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# Individuals and their environments in Georges Canguilhem's philosophy of medicine<sup>1</sup>

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## Introduction

Georges Canguilhem's philosophy of medicine is polemical, rather than architectonic, to paraphrase Bachelard's description of his own rationalism. This is for two reasons. The first is that the central concepts of his philosophy of medicine, the normal and the pathological, only exist in opposition to each other. In his words: '[t]he normal is not a static or peaceful, but a dynamic and polemical concept' (Canguilhem, 1989 [1966], p. 239). The second reason is that it is constructed against several polemical targets, including positivistic views of medicine, the concept of organism as a machine, and environmental determinism. In this article, I read Canguilhem's philosophy of medicine as a series of articulated responses to a number of dominant views that he opposed. My approach highlights the difficulty of reading his philosophy of medicine as a monolithic whole, but it is also a solution to the problem of its unity. The primary sources on which I focus are diverse in scope, and they were written across almost half a century, from the Second World War to the late 1980s. In this period, mainstream views significantly changed, as they have done since his writing. By keeping his polemical targets in mind, we better understand his proposal underneath the perspectives and emphases that depended on them. At the same time, it is important to bear in mind that critique was not his primary aim. Even though Foucault took Canguilhem's view of normalisation as his starting point (Foucault, 2003, 49-50), Canguilhem, unlike his younger colleague, did not primarily aim at unmasking the workings of power behind medicine. In fact, for him the latter should guide philosophy; he presented *The Normal and the Pathological*, as 'an effort to integrate some of the methods and attainments of medicine into philosophical speculation' (Canguilhem, 1999 [1966], 14). His primary aim was not only to highlight the philosophical teachings of medicine, but also to show what medicine should be, and arguably for him has always been, despite the distortions that positivism and other approaches have generated.

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<sup>1</sup> I decided to translate '*milieu*' as 'environment', although several translations of Canguilhem's work leave it as *milieu*. My choice has several reasons, one being that the term *milieu* in English has a specific and more restricted meaning than in French. Moreover, the French term *milieu* has a complex history outside France: as Wolf Feuerhahn has shown, in Germany it came to be identified with determinism, because of its association with French theory and notably Hippolyte Taine's concept of *milieu* (Feuerhahn, 2014). On this topic, see also (Chien, 2007). In the present article, I shall discuss Canguilhem's rejection to Taine's determinism, and his appropriation of Jacob von Uexküll's concept of *Umwelt*, employed in opposition to Taine's *milieu*. I shall also refer to more recent essays by Richard Lewontin and Richard Levins who employ the term environment in a sense far closer to *Umwelt* than Taine's *milieu*.

Here I focus in particular on the two core characteristics of Canguilhem's philosophy of medicine. The first is the centrality of the suffering individual: for him it is only at the individual level that we can establish what is normal, and it is the individuals themselves who know whether they are in a normal or pathological state.<sup>2</sup> The second core characteristic is the relationship of individuals with their environments, which is as dynamic and polemical as his concept of normal. As individuals can only be considered normal in relation to their environments, medicine for Canguilhem must not ignore the latter. My examination of his views of the individuals and of their environments will draw out the lessons that are still relevant to present concerns. In order to use his ideas in current debates, we need to have a layered reading of his works. On the one hand, if we want to understand them, we should bear in mind their specific polemical targets, as well as the assumptions that did not need spelling out because they would have been easily grasped and shared by his readership. On the other hand, we should not lose sight of the fact that some of his polemical targets no longer hold a leading cultural position, notably environmental determinism. In fact, as I shall discuss, the latter started losing its dominance shortly after the publication of the main body of *The Normal and the Pathological* in 1943. The change in the background of mainstream views is mainly an issue in terms of text exegesis and full understanding of his vision of medicine, rather than the enduring value of his philosophy. In fact, Canguilhem's positive and specific proposals can be of use not only in current philosophy, but also for a more general discussion about what medicine should be, and which states should be regarded as pathological, and therefore requiring medical intervention. All the same, I argue that his focus on the individual, and his presentation of the relationship between human beings and their environments, pose a number of problems, some of which might be difficult to resolve.

### One normal or many? Canguilhem's criticism of positivism

Canguilhem developed the central ideas of *The Normal and Pathological* through his critical engagement with the positivistic philosophies of medicine of August Comte and Claude Bernard. Comte and Bernard deemed the normal state to be a scientific fact, and the pathological state to be a variation of the normal state. Bernard was a clear advocate of this approach, which is well illustrated by his own work on glycosuria: sugar in the bloodstream is normal, but if its levels are too high (or too low), then it becomes pathological. He concluded that pathology is a measurable quantitative variation of the normal state. But how do we establish the norm that enables us to judge whether sugar levels, or any other function, is normal or pathological? For positivist philosophers, the norm can be ascertained by studying the 'normal' organism, and physiology is the science that provides its description and explanation. Bernard wrote: 'Knowledge of causes of the phenomena of life in the normal state, i.e., PHYSIOLOGY, will teach us to maintain normal conditions of life and to conserve HEALTH' (Bernard, 2012 [1865], loc. 438-439, original capitalisation).

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<sup>2</sup> For a comprehensive discussion of the concept of individuality in Canguilhem's philosophy, see (Gayon, 1998).

Canguilhem pointed out several weaknesses of the positivist view. First of all, the autonomy that Bernard attached to the normal state cannot logically hold, as we can only judge a condition as normal if there is the possibility of things going differently. As he put it, 'it is the historical anteriority of the future abnormal which gives rise to a normative intention' (Canguilhem, 1989 [1966], p. 243). For him, this is illustrated by the central intuition of long-lasting conceptions of the pathological state as discontinuous with the normal state, and in opposition to it. These include both those that regard disease as caused by an external agent (e.g., theories of infections) and those that see it as an upset of an equilibrium (e.g., Hippocratic medicine). These conceptions, despite their differences, share the assumption that the normal and the pathological are heterogeneous. Moreover, as Canguilhem put it, they envision a polemical situation, a struggle. This struggle may be between the organism and a pathogen that has entered it, or between two opposing forces, but it is still a fight between two different agents. In both cases, life is viewed as a polarity, in which the negative pole is the absence of rules, that is chaos. Nothing really exists in the primordial chaos, but for Canguilhem the role of chaos is to 'summon up, to provoke its interruption'. In other words, chaos is pulled towards the golden age, which represents the positive pole. In the golden age everything works well, but of course there is no awareness of it, because there is nothing to set it against, there is no negative polarity. Taken in isolation, the golden age is a naïve dream, indeed a contradiction, as it is a world or 'regularity in the absence of rules' (Canguilhem, 1989 [1966], p. 241).

Even if we wanted to entertain this dream, the golden age can only be the representation of mediocrity. No science or technology can exist without interruption of the rule. In his discussion of life's polarity, Canguilhem cited Bachelard's *La terre et la rêverie du repos* (Canguilhem, 1989 [1966], pp. 239, 241), which is one of the latter's works on the imagination. However, his remark on science needing an interruption of the rule is perfectly in tune with Bachelard's view of science. Indeed, Canguilhem's mention of the obstacle against which the order must win is a clear reference to Bachelard's epistemological obstacle.<sup>3</sup> For Bachelard, reason must overcome obstacles posed by the imagination in order to produce science and technology, which are rational orders imposed by human beings on nature. Canguilhem's golden age and chaos are the two ideals of an orderly and predicable state, and a disorderly and unpredictable state, respectively. Golden age and chaos, which 'can[not] keep from turning into [each] other'... are the 'fundamental normative relations' (Canguilhem, 1989 [1966], p. 241-2). They are non-existing realities, which represent the opposite ends of a polarity that make human beings' normative activity possible, and regulate their aspirations.

The normal state is such because it conforms to a norm, which is a value, not a fact. The normal and pathological states, far from being quantitative variations of the same state, as Bernard believed, are in fact heterogeneous, and carriers of opposite values, regulated by the ideals of golden age and chaos. Arguably, in positivistic medicine, patients have no significant role to play in the evaluation of their own health. It is the doctor who would carry out tests and judge whether a patient is sick.

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<sup>3</sup> The epistemological obstacle is one of the fundamental concepts of Bachelard's epistemology, which recurs throughout his epistemological works. He gave a comprehensive presentation of it in (Bachelard, 2002 [1938]).

Canguilhem's view restores agency to patients, on whose values the assessment of their state of health is based. Indeed, for him a state can only be called pathological because the patient dreads it, and normal because the patient wants it restored. He wrote:

We have, on the whole, delegated the responsibility for perceiving the onset of disease to the living being himself considered in his dynamic polarity (Canguilhem, 1989 [1966], p. 181).

This does not mean that human beings' assessment is arbitrary, as they are first of all governed by biological norms, which tend to dictate survival to organisms. However, human beings do not live only by biological norms, but also by cultural and social norms, which interact with one another. In fact, these different norms may come into conflict. For instance, life on earth might be of relatively little value for a human being who believes in an afterlife, which is the ultimate goal of their existence. On this point, Canguilhem mentioned that Pascal regarded health as a danger for the soul, and illness as the state in which Christians should spend their lives (Canguilhem, 1994 [1978], 409). Although the survival of our species demonstrates that the devaluation of wellbeing and indeed biological life is uncommon, Pascal's view shows how broad the variations of norms can be in human beings. His perspective is certainly not unique in history, though most modern readers are likely to regard it as rather alien. All the same, the latter would be familiar with other habits in our societies that go directly against preserving our health; for instance, in many cultures drinking alcohol has an important social and cultural value, although it may adversely affect people's health.

For Canguilhem, norms are neither given, nor permanent, but rather produced. Human beings are normative in the sense that they establish norms (Canguilhem, 1989 [1966], 126-127).<sup>4</sup> Data that are often seen as objective are in fact the results of a complex play of biological, cultural, and social norms. He remarked that norms of public hygiene and of good living conditions have brought about what then is expressed as a number, for instance the supposed fact of the average life expectancy. It is because human beings have valued hygienic living conditions that their life expectancy has lengthen. This is why for him it is incorrect to establish the human life span by considering only biological facts, as Buffon (1707-1788), and then Jean-Pierre Flourens (1794-1867) attempted to do by employing the same methodology as for the longevity of animals. He explained:

If it is true that the human body is in one sense a product of social activity, it is not absurd to assume that the constancy of certain traits, revealed by an average, depends on the conscious or unconscious fidelity to certain norms of life. Consequently, in the human species, statistical frequency expresses not only vital but also social normativity. A human trait would not be normal because frequent but frequent because normal, that is, normative in one given kind of life... (Canguilhem, 1989 [1966], p. 160).

Despite this emphasis on the fidelity to social norms of life, ultimately Canguilhem suggested that we cannot establish what is normal for an entire population, let alone for all human beings; we can only do so for an individual. This is because the complex interplay of biological, social, cultural, and

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<sup>4</sup> On the concept of normativity in medicine see (Debru, 2011). Mike Gane points out changes in Canguilhem's view of normativity in the course of his career (Gane, 2003).

individual norms produces different results in different individuals. This is in stark contrast with Bernard's experimental medicine, which deals with general and deterministic laws, rather than individual variations. Bernard clearly stated this point:

In living bodies, as in inorganic bodies, laws are immutable, and the phenomena governed by these laws are bound to the conditions on which they exist, by a necessary and absolute determinism (Bernard, 2012 [1865], loc. 1541-1542).

He polemicized with vitalist doctrines which he believed brought irrationalism into medicine. Canguilhem was a self-confessed vitalist, but his views are very far from Bernard's critical target, namely the vitalists who believe 'that study of the phenomena of living matter can have no relation to study of the phenomena of inorganic matter' and who regard 'life as a mysterious supernatural influence which acts arbitrarily by freeing itself wholly from determinism' (Bernard, 2012 [1865], loc. 1526-1528).

Canguilhem was also a rationalist, and a defender of science. He framed his general position by claiming to follow Bachelard's teachings, referring in particular to the latter's *Le matérialisme rationnel*. Like Bachelard, he believed that 'scientific knowledge is a pleonasm, just as 'true knowledge', and that 'truth is what science speaks' (Canguilhem, 1988 [1977], p. 11); (Canguilhem, 2015 [1965], p. 1100). In other words, for him there is no other knowledge than scientific knowledge, and truth cannot be found outside science. However, he thought that life, which is as 'anarchic as an artist' resists reason, which is as 'regular as an accountant' (Canguilhem, 1947, p. 326). The sciences that study organisms for him must recognise that their objects cannot be made fully rational and regular.<sup>5</sup> As he remarked, we generally think of the object of science as 'stable and identical to itself' (Canguilhem, 1989 [1966], p. 203). Life, on the other hand, is far from stable and identical to itself. Scientific laws are part of any science, but they cannot be perfectly applied to individual living beings, which, as he put it, live among other living beings, qualified objects, and in a world of possible accidents, in short in a world of events (Canguilhem, 1989 [1966], p. 198). He did not aim to deny that laws are immutable, but rather that the behaviour and life of concrete living beings cannot be understood just as expression of laws. Unlike Bernard, he did not expect the progress of medical knowledge to bring absolute determinism to medical practice. With great optimism, Bernard believed that if cures are not always successful it is only because we do not have full knowledge of the causes of the symptoms under investigation; once their causes are known, illnesses are 'always' cured (Bernard, 2012 [1865], loc. 1561-1562). To Bernard's laboratory-based view of medicine, Canguilhem counterposed his practice-based view, in which disease and cure are dependent on a complex network of values.

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<sup>5</sup> This is a departure from Bachelard, who thought that the scientific object should be fully rationalised. This difference between Bachelard and Canguilhem regarding the scientific object depends on the different disciplines on which they focussed. I discuss the impact of the different sciences of choice had on Canguilhem's, Bachelard's and Brunschvicg's respective epistemologies in (Chimisso, Forthcoming).

## An organism is not a machine

Canguilhem regarded the individual as the object of medicine, and as the source of the judgement of normality. But how should the individual human being be conceptualised? First, human beings are organisms, and, like all other organisms, they cannot be reduced to the sums of their parts. Canguilhem's defence of the irreducibility of the organism to its organs is inscribed in his polemic against a long tradition that regarded the organism as a machine. He traced this 'dogma' back to Aristotle, and specifically engaged with Descartes. Interestingly, he judged it to be an anthropomorphic dream: human beings design machines, and then transfer their own designs onto the organic realm (Canguilhem, 1998 [1952], p. 127). In fact, unlike a machine, an organism can build, repair, and maintain itself. Its parts do not have specific and unchangeable functions, or at least not always, as in the case of parts of the brain that can take over the functions of damaged parts. To study organisms as wholes, rather than as collections of parts, Canguilhem's main reference was Kurt Goldstein, whom he cited throughout the main body of *The Normal and the Pathological (Essay on Some problems Concerning the Normal and the Pathological)*. In the Introduction of his main work, *The Organism*, Goldstein pointedly remarked that when, in order to study an organism, we take it apart, we are left with 'a multitude of isolated facts that offer no direct clue to that which we experience directly in the living organism' (Goldstein, 1995 [1934], p. 27). The taking apart, or analysis, is certainly necessary but it alone will never give the answers that the medic wants.

The limitations of analysis present a more general epistemological problem. Analysis was seen in some quarters as the main method of the exact sciences, and therefore as the hallmark of scientificity. Indeed, Bernard aimed to make medicine more scientific by replicating the methods that 'physicists and chemists employ in analysing the phenomena of inorganic bodies' (Bernard, 2012 [1865], loc. 1470). By contrast, Goldstein thought that the inadequacy of an exclusive reliance on analysis was not only 'the basic problem of biology', but also 'possibly of all knowledge' (Goldstein, 1995 [1934], p. 27). Canguilhem would also have been familiar with Gaston Bachelard's critique of analysis as sole instrument of knowledge, which is based on the example of chemistry, precisely the science that Bernard thought would show its importance. Bachelard and Bernard might have agreed that chemistry should suggest methodologies to other types of knowledge, but the former thought that chemistry, including organic chemistry, is not based only on analysis, because the substances that it studies are not simply the sums of their parts (Bachelard, 1973 [1932], 57);(Bachelard, 1972 [1953], 147).<sup>6</sup> An example that can be used to show what Bachelard meant is common salt. We will never find out the properties of sodium chloride (NaCl), by simply studying its components: sodium (Na) and chlorine (Cl). The former is a metallic and shiny element, and latter a toxic, pale green, gaseous element: neither of them will tell us the properties of salt.

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<sup>6</sup> I have discussed Bachelard's take on the roles of analysis and synthesis in the development of knowledge in (Chimisso, 2014).

As far as methodology is concerned, it can be argued that positivist philosophers modelled all knowledge on the imagined methodology of the so-called exact sciences, which however proved to be rather different from the real methods that scientists employ. Historical epistemologists, including Canguilhem and Bachelard, thought that positivist philosophers not only misrepresented scientific methodology, but also overlooked the profound differences that the objects of the various sciences exhibit. The objects of medicine and those of sciences like chemistry for them are particularly dissimilar. Unlike chemical substances, human beings experience pathology, which, in Canguilhem's words 'implies pathos, the direct and concrete feeling of suffering and impotence, the feeling of life gone wrong.' (Canguilhem, 1989 [1966], p. 137). This is a further reason why machines and organisms, let alone human beings, cannot be compared. A malfunctioning machine would have no feeling of 'suffering and impotence'. By contrast, the sick person 'recognises himself as a subject', who represents his own pain to himself. Medicine cannot bracket patients' subjectivities and their 'angst', 'hope' and 'dreams' (Canguilhem, 1994 [1978], p. 409). Unlike the objects of physics or chemistry, the objects of medicine attach values to their own states of health. Patients cannot be reduced to collections of organs and tissues also because their feelings, aspirations and plans are part of the production of norms against which they judge their own state.

### The 'debates' between individuals and their environments

Not only organisms are wholes, but so are their environments. As Canguilhem put it, animals do not react to stimuli separately, but to an environment as a whole (Canguilhem, 2015 [1947], pp. 299-300). An environment is not the whole of nature, or even the totality of an organism's surroundings; rather, it is specific to a given organism, and it differs from that of a different organism, even in the same surroundings. Canguilhem supported his view with the ideas of the biologist Jakob von Uexküll (1864-1944), and in particular the latter's concept of *Umwelt*, or 'self-world' (Uexküll, 2010 [1934, 1940]).<sup>7</sup> An organism's *Umwelt* comprises those elements of the organism's surroundings that the organism itself selects. Canguilhem reported Uexküll's somewhat extreme example of the tick: a female tick, after coupling with a male, can wait on a tree branch for up to eighteen years, until she perceives a mammal passing under the tree, at which point she lets herself fall onto it. Her *Umwelt* is very limited, and includes the rancid smell of the mammal's glands that guide her to the animal, and the latter's temperature that confirms that it is a good place to which to cling (Canguilhem, 2001 [1947], pp. 19-20) (Uexküll, 2010 [1934, 1940], pp. 44ff.). The tick's environment does not comprise much of what is important for an herbivore, not to mention a landscape painter. Many organisms have a wider environment than the tick has, but each creates its own *Umwelt*. This creation is often much more than just a selection. By building a dam, beavers create their own environment, and at the same time alter the environment of other living beings that might have relied on features of the same surroundings. Following Goldstein, Canguilhem regarded organisms as in a 'debate' with their

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<sup>7</sup> Uexküll's concept of *Umwelt* has had a broad reception, notably in biology, semiotic and psychology. For an overview of Uexküll's ideas, see (Kull, 2001). On the concept of *Umwelt*, in comparison with the concepts of milieu and environment, see references in footnote 1.



own environments.<sup>8</sup> This debate is particularly complex as far as human beings are concerned. As Canguilhem put it:

In man, unlike in laboratory animals, the pathogenic stimuli or agents are never received by the organism as brute physical facts, but are lived by the consciousness as signs of tasks or tests. (Canguilhem, 1989 [1966], p. 270).

We see that in the 1960s Canguilhem's critical target was a different set of philosophies from Bernard's positivism, which had been central to *Essay on Some Problems Concerning the Normal and the Pathological*, written in the 1940s. The new target of his criticism was now environmental determinism, which had been given renewed currency by behaviourist psychology. Canguilhem traced one of the origins of environmental determinism to the ideas of the historian and philosopher Hippolyte Taine (1828-1893), which had still a great impact on twentieth-century French culture. Taine believed that hereditary dispositions, ('race', as he put it) time and milieu would determine all aspects of a culture; in fact, he claimed that there are laws that regulate the apparition of a certain culture in a certain time and place. His famous works on art and literature were aimed at presenting them as deterministically caused by the social reality in which they appear, all but erasing contingency and individuality (Taine, 1865, 1877 [1864]).<sup>9</sup> He claimed that the 'moral state' of a people is wholly determined by 'race', 'milieu' and 'epoch' (Taine, 1877 [1864], p. 10), and so are individuals' desires and sentiments.

As Canguilhem saw it, Taine's philosophy in combination with Darwinism had produced behaviouristic theories, notably John B. Watson's. He described the latter's programme as the reduction of the relationship between the organism and the environment to a mere mechanism. In Watson's presentation, the organism contributes nothing that it does not receive from the environment (Canguilhem, 2001 [1947], p. 16). Canguilhem's comments on Taylorist working practices shed light on the philosophical underpinnings of his criticism of behaviouristic philosophies. For him, the creation of an artificial environment that is completely imposed on the worker, who, as Frederick Taylor reportedly said, should not think, is not only psychologically but also biologically nonsensical and counterproductive (Canguilhem, 2015 [1947], p. 299). This is because an organism constructs its environment according to its needs and aims, and it cannot respond appropriately to surroundings that are imposed on it. In fact, he claimed that 'a forced reaction is a pathological reaction' (Canguilhem, 2015 [1947], p. 300). It goes without saying that if this is true for any organism, it is even more the case for human beings, who live by a wider set of norms than other organisms, and have a far greater capacity to create new norms and environments. Workers for Canguilhem would regard as normal only those working conditions that they have themselves created in relation to their own values (Canguilhem, 2015 [1947], p. 306).

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<sup>8</sup> On this point, and for an illuminating discussion of Canguilhem's critique of psychology and its conception of the environment, see (Braunstein, 2007).

<sup>9</sup> For another critical reaction to Taine within historical epistemology of which Canguilhem was probably aware, see (Metzger, 1987 [1930]). I discuss her take on Taine in particular and on determinism in general in (Chimisso, 2019, pp. 64-68, 124-128).

A famous contemporary of Canguilhem, Jean-Paul Sartre, also carried out an attack on the view that human beings' behaviours and choices are dictated by their situation. Just as Canguilhem attacked Taine, Sartre criticised Émile Zola, who in his novels assumed the same principles that guided Taine in his histories of art and literature. However, it is worth emphasising that Canguilhem's criticism of determinism is rather different from that of the existentialists. Sartre did not deny that human beings are situated in a particular set of circumstances, and that their acts would be relative to those circumstances. Nonetheless, his focus was on rejecting the idea that human beings are irremediably bound by their circumstances, and on asserting human freedom. For him, their own actions, rather than heredity or circumstances, make human beings who they are. Ontologically, human beings' ability to self-create distinguishes them from objects; for this reason, he thought that only existentialism is compatible with the 'dignity of man' (Sartre, 1973 [1946], pp. 44-45). Canguilhem also asserted human creativity, especially as far as the establishment of norms is concerned. Nevertheless, his aim was not to persuade individuals to create themselves, or the worker in a Taylorist factory to be authentic. He presented human beings and their environments in a holistic manner, rather than emphasise the independence of the former from the latter. Change for him is engendered by the creation and variation of norms in the context of the relationship between human beings and their environments, which in turn are constructed according to biological, social, and cultural norms.

Nevertheless, Canguilhem thought that individuals can deliberately initiate change. In fact, he explicitly discussed this individual capacity:

It is enough that one individual in any society questions the needs and norms of the society and challenge them – a sign that these needs and norms are not those of the whole society – in order for us to understand to what extent social need is not immanent, to what extent the social norm is not internal, and finally, to what extent the society, seat of restrained dissent or latent antagonisms, is far from setting itself up as a whole (Canguilhem, 1989 [1966], p. 256).

Canguilhem emphasised the individual's capacity to challenge social norms within his criticism of the numerous and long-lasting theories that equated society and organism. He gave examples of sociological and political concepts that made their way into physiology and medicine: eighteenth and nineteenth century physiologists borrowed the concept of division of labour from economists to explain the functioning of cells and organs; Claude Bernard talked about the social life of cells. Those concepts were then received back into politics and sociology. Canguilhem thought that it was a matter of 'considerable concern' when biological concepts become the basis for political practice (Canguilhem, 2012 [1955], p. 68). In order to show that a society is nothing like an organism, he recalled Bernard's celebrated concept of internal milieu, in which the various glands and nerves in an organism work together as a whole. The organism not only produces its internal milieu, but also regulates itself; 'the organism resolves on its own... the contradiction between stability and modification' (Canguilhem, 2012 [1955], p. 72). By contrast, society does not self-regulate; it certainly needs regulations, but social regulations are 'added on' and always precarious (Canguilhem, 2012 [1955], p. 77). The norms of an organism's existence for Canguilhem are given in

its own existence; for a sick organism, the ideal is simply a healthy organism of the same species.<sup>10</sup> By contrast, for him society does not have its own norms as given; its ideal form is not something that can be observed. As Canguilhem suggested, justice is a social norm, indeed ‘the supreme regulation of society’, but it is not immanent to society. Rather, it is something that society, and individuals, must become. One could say that society needs to invent its idea of justice; however, the individuals in society have different ideas of justice. They can challenge current norms because they can imagine and desire different ones.

Canguilhem’s suggestion that an individual can challenge the norms of a society recalls Hannah Arendt’s concept of natality. Admittedly, their respective philosophical contexts and critical targets were profoundly different. In Arendt’s political communities, norms do not need to be unmasked as artificial, because that is their very nature. Political communities are nothing like organisms, as they have been deliberately set up with compacts and constitutions, and are governed by positive laws. In other words, she took as her point of departure the view that Canguilhem had defended against a whole tradition. However, Canguilhem’s and Arendt’s respective reflections have something in common: a tension between a society, which needs (some) shared norms to exist as a society, and its individuals, who are plural, as Arendt put it. In her words: ‘we are all the same, that is, human, in such a way that nobody is ever the same as anyone else who ever lived, lives, or will live’ (Arendt, 1998 [1958], p. 8). Her claim is analogous to Canguilhem’s fundamental view of the irreducibility of the individual to generalisations and general scientific laws. Arendt also held that the human condition is that of natality, that is, not only of being born, but also of giving birth to new things, ideas, and norms.<sup>11</sup> Similarly, for Canguilhem individuals create new norms in the course of their life, because of ageing, life events, illnesses, new demands that their environments pose on them, and because they have the capacity to question existing norms. Arendt’s political philosophy and Canguilhem’s philosophy of medicine are very different in scope and aim, but both address a similar dilemma, namely that on the one hand, the norms that regulate our lives need to be stable, and on the other that these very norms must be open to variation and change.

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<sup>10</sup> Here Canguilhem appeared to be saying something a little close to Bernard’s position, which he so thoroughly criticised, namely that we can observe a normal organism. However, Canguilhem here probably implied that what constitutes a ‘healthy’ (rather than normal) organism can vary in time as well as from individual to individual.

<sup>11</sup> Natality is one of the fundamental concepts of Arendt’s philosophy. Although she wrote that ‘the most general conditions of human existence [are] birth and death, natality and mortality’ (Arendt, 1998 [1958], p. 8), it is natality that defines her view of the human condition, and drives her political theory. See her view of the role of birth and new beginnings in a political community for instance in (Arendt, 2007). On Arendt’s concept of natality see (Fry, 2014).

## Canguilhem's multifaceted philosophy of medicine, its current relevance, and its problems

Canguilhem's writings are a rich source of ideas, insights, and crucial concepts. He fully developed some of these ideas, while he left others with many potential aspects and consequences still to be explored. Moreover, it is not always clear how his different views fit with one another, and occasionally they might look discordant. The problem, however, probably lies with us readers who, consciously or unconsciously, often expect to fit a philosopher's different writings into a sort of perfectly formed system. As it turns out, Canguilhem never aimed to build a philosophical system. He wrote about medicine for decades, and did so for different occasions and purposes. His most comprehensive work on the subject, *The Normal and Pathological*, was written at different times. As mentioned, the main part, *Essay on Some Problems Concerning the Normal and the Pathological*, was completed in 1943, as his thesis in medicine at the University of Strasbourg; later three essays were appended to it with the collective title of *New Reflections on the Normal and the Pathological*. These new essays were written between 1963 and 1966, when his career in philosophy had already culminated in his professorship at the Sorbonne, and directorship of the Institut d'histoire des sciences and techniques. The other texts that I cite in the present article range from a book review written in 1947 (Canguilhem, 2015 [1947]), to an invited talk delivered in 1988 in Strasbourg (Canguilhem, 2012 [1988]). Because of the variety of these texts and their aims, arguably it is unreasonable to demand a perfect consistency. Moreover, as their critical targets are diverse, in each Canguilhem emphasised one or other aspect of his philosophy.

Some of his critical targets in fact did not stay long in the mainstream after he discussed them. As seen above, he most directly addressed the issue of environmental determinism in 'The Living and its Milieu'. This is a lecture that he delivered in the 1946-47 academic year. Only a few years later, James Watson and Francis Crick completed their DNA model. In the following decades, the successes of the genome sequencing project generated the 'familiar notions of genetic determinism that have acquired so powerful a grip on the popular imagination', in Evelyn Fox Keller's words (Keller, 2000, p. 8). Although she convincingly shows that in fact the successes of that project do not lend support to genetic determinism, but rather challenge it, it is undeniable that the grip on popular imagination is still in place at the time of writing. Even for infectious diseases as Covid-19, genetic causes were immediately hypothesised to explain the greater incidence of it among ethnic minorities in the United Kingdom, that is a diverse category of people who, if racism did not exist, would not be considered a distinctive and homogeneous segment of the population. After that first reaction, studies predictably showed that socio-economic factors, including income, type of job and housing situation were to blame.

Canguilhem's current readers should forget neither his polemical targets, nor the assumptions that he left unspoken because they were widely shared in his milieu, as for instance trust in science. His focus on the subjectivity of the patient is not aimed at devaluing scientific research, or indeed rationality. He did not need to stress their importance; arguably, if he wrote in the 2020s, when attacks on medicine and science are vast social phenomena, at least in the rich parts of the world, he would very likely have presented his ideas differently. On the other hand, his philosophy of

medicine, although developed in polemical engagement with other philosophies, is not primarily aimed at a critique of contemporary views, but rather at the articulation of alternative proposals, which can be evaluated separately from his critique. For instance, when attacking environmental determinism, Canguilhem above all put forward views of biology and medicine that take seriously organisms' normativity and creativity, as well as the complexity and variability of life events. His conception of medicine stands in opposition to any determinism, this being environmental or genetic. Similarly, his criticism of positivist philosophies of medicine is aimed at presenting his alternative concepts of normal and pathological, as values rather than facts. These are lessons that are still extremely valuable in current debates.

The enduring relevance of Canguilhem's ideas should not however lead us to ignore the fact that several questions of his philosophy of medicine stay unresolved. **One of these questions regards the way in which individuals come to a judgment of their own normality, and the social consequences of their evaluation.** As discussed, for Canguilhem it is not medicine, but rather patients who are the main agents in the determination of which states count as pathological. But how do living beings judge the state of their health? Their evaluation of their own health is heavily dependent on the values of the society and times in which they live. In the not so distant past, even in rich countries, to have poor eyesight or walk with difficulty would have been seen as a natural part of ageing. Nowadays, the same experiences are regarded as conditions that call for intervention in the form of cataract surgery and hip replacement, respectively.

It is uncontroversial that the advancement of medicine and the improvement in living conditions have raised the bar of normality. However, this bar has risen very unevenly around the globe. As a consequence, individuals live in diverse normative contexts. A good example is provided by the economist Amartya Sen: the prosperous Indian state of Kerala boasts the longer life expectancy at birth in India whereas a poor state like Uttar Pradesh exhibits 'very low life expectancy and exceptionally high age-specific mortality rates'. However, if we look at self-perceived morbidity, this is far higher in Kerala than in Uttar Pradesh. Sen explains this apparently paradoxical situation by employing the Marxian concept of objective illusion: in Uttar Pradesh there is, in his words, a positionally objective illusion of low morbidity, caused by poor education and literacy. Kerala's inhabitants just know more about disease (Sen, 2009, pp. 163-165). Can we fully delegate to the inhabitants of Kerala and Uttar Pradesh the judgment of their own normality? If we were in charge of a national health care budget, would we divert resources to prosperous places like Kerala at the expenses of poorer places like Uttar Pradesh? The answer is certainly not, and I strongly doubt that Canguilhem would argue in favour of such a decision. He acknowledged that the patient's experience of her own illness is not 'original' [*nue, sauvage*], but rather influenced by culture and history (Canguilhem, 1994 [1978], p. 409), and in fact this is consistent with his own conception of norms. However, he did not focus on the problem of how we should collectively judge relative morbidity, without reverting to a positivistic view of normality as a mere fact that can be established in a laboratory. His aim was above all to show that patients shape and should shape medicine; indeed, he pointed out that the only reason why medicine exists is that human beings suffer, and they want their normality restored. Unlike Michel Foucault and more recently Ian Hacking (Hacking, 1999), Canguilhem did not particularly focus on the effects of medicine and science on the perception that individuals have of themselves and their health, although he remarked that health is

no longer, as René Leriche put it, life in the silence of organs, but rather life in the noise generated around statistics (Canguilhem, 1994 [1978], p. 403). He did not fully consider that information, statistical or otherwise, as well as the patient's experience and expectations of medicine, are part of human beings' environment, and important in their assessment of their own normality.

In this article, I have highlighted the importance of Canguilhem's view that human beings must play a central role in the creation of their environments. However, Canguilhem did not dwell on the problems that emerge when we reflect on the way in which various environments are constructed. Despite not being its explicit aim, the article 'Milieu et normes de l'homme au travail' draws attention to a crucial issue that is not developed in *The Normal and the Pathological*, or to my knowledge, elsewhere. **This issue is that in human societies, people have the power to shape their own environment to very different degrees.** Some classes of people appear to have the power not only to mould their own environment, but also other people's environments. Power to create other peoples' environments is also power over their health and indeed their ontological status. There is also another layer of complexity that we should consider: no human being has only one environment. At the end of her shift, a factory worker would go home, which would be as (un)healthy as her position in society allows. She would perhaps travel home by a bus that is more or less convenient and safe depending on the city's administration and wealth; the latter would also depend on the country the town is in, and the state of the country may depend in turn on the world economy. Harmful pollutants can be a very local problem in one's building and at the same time a global problem. A list of the layers of different environments and their effects on both a person's health and her own judgement of her normality would be very long and complicated. The remarkable variety of each human being's environments is a theme that Canguilhem did not discuss. He gave us a general philosophical approach; a reflection on at least some of the details will however affect our philosophical view of the relationship between an individual and their multiple and interconnected environments, as well as our view of the extent to which an individual can judge the state of their own health.

Organisms alter their surroundings by making them their own environments, but in doing so they harm not only other species' environments, but also their own. In Lewontin and Levins's example, every time an animal breathes, it consumes oxygen and exhales carbon dioxide, which is poisonous to animals, though luckily it is necessary to plants. A more specific example is the pine forest, which creates shade, in which the pine seedlings cannot grow: the environment that adult pine trees create is hostile to their own offspring (Lewontin & Levins, 2007, pp. 269-270). Human beings have brought this process to a dramatic level, as, while turning most of the earth into their own environments, they are making these very places unfavourable to the lives of future generations. These examples illustrate how complex is the impact that organisms have on other organisms when they transform their own environments, and also that while some type of transformation can and should be avoided, no organism can survive without creating their own environment, and in so doing transforming somebody else's.

We also must not forget that social and biological elements of an environment cannot be easily separated. Lewontin and Levins offer a particularly powerful example, when they write that 'racism is an environmental factor affecting adrenals and other organs' (Lewontin & Levins, 2007, p. 39). The

stress resulting from one's condition of existence in a society directly affects one's biological functions. If, as Canguilhem rightly held, medicine cannot consider human beings as separate from their environment, part of medicine's object would be outside the individual patient's control. For this reason, the paradigm of the healthy person that at one time Canguilhem presented appears to be out of anybody's reach: he characterised 'the healthy man' as a person who 'adapts silently to his tasks, who lives the truth of his existence in the relative freedom of his choices, [who] exists in a society that ignores him' (Canguilhem, 2012 [1988], p. 49). He continued:

If I say that I'm well, I block stereotypical questions in advance. If, by contrast, I say that I am unwell, people want to know how and why; they wonder whether I am registered with social security. Interest in individual organic failure is eventually transformed into interest in the budgetary deficit of an institution (Canguilhem, 2012 [1988], pp. 49-50).

It is difficult to reconcile this image of the healthy individual as autonomous, with the condition, so well explained by Canguilhem, of human beings as inseparable from their environments. All the same, Canguilhem's insistence on the individuality of each patient, who is inseparable from her environment, or more fittingly environments as I have suggested above, is still very relevant to our current debates. Similarly, his criticism of deterministic theories in their different forms, including those discussed in this article, would helpfully inform not only philosophical reflection but public medical discourse. At the time of writing, the world is still battling with the Covid-19 pandemic. It appears that members of the public are reluctant to accept that the effects of viruses or medications cannot be predicted deterministically in individual patients, but only statistically in populations. Indeed, the reactions of an individual to natural or artificial elements in her environments does not only differ from those of other individuals, but also varies during the same individual's life. An everyday example of the latter is the onset and disappearance of allergies during one's life. It is crucial to acknowledge this individuality, which Canguilhem so lucidly illuminated. At the same time, this individuality should not be understood as human beings' autonomy from the interplay of their material, social and cultural environments. Canguilhem's own holistic approach to human beings and their environments makes individuals' judgements of their own normality a more complex question than he arguably acknowledged.

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