abord partiels, et que dès lors notre liberté consiste à vivre un peu mieux dans ce monde fait de boue. L'action est à la fois conditionnée et libre".

To conclude, let us return to our initial question concerning Canguilhem's positioning within current debates over norms and the dichotomy between normativist and naturalist approaches. From our discussion, it should be clear that, for Canguilhem, norms are produced by the living, meaning the domain of the living and the domain of norms are not two separate realms. This leads Canguilhem to eschew both fully naturalist and fully normativist understandings of health and disease. On the one hand, what Canguilhem rejects from the naturalist position is the reduction of pathology to statistical deviation. Norms are not "natural", in the sense that they cannot be found in nature as facts that are given, not even statistically. On the other hand, what he would reject from the normativist stance is its exclusive reliance on conscious perception and the lived experience of an individual understood as the traditional subject of philosophy. As the previous sections have shown, for Canguilhem norms do not exist in themselves and do not reflect either a quantity or an average. Nor are they given in any natural, subjective, or social sense. Rather, they should be conceived as the product of an axiological activity which characterizes the living by its confrontation with the environment.

This way of putting things is not so far removed from the formulations used by those who are currently reviving the naturalist camp by reckoning with the normative and teleological dimensions of the living. We agree with scholars who frame Canguilhem as a "surnaturalist" (Sholl, 2016), meaning, in Sholl's definition, one who upholds "a peculiar kind of naturalism...which is based on the dynamism and variability of biological norms" (Sholl, 2016, p. 91). In this regard, the stance Canguilhem proposed can be read as a surnaturalist "biological theory of health and disease" that

challenges what we take to be 'normal and natural.' It is naturalistic in that it defines health and disease as two distinct biological norms, and is surnaturalistic by acknowledging the plasticity and variability of living beings (Sholl, 2016, p. 93).

"Surnaturalism," Sholl continues, "suggests that 'normal' functioning is a matter of dynamism and adapting to the changing demands that an organism faces" (Sholl, 2016, p. 95). For Canguilhem, all norms – whether biological or not – are not naturally given as facts but rather produced in a way that implies continuous negotiation, redefinition, and transformation by axiological and normative activity as the living being confronts its environment.

The organizational approaches to biological functions referred to in sections 1 and 3 above can be considered part of this larger attempt to refine the naturalist framework. The fundamental point that Canguilhem and organizational accounts share is the idea that the production of norms is immanent to life itself, meaning that "organismic processes are normative because the preservation of life presupposes the organism's ability to establish and follow stable and flexible norms" (Saborido & Moreno, 2015, p. 84). In section 3, however, we pointed out that Canguilhem would see some limitations to the idea, put forward by organizational accounts, that there is an intrinsic finality and normativity in organisms which *ought* to function in specific ways to ensure their survival. The limitation consists in an exclusive focus on biological functions to explain the very existence of organisms, independent of the relation between the organism and its environment. Canguilhem's position would be more in line with versions of the organizational account that locate in Canguilhem's "vital normativity" support for a view of life as an evolutionary process of adaptation – one grounded in a basic plasticity developed in the living's confrontation with its environment. In this view, the organism actively maintains its norm and also continuously adjusts

that norm in accordance with the environment, which is in turn modified by this normative activity; the norm expresses the margins of tolerance of the environment. From this perspective, organisms have a *living normativity* according to which they distinguish disease (Etxeberria, 2016, pp. 137-138).

However, as the case of hermaphroditism analyzed in section 5 demonstrates, for Canguilhem neither the morphology of sexual organs nor their physiological functions in themselves serve as criteria for establishing norms. In cases of sex determination, it is rather the axiological activity of each individual living organism, expressed through its choice of behavior, which constitutes the decisive normative criterion. This presents a further difference with the organizational accounts, which instead focus on functions, neglecting the behavioral aspect that is crucial in Canguilhem. It is because we do not think it is possible to “naturalize” this position further that we think Canguilhem’s position can be best understood as a form of “normative naturalism”.³⁸ Terms like “naturalist” or “naturalized normativism” describe “typical or statistically normal states (within a range of heterogeneity)” and pathologies as representing “deviations from the basic principles of biological organization” (Etxeberria, 2016, p. 135). They thus seem to imply a form of biological reductivism that is contrary to Canguilhem’s intentions. “Normative naturalism” instead identifies both healthy and pathological states as expressions of a fundamental axiological activity. However, unlike other normativist approaches, “normative naturalism” recognizes that the axiology in question is not that of a conscious subject but something that pertains to life as such and to all living beings. Compared to “anti-reductionist naturalism” and “surnaturalism”, the term “normative naturalism” thus seems to more effectively capture the specificity of Canguilhem’s approach and its relation to contemporary refinements of the naturalist framework. It enriches “naturalism” by attempting to grasp it through a new distinctive “normative” understanding. Employing both terms of the debate between normativist and naturalist approaches to health and medicine, “normative naturalism” gestures toward the impossibility of framing Canguilhem’s position as belonging to only one of the two camps. In this sense, “normative naturalism” recaptures the singularity of Canguilhem’s position, which is resolutely normative but also redefines normativity as something fundamentally inherent to life.

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³⁸ “Axiological naturalism” would do as well, but by keeping “normative” we make a clearer reference to the debates between normative and naturalist approaches sketched in the introduction. We do not claim, on the contrary, any proximity with Laudan’s original “normative naturalism” in philosophy of science (Laudan, 1989).

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