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STUART ELDEN





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# Canguilhem

Stuart Elden

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## Abbreviations for Works by Georges Canguilhem

In-text references are provided for major works. For books, the French page number is given first, followed by the English after a slash. A dash means the relevant text does not have a corresponding passage. I have sometimes modified existing translations, especially earlier ones, for clarity and consistency.

Throughout, English titles are used for works available in translation; French for untranslated texts or unpublished manuscripts, though an English translation of the title is provided the first time they are used. Greek characters are transliterated.

- BT        ‘Le cerveau et la pensée’, in *Georges Canguilhem: Philosophe, historien des sciences – Actes du colloque (6-7-8 décembre 1990)*, Paris: Albin Michel, 1993, 11–33; ‘The Brain and Thought’, trans. Steven Corcoran and Peter Hallward, *Radical Philosophy* 148, 2008, 7–18
- DE        *Du développement à l’évolution au XIXe siècle*, with Georges Lapassade, Jacques Piquemal and Jacques Ulmann, Paris: Presses Universitaires de France, 2003 [1962]
- EGC       ‘Entretien avec Georges Canguilhem’, in François Bing, Jean-François Braunstein, and Elisabeth Roudinesco (eds.), *Actualité de Georges Canguilhem: Le normal et le pathologique*, Paris: Synthélabo, 1998, 121–35
- EHPS      *Études d’histoire et de philosophie des sciences*, Paris: Vrin, 5th edn, 1983 [1968]. Includes an additional study, while the pagination for the rest replicates the first edition
- FCR       *La formation du concept de réflexe aux XVIIe et XVIIIe siècles*, Paris: Presses Universitaires de France, 2nd edn, 1977 [1955]

- viii            Abbreviations for Works by Canguilhem
- IR            *Idéologie et rationalité dans l'histoire des sciences de la vie: Nouvelles études d'histoire et de philosophie des sciences*, Paris: Vrin, 1977; trans. Arthur Goldhammer, *Ideology and Rationality in the History of the Life Sciences*, Cambridge, MA: MIT Press, 1988. Subsequent French editions have the 1977 pagination in the margins
- KL            *La connaissance de la vie*, Paris: Vrin, 2nd revised edn, 1965 [1952]; trans. Stefanos Geroulanos and Daniela Ginsburg, *Knowledge of Life*, New York: Fordham University Press, 2009. Subsequent French editions have the 1965 pagination in the margins
- NP            *Le normal et le pathologique*, Paris: Presses Universitaires de France, 12th edn, 2015 [1943/1966]; trans. Carolyn R. Fawcett and Robert S. Cohen as *The Normal and the Pathological*, New York: Zone, 1991 [1978]
- OC I          *Oeuvres complètes tome I: Écrits philosophiques et politiques (1926–1939)*, ed. Jean-François Braunstein and Yves Schwarz, Paris: Vrin, 2011
- OC IV        *Oeuvres complètes tome IV: Résistance, philosophie biologique et histoire des sciences 1940–1965*, edited by Camille Limoges, Paris: Vrin, 2015
- RAM          'The Role of Analogies and Models in Biological Discovery', in A. C. Crombie (ed.), *Scientific Change*, London: Heinemann, 1963, 507–20; French version in EHPS 305–18
- VM            *Vie et mort de Jean Cavaillès*, Paris: Allia, 1996
- VR            *A Vital Rationalist: Selected Writings*, edited by François Delaporte, translated by Arthur Goldhammer, New York: Zone, 1994
- WM            *Écrits sur la médecine*, Paris: Seuil, 2002; trans. Stefanos Geroulanos and Todd Meyers, *Writings on Medicine*, Fordham University Press, 2011
- WP            'What is Psychology?', trans. Howard Davies, *Ideology and Consciousness* 7, 1980, 37–50; French version in EHPS 365–81

### Archival Material

- CAPHÉS    Archives de Georges Canguilhem, Centre d'Archives en Philosophie, Histoire et Édition des Sciences (CAPHÉS), École Normale Supérieure.

# 1

## *Foundations*

### **Preface**

Georges Canguilhem was a significant twentieth-century thinker, usually described as a historian and philosopher of science. He wrote extensively on politics, medicine, biology, history and epistemology. Some of his work concentrates on the formation of specific medical and biological concepts, such as the reflex, bacteria, evolution, regulation and psychology. There are also historical studies of science, including essays on figures such as Gaston Bachelard, Claude Bernard, Jean Cavailles, Auguste Comte and Charles Darwin. His relation to Bachelard is especially important, and he develops Bachelard's research on physics and mathematics to apply his ideas to the life sciences, as well as developing his epistemological claims, particularly concerning obstacles and ruptures. Canguilhem edited some of Bachelard's work for publication, and regularly wrote prefaces to other people's works.<sup>1</sup> In his work on biology, he developed accounts of milieu and experience, or examined themes in natural history. For Canguilhem, these broad questions have important political and social consequences: they relate to concrete human problems.

He published five single-authored books in his lifetime: *The Normal and the Pathological* (1943), *Knowledge of Life* (1952), *La formation du concept de réflexe aux XVIIe et XVIIIe siècles* [The formation of the concept of reflex in the seventeenth and eighteenth centuries] (1955), *Études d'histoire et de philosophie des sciences* [Studies in the history and philosophy of the sciences] (1968) and *Ideology and Rationality*

(1977).<sup>2</sup> Some of the earlier works included additional essays when re-edited for later editions. He also led a collaborative project in his Paris seminars entitled *Du développement à l'évolution au XIXe siècle* [From development to evolution in the nineteenth century], first published in 1962.

His most famous book is his first, *The Normal and the Pathological*, written in 1943 as his doctoral thesis in medicine, and revised in 1966 with some additional essays. His doctoral thesis in philosophy was *La formation du concept de réflexe*, and for this degree *Knowledge of Life* was also submitted as the minor thesis. In a sense, *La formation du concept de réflexe* and *The Normal and the Pathological* are the only books he wrote. All his other books are collections of essays or lectures. A posthumous collection, *Writings on Medicine* (2002), brought together some late essays, and a six-volume *Oeuvres complètes* [Complete works] is under way. This is an invaluable project, since many other articles, chapters and prefaces first appeared in a diverse range of outlets, which are often hard to find.

This study is an introduction to his work as a whole, drawing on the entirety of his writings, including the *Oeuvres complètes*, and to some extent on archival material housed at the Centre d'Archives en Philosophie, Histoire et Édition des Sciences (CAPHÉS) at the École Normale Supérieure (ENS) in Paris. This archive holds all of Canguilhem's surviving papers, as well as his personal library. While, therefore, it is thoroughly researched in terms of his familiar and more obscure writings, its aim is to make Canguilhem's important and sometimes difficult ideas accessible to as wide an audience as possible.

The book is organized in a thematic and partly chronological way. Chapter 1, 'Foundations', examines Canguilhem's life and career as a whole, especially the years of his intellectual formation. Chapter 2 discusses *The Normal and the Pathological*, both in its original and revised form, and some later essays on its themes. This remains Canguilhem's most influential work, and it established his status as a major thinker. Yet Canguilhem's work was broader than this study alone would suggest.

Chapter 3 focuses on a series of early lectures on philosophical biology, which set out many of the topics he was to discuss in future work. These lectures discussed the questions of vitalism and mechanism in relation to living beings, and the situation of organisms within a milieu or environment. Their importance to his overall career cannot be overestimated. They were published, along with some more specific studies, in *Knowledge of Life* in 1952. In later

writings, Canguilhem utilized some of these insights, along with his keen historical sense, to examine a number of questions in the history of the life sciences. Chapter 4 looks at the question of physiology, focusing on the role of experimentation in science, and his major study of the concept of the reflex. Chapter 5 explores some of his other historical studies on regulation and psychology. Chapter 6 looks at his work on evolution and monstrosity. These three chapters draw on both his book-length study *La formation du concept de réflexe* and the *Knowledge of Life* collection, but also on his multiple essays, many of which were collected in *Études d'histoire*.

Yet Canguilhem was significant not just as a historian, but as a philosopher of history, through his discussions of knowledge, truth and ideology. These themes come through in many places, notably *Études d'histoire* and its sequel *Ideology and Rationality*. They are the focus of chapter 7, which also discusses his debt to Cavaillès and Bachelard. Chapter 8 discusses some later essays on medicine, many of which were collected in the posthumous book *Writings on Medicine*. Finally, chapter 9, 'Legacies', discusses the influence his work has had, on both some of his contemporaries and his students, as well as more broadly.

## Life and career

Canguilhem was born on 4 June 1904 in Castelnaudary in the Occitania region of southern France. His father owned a smallholding in the commune, and both parents were from rural families, but his father was also a tailor (EGC 132). Canguilhem's occasional claim that he was a peasant is therefore only partially true.<sup>3</sup> Nonetheless, all his childhood friends became farmers, and this is what he was expected to become.<sup>4</sup> Something of the limits of his upbringing can be understood from Canguilhem telling Pierre Bourdieu that when he first attended school he did not know what the toilets were for.<sup>5</sup>

He was taught at the Lycée Henri IV in Paris (1921–4), and then entered the École Normale Supérieure (ENS) in 1924 to study philosophy, where he was an exact contemporary of Raymond Aron, Daniel Lagache, Paul Nizan and Jean-Paul Sartre.<sup>6</sup> Jean Cavaillès had entered the previous year, while Jean Hyppolite (1925), Maurice Merleau-Ponty (1926) and Simone Weil (1928) were also students at a similar time.<sup>7</sup> Bourdieu reports that Canguilhem felt a distance from his friends Aron and Sartre in terms of their attitude to sports – he played the team game of rugby; they were tennis players.<sup>8</sup> His

*Diplôme d'études supérieures* thesis, roughly equivalent to a Master's degree, was written between November 1925 and June 1926 and directed by Célestin Bouglé. The topic was 'the theory of order and progress in Auguste Comte'.<sup>9</sup> Even at this very early stage of his career, Canguilhem was interested in the relation between philosophical reflection on science, the specific nature of the life sciences, and the way a historical approach could help to elucidate their concerns.

In the *agrégation de philosophie* in 1927, he came second, after Paul Vignaux and above Jean Lacroix and Cavaillès.<sup>10</sup> While teaching was the next academic step, he first had to do his compulsory military service. Influenced in part by the philosopher Alain (Émile Chartier), who had taught him at Henri IV, and also by the atmosphere in the ENS, Canguilhem was a pacifist, and had been active in student circles on this question.<sup>11</sup> It was expected that he would enter the ENS officer training programme but he avoided this by dropping a machine gun tripod on the foot of an inspecting officer. His service between November 1927 and April 1929 was as a private, later promoted to corporal. Following the completion of his service, Canguilhem taught philosophy in *lycées* in Charleville (1929–31), Douai (1932–3), Valenciennes (1933–5), Béziers (1935–6) and Toulouse (1936–40).<sup>12</sup>

In 1935, Canguilhem was the author of an anonymously published pamphlet on *Le fascisme et les paysans* [Fascism and the peasants], published under the auspices of the Comité de Vigilance des Intellectuels Antifascistes.<sup>13</sup> As part of a series of pamphlets under the general title of Vigilance, this group also presented reports on *Qu'est-ce que le Fascisme?* and *Les croix de feu: leur chef, leur programme* in the same year. Paul Rivet was the president of the Comité; Alain and Paul Langevin were its vice presidents.

While teaching at the town's *lycée*, Canguilhem had taken up training in medicine, initially at the University of Toulouse. He later went on to doctoral studies at the University of Strasbourg. Canguilhem was, therefore, formally trained in both philosophy and medicine, a crucial combination for his later research, though he spent his career as a professor of philosophy. Colin Gordon has suggested that Canguilhem's initial medical training was solely in order to become sufficiently knowledgeable to undertake work in the history of the life sciences.<sup>14</sup> This is partly the way that Canguilhem himself recalls things, though he stresses that it was more to have some practical experience aside from just book-learning (EGC 121–2).

Canguilhem's first major philosophical work was published with Camille Planet in 1939, as *Traité de logique et de morale*.<sup>15</sup> This early period has been the focus of some of the most interesting work recently, including a fundamental study by Xavier Roth.<sup>16</sup> The *Traité* advertised that two further works were forthcoming by the same authors – *Traité de psychologie* and *Traité d'esthétique* – but neither of these was ever published. The Second World War, of course, intervened, and things changed. Following the French surrender in June 1940, Canguilhem refused to continue teaching under the Vichy regime. He said he had 'not taken the *agrégation de philosophie* in order to teach the Vichy regime's insipid morality of 'Work, Family, Fatherland'.<sup>17</sup> Instead he joined the French resistance, in the Maquis band of rural guerrillas, alongside his friend Cavailles, a significant historian and philosopher of logic and mathematics (EGC 123). Canguilhem operated for the resistance under the codename of 'Lafont', and made unanticipated use of his medical training. For organizing a field hospital in Auvergne, and evacuating it while under attack in the battle of Mont Mouchet, he was awarded the Croix de Guerre and the Médaille de la Résistance.<sup>18</sup>

When Cavailles moved to the Sorbonne in 1941 to take up the chair in logic, he encouraged Canguilhem to replace him in the philosophy department at the University of Strasbourg (EGC 122).<sup>19</sup> At the time, the faculty were in exile in Clermont-Ferrand because of the German wartime occupation of Alsace-Lorraine. During those war years, Canguilhem researched and wrote his doctoral thesis in medicine, *The Normal and the Pathological*, defended in 1943. In 1948, he became the Inspector General of Philosophy in the French higher education system, a post he had initially turned down immediately after the liberation, preferring to return to Strasbourg. He also became President of the Jury d'Agrégation in philosophy, exercising a major influence on intellectual life.

In 1953, he led a UNESCO report on the teaching of philosophy, to which he contributed an overview chapter on 'The Significance of the Teaching of Philosophy' and one on 'The Teaching of Philosophy in France'.<sup>20</sup> The 1948–55 period was the only time he was not teaching his own courses, but teaching was obviously at the heart of his concerns.<sup>21</sup> In 1955, he defended his doctoral thesis in philosophy, *La formation du concept de réflexe*, which was directed by Gaston Bachelard. That same year, he succeeded Bachelard to the chair of the history and philosophy of the sciences at the Sorbonne, and as Director of the Institut d'histoire des sciences et des techniques (IHS) of the University of Paris. He occupied these

positions until his retirement in 1971, though he continued to pursue an active research and speaking career.

Canguilhem found the events of May 1968 difficult as they put him in an awkward position. He was friend and mentor to some of the activists, yet a staunch defender of the educational establishment. He complained of the destruction of things that had taken years to build.<sup>22</sup> In 1983, he received the George Sarton Medal of the History of Science Society, and in 1987 the Médaille d'or of the Centre National de la Recherche Scientifique (CNRS), the highest scientific distinction in France. Until his final years, he continued to lecture, including the opening addresses at two important conferences on Foucault's work held in 1988 and 1991.<sup>23</sup>

His early work is shaped by Alain, Bouglé and Henri Bergson. Alain remained a lifelong friend, and Canguilhem was there when he died in 1951. Foucault suggests that Canguilhem is both 'far from and close to Nietzsche', noting that, while Nietzsche saw 'truth as the greatest lie', for Canguilhem it was science's 'most recent error'.<sup>24</sup> Indeed, Canguilhem told Michel Fichant he saw himself as a 'non card-carrying Nietzschean'.<sup>25</sup> Canguilhem is most commonly seen as part of a French tradition in the history and philosophy of science of which Bachelard, Cavallès and Alexandre Koyré were key figures.<sup>26</sup> Canguilhem's work is certainly not a systematic philosophy, but nor is it just the work of a historian of science.<sup>27</sup> Indeed, although his work certainly does trace the histories of some sciences, he never described himself as a historian in a narrow sense, and his institutional positions were all in philosophy. Yet there is relatively little traditional philosophy in his published works. Intriguingly, in 1947, Canguilhem signed a contract to write a book in an introductory series with Bordas: *Pour connaître la pensée de Descartes* [To know the thought of Descartes]. Henri Lefebvre wrote the volumes on Lenin and Marx in that series; there were also volumes on Alain, Bergson, Nietzsche and Bachelard, among others. Yet, while Canguilhem wrote over half of the text, and submitted some chapters to the publisher, he never completed the work.<sup>28</sup>

There is no straightforward ethics in Canguilhem's mature work, though he did discuss this in his earliest work with Planet. Equally, *The Normal and the Pathological*, with its genesis in the war and the sole period he practised as a physician, shows the political stakes of his work. His last writings on medicine return to the ethical duties inherent in this practice. It would be difficult to claim any of his work was metaphysics, although there are reflections on space, time and mortality, to name just a few themes. He wrote little that



could be considered aesthetics, though his books and lectures are occasionally illustrated with examples from art and literature. A course on the analogue and the singular is introduced by Honoré de Balzac's *La peau de chagrin*;<sup>29</sup> he mentions Francisco Goya's paintings and the poem *Orlando Furioso* (KL 178/140, 181/143) and begins an essay on Darwin with Gustave Flaubert's *Bouvard and Pécuchet* (EHPS 112). He seems content to have left his contribution to logic to just his early work with Planet.

In December 1990, a conference on his work was convened at the Palais de la Découverte science museum in Paris. Canguilhem sent a letter to the organizers, politely declining to attend due his age – he was 86 at the time. But the letter is also revealing because he tells them that 'It is not possible, at my age, to do other than what I have always done, that is to consider what is called my *oeuvre* as anything other than the trace of my trade [*métier*]'. He added that he was well aware of might seem to be the 'rustic nature of his behaviour'.<sup>30</sup> His teaching was indeed crucial to his sense of vocation. The majority of Canguilhem's publications relate to his teaching in some way. But there is not a sense of his research directing his teaching as much as the other way round. He taught a course at Strasbourg on 'Norms and the Normal' in 1942–3, at the time he was completing his thesis on the normal and the pathological.<sup>31</sup> He taught a course on the 'Normal and Pathological, Norm and Normal' in 1962–3 at the Sorbonne, and one on 'The Normal and the Pathological' the following year, around the time he was writing some additional essays for the book's re-edition.<sup>32</sup> Most of the pieces that make up his various collections of essays can be traced to teaching or guest lectures. Many of those seem to have been him using material from his Paris teaching for an audience elsewhere. For example, he taught a course in Paris on the 'History of Teratology from Étienne Geoffroy Saint-Hilaire' in 1961–2, gave a lecture in Brussels on 'Monstrosity and the Monstrous' on 9 February 1962, and included this lecture in the second edition of *Knowledge of Life*.<sup>33</sup> Courses on scientific and medical ideology in the late 1960s and early 1970s fed into the book published as *Ideology and Rationality*.<sup>34</sup> Yet, equally, there are a number of courses taught which were never developed into publications. At the very least, there was depth of engagement and breadth of interests in his teaching, in which he gave courses on new topics nearly every year, which are only partially reflected in his writings.

Canguilhem, unlike many of his contemporaries, shunned the limelight of media attention. He gave very few interviews, wrote

little for newspapers and was not a regular presence on French radio or television.<sup>35</sup> Bourdieu recalls this with regret that he left that space 'to show-offs and impostors', but also with praise for his being true to himself.<sup>36</sup> One rare interview was conducted just a few months before his death on 11 September 1995 in Marly-le-Roi, a small town to the west of Paris where he had lived for many years. Canguilhem's voice mainly comes to us from the traces of his teaching.

Canguilhem had a reputation of being intellectually ferocious, with reports that he believed he could correct erroneous ideas by shouting at people.<sup>37</sup> Bourdieu recalls 'his gravelly voice and accent, which had the effect of making him seem always angry, and the sidelong glance coupled with an ironic smile which accompanied his stern judgements on the academic world'.<sup>38</sup> In his role at the IHS he organized many events, proceedings of some of which have been published. His active participation in the discussions at these events can be seen in some of these publications. In a colloquium on the theme of mathematics and informal doctrines, for example, his exchange with Jacques Guillerme contains the following: 'I found your examples very good, and well analysed. What I see less well is the relation between the examples and the initial exposition of the doctrine for, on the one hand, the informal and, on the other, the relation of all this to the problem of this colloquium ... The question I will ask you is a bit brutal ...'<sup>39</sup> After a somewhat evasive response from Guillerme, he adds: 'That is not really my question: My question was the localization of the informal.' He concludes: 'I did not say that you were mistaken on the situation of the informal. What I asked you was where you placed the informal, because for me I do not see clearly where you place it.'<sup>40</sup> It seems that Canguilhem was suggesting that his work was 'not even wrong'.

However, his sarcasm and violent temper were usually directed at colleagues, rather than students, and he was much loved by those he taught.<sup>41</sup> His nicknames of 'le Cang' or 'King Cang' stems from them – as well as giving a sense of his status, it is a clue to the pronunciation of his name, since it sounds the same as the cinematic ape. These students include a wide array of figures, many now more famous than him. In some ways, he has generally been recognized as influential, rather than for his own work.

It was through his role as president of the Jury d'Agrégation that he first met Foucault, with whom he was to have a lifelong professional relationship (EGC 126). He was the sponsor of Foucault's thesis on madness in 1961 – 'supervisor' would be too strong a

word, as Canguilhem himself makes clear.<sup>42</sup> Hyppolite suggested Foucault contact Canguilhem about his manuscript, and Canguilhem was so impressed he replied: 'don't change anything, it is a thesis'.<sup>43</sup> Despite Foucault's fulsome acknowledgement in the published version,<sup>44</sup> Canguilhem denies that his comments on it made any difference to its final form.<sup>45</sup> Canguilhem later recalled that 'as it happened, I had previously reflected and written on the normal and pathological. Reading Foucault fascinated me while revealing to me my limits'.<sup>46</sup> His importance to Foucault is certainly significant, though Canguilhem was also influenced by Foucault in turn, and the supplementary essays in the revised edition of *The Normal and the Pathological* bear the influence of Foucault's *History of Madness* and *Birth of the Clinic*.<sup>47</sup> There are many links between their projects. As early as 1957, Canguilhem had suggested that 'an archaeology of science is an enterprise which has a meaning, a prehistory of science is an absurdity' (OC IV, 731).

Louis Althusser stated that his 'debt to Canguilhem was incalculable',<sup>48</sup> while Canguilhem's work on science and ideology, especially in the 1970s, also builds on Althusser (EGC 128). Many of Althusser's students attended Canguilhem's seminars, and the work of the collaborative *Reading Capital* bears the mark of these discussions. This is noted by Étienne Balibar in his preface to the work, in which he and his colleagues pay tribute to Canguilhem (along with Bachelard, Cavaillès and Foucault) as one of their 'masters in reading learned works'.<sup>49</sup> The influence is also felt in the journal *Cahiers pour l'analyse*. Appearing in ten issues between 1966 and 1969, the *Cahiers* was edited by some of Althusser's students at the ENS, including Badiou, Jean-Claude Milner and Jacques-Alain Miller.<sup>50</sup> While drawing on a range of intellectual inspirations, including Althusser and Lacan, the *Cahiers* gave Canguilhem a privileged position, reprinting his lecture 'What is Psychology?' in issue 2, and with a passage from one of his essays on Bachelard used as an epigraph for each issue: 'To work on a concept is to move between extension and comprehension, to generalise it through the incorporation of the marks of exception, to take it outside of its original region, to take it as a model or inversely to search for its model, in short, gradually to confer on it, through regulated transformations, the function of a form' (EHPS 206).<sup>51</sup>

Canguilhem supervised Balibar's, Dominique Lecourt's and Pierre Macherey's Master's theses, and Bourdieu began a doctoral thesis under his supervision.<sup>52</sup> Jacques Derrida was nominally his assistant at an early stage of his career, and Canguilhem was instrumental

in getting Derrida's Introduction to his translation of Edmund Husserl's *The Origin of Geometry* the Jean Cavaillès prize. Canguilhem and Derrida kept up a friendship and correspondence until the end of Canguilhem's life.<sup>53</sup> The legacies of Canguilhem's work will be explored more fully in chapter 9.

### ***Oeuvres complètes*, English translations and secondary literature**

Since his death, and despite Canguilhem's challenge to the idea of his work constituting a coherent whole, there has been an ambitious plan to collect his writings in a multi-volume *Oeuvres complètes*. Two volumes have been published to date, with a third forthcoming and three more planned. Together these will contain almost all the shorter pieces he produced in his long career. They comprise a collection of his early political and philosophical writings (volume I), his work from the 1940s to the 1960s on resistance, the philosophy of biology and the history of sciences (volume IV), and shorter writings from the last three decades of his career on the history of sciences, epistemology and commemorations (the much-delayed volume V). The first of these volumes makes available the anonymous 1935 pamphlet *Le Fascisme et les paysans* and the hard-to-find 1939 book *Traité de logique et de morale*. Both these texts indicate his early interests were rather broader than later specialisms. Many of his early publications were published under pseudonyms, especially 'C. G. Bernard', and these are now integrated into his chronology. Some of his early concerns lead directly to topics addressed in volume IV of the *Oeuvres complètes*, which demonstrates his political engagement from the resistance to the German occupation through to opposition to the Algerian war and General de Gaulle. This volume and the fifth, though, with their extensive collection of texts on the history of sciences, also show how his early work developed into his better-known concerns. Each of these volumes extends to over 1,000 pages. In particular, these volumes make Canguilhem's philosophical underpinnings and political inspirations more explicit.

The planned volume II will contain the three theses *The Normal and the Pathological*, *Knowledge of Life* and *La formation du concept de réflexe*. Volume III will include *Études d'histoire, Ideology and Rationality* and the collaborative *Du développement à l'évolution*. The final volume VI will comprise an annotated bibliography, a biography,

an index across all the volumes, and 'certain administrative texts and *agrégation* reports'.<sup>54</sup> The texts from the posthumous collection *Writings on Medicine* are in volumes IV and V in their chronological place, while the texts included in other collections, reprinted in volumes II and III, are merely noted in the chronological order of the other volumes. While the forthcoming volumes will be invaluable, the present study is able to draw on almost the entirety of their contents. The books and collections reprinted in volumes II and III have been referenced in their separate editions. Perhaps the key missing element that this book would have wished for was the biography slated to appear in volume VI. That was also something Canguilhem resisted: he told the organizers of the 1990 colloquium that he did not want a biography in the volume that came from it, stating 'I am not dead yet'.<sup>55</sup>

Canguilhem has been sporadically translated into English. *The Normal and the Pathological* was translated in 1978, *Ideology and Rationality in the History of the Life Sciences* in 1988, and the collection *A Vital Rationalist* appeared in 1994, shortly before his death. This collection excerpted parts of the earlier translations, along with parts of other books, and some other writings. But, as David Macey notes, the collection is flawed because, instead of providing full essays or chapters, it comprises 'edited extracts arranged in thematic order. Sentences and even whole paragraphs have been cut and there is nothing to bring the elisions to the reader's attention.' The collection suffers too from 'the complete abolition of chronology', and this 'makes it impossible to trace the development of Canguilhem's thought ... Canguilhem's work was always characterized by a scrupulous attention to detail: King Cang deserves better than this.'<sup>56</sup> In the last decade, two further complete books have appeared in translation – *Knowledge of Life* and the posthumous collection *Writings on Medicine*. His study of the reflex awaits a full translation, and many of his essays on the history and philosophy of science and natural history are not yet available. As far as I am aware, there are currently no plans to translate the rich material of the *Oeuvres complètes*. Nonetheless, this work of translation has helped to feed a growing interest in Canguilhem, for both those with an interest in his substantive topics and those working on the figures he influenced.

The secondary literature in English can be found in a range of places, including the introductions to his books, single chapters in broader studies, and journal articles. The most extensive discussions are in books by Gary Gutting and Dominique Lecourt.<sup>57</sup> Both are

excellent studies, but Gutting discusses Canguilhem in one long chapter alongside Bachelard as a background to Foucault, and Lecourt's analysis is only a short part of his study, most of which is also devoted to Bachelard. Both these books were published while Canguilhem was still alive and working, and so do not account for all his work. There are valuable but short introductions in several of the English collections – by Foucault in *The Normal and the Pathological*, by Paul Rabinow in *A Vital Rationalist*, Stefanos Geroulanos and Todd Meyers in *Writings on Medicine*, and Meyers and Paola Marrati in *Knowledge of Life*. Canguilhem is usefully discussed in studies by Alain Badiou, Bourdieu, Roberto Esposito, Mike Gane, Hans-Jörg Rheinberger, and Élisabeth Roudinesco, many of which are available in English.<sup>58</sup> All these are relatively brief discussions in single chapters of books which treat several thinkers.<sup>59</sup> Given his importance, a study of the entirety of his work in English is overdue.<sup>60</sup>

In French, there is significantly more work, including Lecourt's introductory study in the popular 'Que sais-je?' series. There are also book-length studies by François Dagognet, Macherey, Claude Debru, and two by Guillaume Le Blanc.<sup>61</sup> Other monographs concentrate explicitly on his work on the normal and pathological, or on health and illness,<sup>62</sup> and there are important studies of his epistemology.<sup>63</sup> There are also several collections of essays on his work in French.<sup>64</sup> There is a literature in other languages, notably Spanish, Italian and German. There are, of course, several articles on his work in English and French, usually with a specific focus. A special issue of *Revue de métaphysique et de morale* was devoted to his work in 1985, including one of the last pieces Foucault revised for publication, a bibliography and a useful chronology of his teaching.<sup>65</sup> *Prospective et santé* discussed his work in 1986/7, and *Economy and Society* in 1998, with contributions by Lecourt, Macey, Rabinow, Gordon and others. There were also special issues of *Revue d'histoire des sciences* in 2000, and a bilingual one of *Dialogue: Canadian Philosophical Review* looked at his work in 2013.<sup>66</sup> Since 2007, *Les Cahiers du Centre Georges Canguilhem* has published seven volumes.

Much of the difficulty in approaching Canguilhem's work comes not from his own concepts and writing, but from the material with which he is grappling. As Lecourt usefully summarizes:

Canguilhem's texts are undoubtedly disconcerting. The tightly-knit style, with its sentences entirely mustered around the concepts which give them their order, leaving no room for the slightest rhetorical 'play', is rarely reminiscent of what is customary for philosophical

discourse. It does not invite reverie, it does not even urge meditation: it *demand*s of the reader that he set himself to work. Nor is there any doubt that the precision of the references and dates, the profusion of proper names, disappoint the expectations of the 'enlightened amateur', half absent-minded, half dilettante, that the philosopher reading a book by one of his peers imagines himself to be, in function if not by right.

There will be more readiness to applaud the erudition than to reflect on the theoretical import of this superabundance of precision.<sup>67</sup>

As this book demonstrates, Canguilhem is a historically crucial figure, bridging an older tradition through to post-structuralism, connecting to debates in Marxism and social theory, while being a thinker who has much to offer to contemporary concerns. Despite Lecourt's comments about precision, it is worth noting that, in common with many other French writers of his generation and the one that followed, Canguilhem can be careless with his references. Sometimes none are provided, and others are incomplete or inaccurate. Fortunately, his editors and translators have corrected many of these. In addition, many of his sources are not available in English. I have rechecked all his references, and have indicated English sources if these exist.<sup>68</sup>

It is not a case here of trying to reconstruct a project which Canguilhem himself did not quite produce, in the sense of a systematization of his work.<sup>69</sup> Rather, its aim is to try to outline what his work did actually accomplish, with the intention that this book can serve as a guide, summary and introduction to his writings. In his study of the reflex, Canguilhem commented: 'A library annexed to a laboratory is eventually divided into two sections: a museum and a workshop. There are books that you glance over like you observe a flint axe; there are others you slice [*dépouille*] like you use a microtome. Where is the boundary between the museum and the workshop? Who traces it, and when does it move?' (FCR 156).

Part of the point of this study is to rescue his work from the museum.