The Normal

and the Pathological

Translated by Carolyn R. Fawcett
in collaboration with Robert S. Cohen

The Normal and the Pathological

Georges Canguilhem

with an introduction by

Michel Foucault

ZONE BOOKS · NEW YORK

1991

07 -09- 2005

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ZONE BOOKS
611 Broadway, Suite 608
New York, NY 10012
First Paperback Edition
Fourth Printing 1998

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Originally published in 1966 as *Le normal et le pathologique* © 1966 by Presses Universitaires de France. Originally published in the English language and © 1978 by D. Reidel Publishing Company, Dordrecht, Holland.

Printed in the United States of America

Distributed by The MIT Press,
Cambridge, Massachusetts, and London, England

Library of Congress Cataloging-in-Publication Data

Canguilhem, Georges, 1904–
The normal and the pathological.

Translation of: Le normal et le pathologique.
Reprint. Originally published: On the normal and the pathological. Dordrecht, Holland; Boston: D. Reidel, © 1978.
Includes bibliographies and index.
1. Pathology–Philosophy. 2. Medicine–Philosophy. I. Title.
RB112.C313 1989 616.07'01 88-20626
ISBN 0-942299-59-0 (pbk.)

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Introduction

by

Michel Foucault

Everyone knows that in France there are few logicians but many historians of science; and that in the "philosophical establishment" – whether teaching or research oriented – they have occupied a considerable position. But do we know precisely the importance that, in the course of these past fifteen or twenty years, up to the very frontiers of the establishment, a "work" like that of Georges Canguilhem can have had for those very people who were separated from, or challenged, the establishment? Yes, I know, there have been noisier theaters: psychoanalysis, Marxism, linguistics, ethnology. But let us not forget this fact which depends, as you will, on the sociology of French intellectual environments, the functioning of our university institutions or our system of cultural values: in all the political or scientific discussions of these strange sixty years past, the role of the "philosophers" – I simply mean those who had received their university training in philosophy departments – has been important: perhaps too important for the liking of certain people. And, directly or indirectly, all or almost all these philosophers have had to "come to terms with" the teaching and books of Georges Canguilhem.

From this, a paradox: this man, whose work is austere, intentionally and carefully limited to a particular domain in the history

of science, which in any case does not pass for a spectacular discipline, has somehow found himself present in discussions where he himself took care never to figure. But take away Canguilhem and you will no longer understand much about Althusser, Althusserism and a whole series of discussions which have taken place among French Marxists; you will no longer grasp what is specific to sociologists such as Bourdieu, Castel, Passerson and what marks them so strongly within sociology; you will miss an entire aspect of the theoretical work done by psychoanalysts, particularly by the followers of Lacan. Further, in the entire discussion of ideas which preceded or followed the movement of '68, it is easy to find the place of those who, from near or from afar, had been trained by Canguilhem.

Without ignoring the cleavages which, during these last years after the end of the war, were able to oppose Marxists and non-Marxists, Freudians and non-Freudians, specialists in a single discipline and philosophers, academics and non-academics, theorists and politicians, it does seem to me that one could find another dividing line which cuts through all these oppositions. It is the line that separates a philosophy of experience, of sense and of subject and a philosophy of knowledge, of rationality and of concept. On the one hand, one network is that of Sartre and Merleau-Ponty; and then another is that of Cavaillès, Bachelard and Canguilhem. In other words, we are dealing with two modalities according to which phenomenology was taken up in France, when quite late – around 1930 – it finally began to be, if not known, at least recognized. Contemporary philosophy in France began in those years. The lectures on transcendental phenomenology delivered in 1929 by Husserl (translated by Gabrielle Peiffer and Emmanuel Levinas as *Méditations cartésiennes*, Paris, Colin, 1931; and by Dorion Cairns as *Cartesian Meditations*, The Hague, Nijhoff, 1960) marked the moment: phenomenology entered France through that text. But

it allowed of two readings: one, in the direction of a philosophy of the subject – and this was Sartre's article on the "Transcendance de L'Ego" (1935) and another which went back to the founding principles of Husserl's thought: those of formalism and intuitionism, those of the theory of science, and in 1938 Cavaillès's two theses on the *axiomatic method* and the *formation of set theory*. Whatever they may have been after shifts, ramifications, interactions, even rapprochements, these two forms of thought in France have constituted two philosophical directions which have remained profoundly heterogeneous.

On the surface the second of these has remained at once the most theoretical, the most bent on speculative tasks and also the most academic. And yet it was this form which played the most important role in the sixties, when a "crisis" began, a crisis concerning not only the University but also the status and role of knowledge. We must ask ourselves why such a mode of reflection, following its own logic, could turn out to be so profoundly tied to the present.

Undoubtedly one of the principal reasons stems from this: the history of science avails itself of one of the themes which was introduced almost surreptitiously into late eighteenth century philosophy: for the first time rational thought was put in question not only as to its nature, its foundation, its powers and its rights, but also as to its history and its geography; as to its immediate past and its present reality; as to its time and its place. This is the question which Mendelssohn and then Kant tried to answer in 1784 in the *Berlinische Monatschrift*: "Was ist Aufklärung?" (What is Enlightenment?). These two texts inaugurated a "philosophical journalism" which, along with university teaching, was one of the major forms of the institutional implantation of philosophy in

the nineteenth century (and we know how fertile it sometimes was, as in the 1840s in Germany). They also opened philosophy up to a whole historico-critical dimension. And this work always involves two objectives which in fact, cannot be dissociated and which incessantly echo one another: on the one hand, to look for the moment (in its chronology, its constituent elements, its historical conditions) when the West first asserted the autonomy and sovereignty of its own rationality: the Lutheran Reformation, the "Copernican Revolution," Cartesian philosophy, the Galilean mathematization of nature, Newtonian physics. On the other hand, to analyze the "present" moment and, in terms of what was the history of this reason as well as of what can be its present balance, to look for that relation which must be established with this founding act: rediscovery, taking up a forgotten direction, completion or rupture, return to an earlier moment, etc.

Undoubtedly we should ask why this question of the Enlightenment, without ever disappearing, had such a different destiny in Germany, France and the Anglo-Saxon countries; why here and there it was invested in such different domains and according to such varied chronologies. Let us say in any case that German philosophy gave it substance above all in a historical and political reflection on society (with one privileged moment: the Reformation; and a central problem: religious experience in its relation with the economy and the state); from the Hegelians to the Frankfurt School and to Lukács, Feuerbach, Marx, Nietzsche and Max Weber it bears witness to this. In France it is the history of science which has above all served to support the philosophical question of the Enlightenment: after all, the positivism of Comte and his successors was one way of once again taking up the questioning by Mendelssohn and Kant on the scale of a general history of societies. Knowledge belief; the scientific form of knowledge and the religious contents of representation; or the transition from the pre-scientific

or scientific; the constitution of a rational way of knowing on the basis of traditional experience; the appearance, in the midst of a history of ideas and beliefs, of a type of history suitable to scientific knowledge; the origin and threshold of rationality – it is under this form, through positivism (and those opposed to it), through Duhem, Poincaré, the noisy debates on scientism and the academic discussions about medieval science, that the question of the Enlightenment was brought into France. And if phenomenology, after quite a long period when it was kept at the border, finally penetrated in its turn, it was undoubtedly the day when Husserl, in the *Cartesian Meditations* and the *Crisis* (*The Crisis of European Sciences and Transcendental Phenomenology*, translated by David Carr, Evanston, Ill., Northwestern University Press, 1970), posed the question of the relations between the "Western" project of a universal development of reason, the positivity of the sciences and the radicality of philosophy.

If I have insisted on these points, it is to show that for a century and a half the history of science in France carried philosophical stakes within itself which are easily recognized. Works such as those of Koyré, Bachelard or Canguilhem could indeed have had as their centers of reference precise, "regional," chronologically well-defined domains in the history of science but they have functioned as important centers of philosophical elaboration to the extent that, under different facets, they set into play this question of the Enlightenment which is essential to contemporary philosophy.

If we were to look outside of France for something corresponding to the work of Cavaillès, Koyré, Bachelard and Canguilhem, it is undoubtedly in the Frankfurt School that we would find it. And yet, the styles are quite different: the ways of doing things, the domains treated. But in the end both pose the same kind of questions, even if here they are haunted by the memory of Descartes, there by the ghost of Luther. These questionings are those

which must be addressed to a rationality which makes universal claims while developing in contingency; which asserts its unity and yet proceeds only by means of partial modification when not by general recastings; which authenticates itself through its own sovereignty but which in its history is perhaps not dissociated from inertias, weights which coerce it, subjugate it. In the history of science in France as in German critical theory, what we are to examine essentially is a reason whose autonomy of structures carries with itself the history of dogmatisms and despotisms – a reason which, consequently, has the effect of emancipation only on the condition that it succeeds in freeing itself of itself.

Several processes, marking the second half of the twentieth century, have led to the heart of contemporary preoccupations concerning the question of the Enlightenment. The first is the importance acquired by scientific and technical rationality in the development of the productive forces and the play of political decisions. The second is the very history of a "revolution" whose hope, since the close of the eighteenth century, had been borne by a rationalism to which we are entitled to ask, what part it could have in the effects of a despotism where that hope was lost.

The third and last is the movement by which, at the end of the colonial era, people began to ask the West what rights its culture, its science, its social organization and finally its rationality itself could have to laying claim to a universal validity: is it not a mirage tied to an economic domination and a political hegemony? Two centuries later the Enlightenment returns: but not at all as a way for the West to become conscious of its actual possibilities and freedoms to which it can have access, but as a way to question the limits and powers it has abused. Reason – the despotic enlightenment.

Let us not be surprised that the history of science, above all in the particular form given it by Georges Canguilhem, could have

occupied so central a place in contemporary discussions in France, even if his role has remained rather hidden.

In the history of science, such as it was practiced in France, Georges Canguilhem brought about a significant shift. Broadly speaking, the history of science concerned itself by preference, if not exclusively, with disciplines which were "noble" in terms of the antiquity of their foundation, their high degree of formalization and their fitness for mathematization; in terms of the privileged position they occupied in the positivist hierarchy of the sciences. To remain close to these sciences which, from the Greeks to Leibniz, had, in short, been an integral part of philosophy, the history of science hid what it believed it was obliged to forget: that it was not philosophy. Canguilhem has focused almost all his work on the history of biology and medicine, knowing full well that the theoretical importance of the problems raised by the development of a science are not perforce in direct proportion to the degree of formalization reached by it. Thus he brought the history of science down from the heights (mathematics, astronomy, Galilean mechanics, Newtonian physics, relativity theory) toward the middle regions where knowledge is much less deductive, much more dependent on external processes (economic stimulations or institutional supports) and where it has remained tied much longer to the marvels of the imagination.

But in bringing about this shift, Canguilhem did more than assure the revaluation of a relatively neglected domain. He did not simply broaden the field of the history of science: he recast the discipline itself on a certain number of essential points:

1. He took up again the theme of "discontinuity" – an old theme which stood out very early, to the point of being contemporary,

or almost, with the birth of the history of science. What marks such a history, Fontenelle said, is the sudden formation of certain sciences "starting from nothing"; the extreme rapidity of some progress which was hardly expected; the distance separating scientific knowledge from "common usage" and the motives which could stimulate scientists; and furthermore, the potential form of this history which does not stop recounting the battles against "prejudices," "resistances" and "obstacles."[1] In taking up this same theme elaborated by Koyré and Bachelard, Canguilhem insists that for him marking discontinuities is neither a postulate nor a result, but rather a "way of doing," a process which is an integral part of the history of science because it is summoned by the very object which must be treated by it. In fact, this history of science is not a history of the true, of its slow epiphany; it would not be able to claim that it recounts the progressive discovery of a truth "inscribed forever in things or in the intellect," except to imagine that contemporary knowledge finally possesses it so completely and definitively that it can start from it to measure the past. And yet the history of science is not a pure and simple history of ideas and the conditions in which they appeared before being obliterated. In the history of science the truth cannot be given as acquired, but one can no longer economize on a relation to the truth and the true–false opposition. It is this reference to the "true–false" which gives this history its specificity and importance. In what form? By conceiving that one is dealing with the history of "truthful discourses," that is, discourses which rectify, correct themselves and which effect on themselves a whole work of elaboration finalized by the task of "speaking true." The historical tie which the different moments of science can have with one another necessarily has this form of discontinuity constituted by the alterings, reshapings, elucidations of new foundations, changes in scale, the transition to a new kind of object – "the perpetual revision

of contents through thorough examination and amendment," as Cavaillès said. Error is not eliminated by the muffled force of a truth which gradually emerges from the shadow but by the formation of a new way of "speaking true."[2] One of the conditions of possibility because of which a history of science was formed at the beginning of the eighteenth century was, as Canguilhem notes, the awareness that there had been recent scientific "revolutions": that of algebraic geometry and the infinitesimal calculus, of Copernican and Newtonian cosmology.[3]

2. Whoever says "history of truthful discourse" also says recurrent method, not in the sense where the history of science would say: let the truth be finally recognized today, how long has one foreseen it, what paths had to be followed, what errors averted to discover it and prove it? But in the sense that the successive transformations of this truthful discourse continuously produce reshapings of their own history; what had for a long time remained a dead end, today becomes an exit; a "side" attempt becomes a central problem around which all the others gravitate; a slightly divergent step becomes a fundamental break: the discovery of non-cellular fermentation – a "side" phenomenon during the reign of Pasteur and his microbiology – marked an essential break only when the physiology of enzymes developed.[4] In short, the history of discontinuities is not acquired once and for all; it is itself "impermanent" and discontinuous.

Must we conclude from this that science spontaneously makes and remakes its own history at every instant, to the point that the only authorized historian of a science could be the scientist himself, reconstituting the past of what he was engaged in doing? The problem for Canguilhem is not a matter of a profession: it is a matter of point of view. The history of science cannot be content with bringing together what past scientists were able to believe

or demonstrate; a history of plant physiology is not written by amassing

> everything that people called botanists, physicians, chemists, horticulturists, agronomists, economists could write down, touching on their conjectures, observations or experiences with regard to the relations between structure and function for objects which are sometimes called grass, sometimes plants, sometimes vegetables.[5]

But one does not make history of science either by refiltering the past through the set of statements or theories valid now, thus disclosing in what was "false" the true to come, and in what was true, the error made manifest later on. Here is one of the fundamental points of Canguilhem's method: the history of science can consist in what it has that is specific only by taking into account the epistemological point of view between the pure historian and the scientist himself. This point of view is that which causes a "hidden, ordered progression" to appear through different episodes of scientific knowledge: this means that the processes of elimination and selection of statements, theories, objects are made at each instant in terms of a certain norm; and this norm cannot be identified with a theoretical structure or an actual paradigm because today's scientific truth is itself only an episode of it – let us say provisional at most. It is not by depending on a "normal science" in T.S. Kuhn's sense that one can return to the past and validly trace its history: it is in rediscovering the "norm" process, the actual knowledge of which is only one moment of it, without one being able, save for prophesying, to predict the future. This history of science, says Canguilhem quoting Suzanne Bachelard, can construct its object only "in an ideal space-time." And this space-time is given to the history of science neither by the "realist" time

accumulated by the historian's erudition nor by the idealized space authoritatively cut out by today's science, but by the point of view of epistemology. The latter is not the general theory of all science or of every possible scientific statement; it is the search for normativity within different scientific activities, such that they have effectively been brought into play. Hence we are dealing with an indispensable theoretical reflection which a history of science can form for itself in a way different from history in general; and conversely, the history of science opens up the area for analysis which is indispensable in order for epistemology to be something other than the simple reproduction of schemes within a science at a given moment.[6] In the method used by Canguilhem, the elaboration of "discontinuist" analyses and the elucidation of the history of science/epistemology relation go hand in hand.

3. Now, in placing the life sciences within this historico-epistemological perspective, Canguilhem brings to light a certain number of essential traits which single out the development of these sciences; and for their historians they pose specific problems. One had been able to believe around the time of Bichat that between a physiology studying the phenomena of life and a pathology dedicated to the analysis of diseases, one was finally about to disentangle what had remained confused for a long time in the mind of those who were studying the human body in order to "cure" it; and that having thus been freed from every immediate care of practice and every value judgment as to the good and evil functioning of the organism, one was finally going to be able to develop a pure and rigorous "science of life." But it proved impossible to make up a science of the living being without having taken into account, as essential to its object, the possibility of disease, death, monstrosity, anomaly, error (even if genetics gives this last word a meaning completely different from that intended by eighteenth-century physicians when

they spoke of an error of nature). You see, the living being involves self-regulation and self-preservation processes; with increasing subtlety we can know the physico-chemical mechanisms which assure them: they nonetheless mark a specificity which the life sciences must take into account, save for themselves omitting what properly constitutes their object and their own domain.

Hence a paradoxical fact in the life sciences: it is that if the "scientificization" process is done by bringing to light physical and chemical mechanisms, by the constitution of domains such as the chemistry of cells and molecules or such as biophysics, by the utilization of mathematical models, etc., it has on the other hand, been able to develop only insofar as the problem of the specificity of life and of the threshold it marks among all natural beings was continually thrown back as a challenge.[7] This does not mean that "vitalism," which has circulated so many images and perpetuated so many myths, is true. It does not mean that this idea, which has been so often rooted in less rigorous philosophies, must constitute the invincible philosophy of biologists. It simply means that it has had and undoubtedly still has an essential role as an "indicator" in the history of biology. And this in two respects: as a theoretical indicator of problems to be solved (that is, what, in general, constitutes the originality of life without, in any way, constituting an independent empire in nature); as a critical indicator of reductions to be avoided (that is, all those which tend to ignore the fact that the life sciences cannot do without a certain position of value indicating preservation, regulation, adaptation, reproduction, etc.). "A demand rather than a method, a morality more than a theory."[8]

Enlarging on the point, we could say that the constant problem in all Canguilhem's work, from the *Essai sur le normal et le pathologique* of 1943 to *Idéologie et rationalité dans l'histoire des sciences de la vie* (Ideology and Rationality in the History of the Life

Sciences) of 1977, has been the relation between science of life and vitalism: a problem which he tackled both in showing the irreducibility of the problem of disease as a problem essential to every science of life, and in studying what has constituted the speculative climate, the theoretical context of the life sciences.

4. What Canguilhem studies in a privileged way in the history of biology is the "formation of concepts." Most of the historical investigations he has conducted turn on this constitution: the concept of reflex, environment, monster and monstrosity, cell, internal secretion, regulation. There are several reasons for this. First of all, it is because the role of a strictly biological concept is to cut out from the ensemble of the phenomena "of life" those which allow one, without reducing, to analyze the processes proper to living beings (thus, among all the phenomena of resemblance, disappearance, mingling, recurrence proper to heredity, the concept of "hereditary trait" has brought about a similar "cutting out"): there is no object pertinent to biological science unless it has been "conceived." But, on the other hand, the concept does not constitute a limit which cannot be transcended by analysis: on the contrary, it must give access to a structure of intelligibility such that elementary analysis (that of chemistry or physics) allows one to show up the specific processes of the living being (this same concept of the hereditary trait led to a chemical analysis of the mechanisms of reproduction). Canguilhem insists that an idea becomes a biological concept at the moment the reductive effects, which are tied to an external analogy, become obliterated for the benefit of a specific analysis of the living being; the concept of "reflex" was not formed as a biological concept when Willis applied the image of a reflected light ray to an automatic movement; but it did happen the day Prochaska could write it down in the analysis of sensorimotor functions and their centralization in relation to

the brain.[9] Canguilhem would undoubtedly allow one to say that the moment which must be considered strategically decisive in a history of physics is that of the formalization and constitution of the theory; but the moment that counts in a history of the biological sciences is that of the constitution of the object and the formation of the concept.

The life sciences call for a certain manner of making their history. In a singular fashion they also pose the philosophical question of knowledge.

Life and death are never in themselves problems of physics, although in his work even the physicist risks his own life or that of others; for him these are questions of morals or politics, not of science. As A. Lwoff said, lethal or not, for the physicist a genetic mutation is neither more nor less than the substitution of one nucleic acid base for another. But it is in this very difference that the biologist recognizes the mark of his object; and an object of a type to which he himself belongs, since he lives and he manifests the nature of the living being, he exercises it, he develops it in an activity of knowledge which must be understood as a "general method for the direct or indirect resolution of tensions between man and the environment." The biologist must grasp what makes life a specific object of knowledge and thereby what makes it such that there are at the heart of living beings, because they are living beings, some beings susceptible to knowing, and, in the final analysis, to knowing life itself.

Phenomenology asked of "actual experience" the original meaning of every act of knowledge. But can we not, or must we not look for it in the living being himself?

Canguilhem, through the elucidation of knowledge concerning life and the concepts which articulate this knowledge, wants

to rediscover which of them belongs to the *concept of life*. That is, the concept insofar as it is one of the modes of this information which every living being levies on his environment and by means of which, on the other hand, he structures his environment. That man lives in a conceptually architectured environment does not prove that he has been diverted from life by some oversight or that a historical drama has separated him from it; but only that he lives in a certain way, that he has a relationship with his environment such that he does not have a fixed point of view of it, that he can move on an undefined territory, that he must move about to receive information, that he must move things in relation to one another in order to make them useful. Forming concepts is one way of living, not of killing life; it is one way of living in complete mobility and not immobilizing life; it is showing, among these millions of living beings who inform their environment and are informed from it outwards, an innovation which will be judged trifling or substantial as you will: a very particular type of information.

Hence the importance Canguilhem accords the meeting, in the life sciences, of the old question of the normal and the pathological with the set of notions that biology, in the course of the last decades, has borrowed from information theory: code, messages, messengers, etc. From this point of view *Le normal et le pathologique*, written in part in 1943 and in part in the period 1963–66, constitutes without any doubt the most important and the most significant of Canguilhem's works. Here we see how the problem of the specificity of life recently found itself bent in one direction where we meet some of the problems believed to belong in their own right to the most developed forms of evolution.

At the heart of these problems is that of error. For at life's most basic level, the play of code and decoding leaves room for

chance, which, before being disease, deficit or monstrosity, is something like perturbation in the information system, something like a "mistake." In the extreme, life is what is capable of error. And it is perhaps this given or rather this fundamental eventuality which must be called to account concerning the fact that the question of anomaly crosses all of biology, through and through. We must also call it to account for mutations and the evolutionary processes they induce. We must also call it to account for this singular mutation, this "hereditary error" which makes life result, with man, in a living being who is never completely at home, a living being dedicated to "error" and destined, in the end, to "error." And if we admit that the concept is the answer that life itself gives to this chance, it must be that error is at the root of what makes human thought and its history. The opposition of true and false, the values we attribute to both, the effects of power that different societies and different institutions link to this division – even all this is perhaps only the latest response to this possibility of error, which is intrinsic to life. If the history of science is discontinuous, that is, if it can be analyzed only as a series of "corrections," as a new distribution of true and false which never finally, once and for all, liberates the truth, it is because there, too, "error" constitutes not overlooking or delaying a truth but the dimension proper to the life of men and to the time of the species.

Nietzsche said that truth was the most profound lie. Canguilhem, who is at once close to and far from Nietzsche, would say perhaps that on the enormous calendar of life, it is the most recent error; he would say that the true–false division and the value accorded truth constitute the most singular way of living which could have been invented by a life which, from its furthermost origin, carried the eventuality of error within itself. Error for Canguilhem is the permanent chance around which the history of life

and that of men develops. It is this notion of error which allows him to join what he knows about biology to the way he works its history without ever having wanted, as was done at the time of evolutionism, to deduce the latter from the former. It is this notion which allows him to mark the relation between life and the knowledge of life, and to follow, like a red thread, the presence of value and norm.

This historian of rationalities, himself a "rationalist," is a philosopher of error: I mean that it is in starting from error that he poses philosophical problems, I should say, *the* philosophical problem of truth and life. Here we touch on what is undoubtedly one of the fundamental events in the history of modern philosophy: if the great Cartesian break posed the question of the relations between truth and subject, the eighteenth century, as far as the relations of truth and life are concerned, introduced a series of questions of which the *Critique of Judgment* and the *Phenomenology of Spirit* were the first great formulations. And from then on it was one of the stakes of philosophical discussions: is it that knowledge of life must be considered as nothing more than one of the regions which depends on the general question of truth, subject and knowledge? Or is it that it obliges us to pose this question differently? Is it that the entire theory of the subject must not be reformulated, since knowledge, rather than opening itself up to the truth of the world, is rooted in the "errors" of life? We understand why Canguilhem's thought, his work as a historian and philosopher, could have so decisive an importance in France for all those who, starting from different points of view (whether theorists of Marxism, psychoanalysis or linguistics), have tried to rethink the question of the subject. Phenomenology could indeed introduce the body, sexuality, death, the perceived world into the field of analysis; the Cogito remained central; neither the ratio-

nality of science nor the specificity of the life sciences could compromise its founding role. It is to this philosophy of meaning, subject and the experienced thing that Canguilhem has opposed a philosophy of error, concept and the living being.

Foreword

The present work unites two studies – one unpublished – on the same subject. It is first a re-edition of my doctoral thesis in medicine, made possible by the gracious consent of the Publications Committee of the Faculty of Letters at Strasbourg for this project of the Presses Universitaires de France. To those who conceived the project as well as to those who furthered its realization, I express here my heartfelt gratitude.

It is not for me to say whether this re-edition is necessary or not. It is true that my thesis was fortunate enough to arouse interest in medical as well as philosophical circles. I am left with the hope that it will not be judged now as being too out of date.

In adding some unpublished considerations to my first Essay (Section 1), I am only trying to furnish evidence of my efforts – if not my success – to preserve a problem, which I consider fundamental, in the same state of freshness as its everchanging factual data.

G.C.
1966

This revised edition contains corrections of some details and some supplementary footnotes indicated by an asterisk.

G.C.
1972