

HUSSERL'S CRISIS FROM THE PHILOSOPHY OF SCIENCE TO THE POLITICS OF SCIENCE

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Abstract. Edmund Husserl's *The Crisis of European Science* remains a very relevant work today, because the “crisis” has by no means been overcome. The crisis is not primarily a crisis in scientific productivity or theorizing, but rather a crisis in our conception of what science is, can be, and should be. The crisis consists in a lack of reflection and meaning: the sciences, precisely because of their successes, focus on delivering ready-made solutions for practical problems: material prosperity, but spiritual poverty. In this article, I will try to extend Husserl's account of the philosophical crisis of the sciences also to the politics and policies of science. Not only have the sciences themselves been mathematized (in the sense of studying only what is quantifiable), but also our thinking about science, especially our science policy, has been mathematized: not only what the sciences study, but also how the sciences operate must be quantifiable. Scientific achievements are measured and managed by quantitative assessments and rankings: number of publications, citations, projects, PhDs supervised, H-index, impact factor, etc. Through the mathematization, technization, and then mechanization of science itself, the practical results have grown a hundredfold, but at the expense of genuine thought. By limiting science, we limit who we are and can be as humans: the crisis of the sciences is therefore essentially also a crisis of humanity. Besides a diagnosis of the nature of the crisis, Husserl's work can also offer a potential cure: *Besinnung*. A fundamental questioning and reflecting on the sense of science, to clarify the means and ends of science, would also help to make sense of and give meaning to human existence. Only in this way can society fully realize the potential of scientific inquiry to enrich human existence beyond mere material prosperity.

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The future of philosophy as a rigorous science as well as science as such is tied closely to addressing the issues raised a century ago by Edmund Husserl's *The Crisis of European Sciences and Transcendental Phenomenology*. This work remains a very timely and relevant one, because the “crisis” mentioned in the title has by no means been solved or overcome. Despite being almost a century old, the book's diagnosis of the central problem of the sciences remains surprisingly applicable and fitting for our



times. As the cliché goes: the first step towards improvement is admitting that there is a problem at all. This is also the reason why Husserl quite rightly spends the first, introductory chapter of the work asking why and in what respect there would be a “crisis” of the sciences at all and why this supposed crisis would have further and farther-reaching implications for contemporary society and the whole of humanity in general.¹ An introductory chapter with such a theme is required, because in Husserl’s time, no less than in ours, the sciences seem instead to be extremely successful and productive, with new discoveries and breakthroughs on an almost daily basis. Moreover, Husserl’s intellectual formation and development as philosopher took place during the second industrial revolution (generally dated 1870-1914), with the First World War as its zenith or nadir. In that time and context, “war machine” and “military-industrial complex” were not mere metaphors or subtle political framing. Science and technology played a central role: unlimited supplies of gunpowder thanks to the Haber-Bosch process, chlorine gas as byproduct of the dyes industry, airplanes with synchronised machine guns, the use of radio and development of telecommunications to coordinate operations in the field, etc. not to mention the sometimes outrageous profits for the manufacturing industry. Husserl was involved very closely with WWI, as both his sons as well as many of his students were fighting at the front.² Therefore, the crisis that Husserl recognises is not primarily a crisis in scientific productivity or theoretical achievements within the sciences, but much more a crisis in scientific theory from the point of view of a philosophy of science, that is, a crisis in our conception of what science is, can be, and should be (Husserl 1970, p.12). The ambition of the *Crisis* is therefore also “[to subject] the scientific character of all sciences to a *serious and quite necessary critique*” (Husserl 1970, p.5).³ According to Husserl, the crisis consists mainly in the underlying lack of reflection and meaning: the sciences, precisely because of their success, are no longer questioning themselves and are only focused on delivering goods and services: ready-made solutions for practical problems (whatever their ethical ramifications). In other words: material prosperity, but spiritual poverty. Science merely develops and provides the means, but avoids considering or defining the ends. What are the value, meaning, and purpose of science anymore in this case, beyond contributing a return on investment to the bottom line of the national economy? In the present contribution, I will try to extend Husserl’s account of the philosophical crisis of the sciences also to the politics and policies of science.⁴

What is science?

Husserl, following in the footsteps of his teachers Franz Brentano and Friedrich Paulsen,⁵ states quite clearly throughout his career that philosophy is (and can be

or should be) science, rigorous science even. What does that mean? Philosophy, from its very name, is “love”: desiring, striving for knowledge, wanting to know, insatiable curiosity, questioning everything. Husserl does certainly agree with Aristotle's famous statement that “all human beings naturally desire to know”.⁶ Philosophy is therefore not like a specialised discipline, one more science among many, focused on one specific field or domain, but philosophy is universal and all-embracing: not “a” science, but “the” science encompassing the whole of all knowledge, contained in a coherent theoretical system.⁷ Philosophy and science in their most general form thus seek knowledge not only of nature and its history, but also of humanity and its history, not only of events and facts, but also of actions and ideas. This is why Husserl warns against the identification of science with the “science of facts”. When we talk about “science” as such, this term should most certainly not be limited to what he calls “positive sciences”, the sciences of (the objects of) experience in complete abstraction from the very experiencing (subject) itself.

Yet this is exactly the kind of conception of science that prevailed then and seems to prevail now as well. Something is objective precisely insofar as it is not subjective.⁸ Therefore, in extremis, even the subject itself must be made measurable: objectified, treated just like another thing. Since the separation of psychology from philosophy in the 19th century, after which it became more a natural science than a “spiritual science” (if the reader allows such an awkward literal translation of *Geisteswissenschaft*),⁹ hardly anything has actually changed in this regard. Even today, there is a widespread belief that to study the human mind itself scientifically, it must be reduced to a physical fact, a thing or process like the brain or publicly observable behaviour. We can study the mind only indirectly. This is often also made explicit in policy documents about the *Geisteswissenschaften* or “sciences of the spirit”, where they are described as actually not concerned at all with the human spirit itself, but only with the (historical) products and manifestations of this spirit, i.e. again measurable facts and things. Instead it would be the role of psychology to be the science of the spirit, although psychology then as well as now all too often reduces the mind to measurable facts and things, such as the brain and behaviour.¹⁰ It is precisely this absurdity that Husserl tried to expose in detail with his analysis in the *Crisis*.

As Husserl argues there, all sciences, natural and spiritual, are merely inseparable branches of philosophy as an all-comprehensive scientific ideal.¹¹ What distinguishes these disciplines qua disciplines cannot be something pertaining to their essence or scientific character: in this respect they are equal. They might differ in content and specific techniques (working with reagents or telescopes, texts or numbers, inductive or deductive reasoning, etc.). Quite possibly we choose a certain division of labour in universities and research institutes for merely pragmatic and administrative reasons. That we have separate faculties and departments of natural sciences and humanities and social sciences etc. does not reflect a deeper, essential subdivision of science as

such, but merely the practical organization of human activities. Certainly, none of this implies that some disciplines would be “more scientific” than others. In terms of “scientificity”, all disciplines should face their questions and problems with the same rigour, whether they are about facts or values, about things or thoughts.

The Value of Science

Husserl accuses positivism of “decapitating” science:¹² precisely by excluding subjectivity, consciousness, values, et cetera, or reducing them to something else, the radical question of the scientificity of science, the philosophical question of the value and possibility of science as a universal theoretical framework, becomes impossible. Science would remain an unreflected and therefore *meaningless and worthless* science. This is meant in a double sense: science can neither reflect on its own value nor offer value to society.¹³ The only “value” left is economic: a bland cost-benefit analysis, investment and return on investment. The only “rationality” is bureaucratic and administrative, where “rationalization” is used in the sense of making processes more efficient, not in the sense of providing reasons, arguments, justifications. This “rationality” that dominates the sciences is certainly not what was originally the essence of philosophy and science.¹⁴ Reason, which is the essential element that makes us human and that makes science into science, is precisely not this degenerate “rationalism” that is exclusively numerical, quantitative, reductionist. The original rationality of philosophy as a universal science, the unity of the multitude of questions we have, is far more comprehensive than what is allowed by positivism and managerialism. Positivism, as outlined by Husserl, excludes all questions of meaning and value as unscientific, because they would not be objective or measurable.¹⁵

However, value-free science (in this specific sense) is also worthless science. The positivist contribution to society is exclusively about quantifiable things: for every euro of tax money, so many euros of profit. The task of science becomes that of delivering return on investment based on projects that take the form of precise business plans. Teaching programs must serve the needs of society and industry for workers with specific practical, technical competences and skills. Subsidies are meant and must be spent to support new commercial products and revenue: faster computers, energy efficient machines, higher agricultural yields, etc. They become part of ideologically driven political agenda’s, strategies, and missions. Husserl deliberately chooses the English term “*prosperity*” in this context (Hua VI, p.3): as long as things are going materially well for us, as long as our wealth and well-being are secure, we don’t need to think any further or deeper. From this perspective, it is almost inconceivable that there could also exist some kind of science that could add a different kind of value to society that is not merely economical, and yet would still be a rig-

orously scientific discipline. Wouldn't that just be a waste of money, if our only goal is prosperity? Hence, Husserl undertakes an attempt to rescue science, all of science, and get it back on track. In doing so, he also aims to enable a much broader and momentous cultural shift. Only once we become aware again of the actual depth and breadth of what reason and science can be and can mean for humanity, only then we can also understand ourselves as rational beings and our society as one based on reason.¹⁶ Without this, there is no real future for philosophy as rigorous science, or any science at all.

The Origin of the Crisis

With respect to the questions of where, when, and why things went wrong in the first place and how they should be done differently, Husserl offers us a double "reduction": first, "leading back" to the original problem that caused the crisis, namely the mathematisation of nature and the natural sciences, and then "leading back" towards the true ideal of scientificity and how it fits into human society and our everyday lifeworld. Husserl believes he sees a fundamental error originating with Galileo (roughly: "the book of nature is written in the language of mathematics and geometry"),¹⁷ which in many ways is also present in Descartes and Locke, and conditioned the very idea of science to his and our days.¹⁸ The error lies in their having constructed a reality behind experience that can only be grasped by abstract reason. This is then postulated as the ultimate cause and explanation for all experience. All sensible qualities are (in)directly reducible to quantities.¹⁹ This reality behind reality is a world of theoretical, imperceptible, but quantifiable entities and properties, which are supposed to explain (the object of) experience, but at the same time also abstract from and disregard (the subject of) experience and the lifeworld, which is its forgotten foundation. In other words, the act of experiencing is explained through an appeal to what one cannot in principle ever experience. The basis of experience and empirical science thus comes to lie outside experience and empirical science. Experience becomes the *explanandum* (what needs to be explained), and is no longer the *explanans* (what explains), hence the act of experiencing can play no active role in scientific theories anymore: it is to be explained away.²⁰

Ever since the very beginning of his academic career, Husserl had protested against this kind of reasoning: empiricism cannot explain and justify itself, even if it takes the long way around via mathematics and geometry. On the contrary, real empiricism, including both the experienced as well as the experiencing, is the ultimate explanatory basis. Husserl's proposed solution is therefore not so surprising at this point: phenomenology, a new science of experience, in which experiencing itself plays a pivotal role. We need to take questions about experiences and experiencing seriously

and examine them in a rigorously scientific manner: Who experiences? How is something being experienced? What is it, that is being experienced? And what conclusions can we legitimately draw from experience and experiencing? The starting point of analysis and reduction is always the concrete experiencing individuals, their acts of experiencing, and the objects that are experienced in those acts. The experiencing itself, as an act of someone and focused on something, is the starting point: it is not an abstracted, idealised, and absolutised “experience”, as if it were an independent and autonomous entity. If one shifts and enlarges the focus, as Husserl suggests, then the question “Who are we who do science, and to what end?” must never disappear from the scene.

The Crisis then and now

Whether or not one shares Husserl’s solution to the problem or agrees with the whole further development of transcendental idealist phenomenology, his analysis of the problem remains, in my opinion, not only fitting in his own time, but also still applicable to today’s science and society. We have not overcome or solved the crisis Husserl identified. We too regard the world and all human activity, including the products of the human spirit, as quantifiable and measurable. We seem to associate scientificity mainly (if not exclusively) with the (positive) natural, applied, and exact sciences: the “STEM” disciplines (Science, Technology, Engineering, Mathematics). All the critiques advanced by Husserl against positivism and the degenerated kind of rationalism, would seem to be also applicable today. Broadly in keeping with Husserl’s thrust, *mutatis mutandis*, we might name some examples of how the crisis perseveres. One example may be the “replication crisis”: the failure of attempts to successfully repeat experiments in (social) psychology, medicine, economics, and other statistical sciences. Among the proposed solutions we see a further refinements of quantitative techniques (“let’s use $p=0.005$ instead of 0.05”) as well as doing *more* measurements to complement the existing ones (larger sample sizes, more replication studies, etc.), instead of more fundamentally questioning and reflecting on the underlying assumptions about quantification and measurability of human thought and action. Another prominent example would be the advances in AI, specifically where AI is (wrongly) taken as a model of human thought and consciousness. This continues to presuppose that an exclusively quantitative analysis and models of the products and expressions of the human spirit (specifically linguistic ones in Large Language Models) would be sufficient to emulate (and not just simulate) the human spirit, with all its meanings, values, arguments and theories. At the same time, we are shocked and dumbfounded by the fact that the inscrutable algorithms of AI appear to simply reproduce and magnify our own biases and assumptions, rather than being an incarnation of pure reason

and an embodiment of a perfectly neutral “view from nowhere”. Yet, statistics remains a cornerstone of scientific research in a large variety of fields, both as tool for measurement in experimental lab-settings as well as a tool for machine learning in AI. In both cases, researchers and scholars follow algorithms and use tools they scarcely comprehend and delegate their application to actual machinery. Husserl explicitly warned about this kind of “technicisation” of science, namely that we outsource an ever-increasing part of scientific praxis and research to literal and figurative mechanisms and machines, where symbolic intentionality helps us overcome the limits of our reason thanks to blind, unsightful (but oh so efficient and effective) processes (“technical thinking and acting emptied of meaning”)²¹. Instead of a scientific praxis, we engage in a mechanical praxis. Qualities are transformed into quantities, quantities are fed into an algorithm, the algorithm is executed by a machine. We then learn to design, improve, operate and service the machines that do our science and our thinking for us. Science itself thereby acquires the character of a mechanism:²²

Are science and its method not like an obviously very useful and reliable machine, a machine everyone can learn to operate correctly without in the least understanding the inner possibility and necessity of this sort of accomplishment? (Husserl 1970, p.52)²³

With the similar progressive technicisation of society, in which we interact much more often through or directly with machines, we also see the same kind of un-reflected processes playing an increasing role in our daily lives. In fact, we should note that we are probably in an even deeper and more ambiguous crisis today than in Husserl's time. Not only have the sciences themselves been mathematised (i.e. reduced to studying only what is quantifiable and measurable), also nearly all our thinking about science, especially in the context of science policy, has been mathematised. In fact, “managerialism” is nothing other than the recursive triumph of mathematisation and positivism that Husserl warned against: this time not only on the level of the philosophy of science, but also on the level of the politics of science. Both scientific theory and praxis are now thoroughly driven by number fetishism: not only what the sciences study must be quantifiable, but also how the sciences operate in practice must be quantifiable.²⁴ Ultimately, policy reduces all research and teaching to the economical costs for working hours, materials, buildings and classrooms, instruments and ICT tools, etc.. The object as well as the *modus operandi* of science are both forced into a straitjacket that does not fit their original and essential meaning and value. Rationality in the sense of accountability no longer has anything to do with a *redde rationem* (giving reasons, arguments, justifications), but with rationalisation in the sense of increasing the efficiency and productivity of labor (whatever the specific work being done) and consequently red or black numbers under the bottom line: revenue, return on investment, profit. Sciences appear no longer as nat-

urally, intrinsically valuable, but must instead be made artificially valuable through “valorization”: adding new value to society, as if they would have no original value of their own. This new “value”, is furthermore mostly economical and expressed in earning capacity. Hence, the scientific disciplines that on the surface seem to thrive on this model, can also acquire only worthless *prosperity* as a result. The only value that the natural, applied, and mathematical sciences seem to have left in this model is economical and focused on practical usefulness.²⁵ This has been fittingly brought into focus by i.a. Heffernan:

There can be no doubt, however, that Husserl’s existential *Krisis* is *our* existential crisis, in so far as contemporary, especially academic, philosophy finds itself under increasingly heavy, even life-threatening, siege by factors and forces favoring disciplines that promise ‘prosperity’, to people pursuing the maximum return on investment in their training as ‘factual human beings’, in the ‘sciences’, obedient employees in the workplace, and insatiable consumers in the marketplace. (Heffernan 2017, p.255)

As a result, universities are degenerating from institutes of higher learning, into vocational schools and R&D departments. Like true Stakhanovists, we celebrate our “success” based on quantitative assessments: more publications, more citations, more projects, more PhDs, higher H-index, higher impact factor, higher ranking, etc.²⁶ We want to obtain the highest number in achievement with the lowest number in cost. The people actually enabling the achievements are exploited with temporary contracts (due to projectification) and overwork (because we love what we do). In contrast with this political and bureaucratic approach, for years there has been growing dissatisfaction both among students and teachers at universities about such worthless and meaningless metrics and how they drive scientific work and the organization of universities. Economical considerations, reputation management, and metrics push the staff and students in higher education to produce theses, diploma’s, articles, patents, grant applications, etc. as quickly as possible. Everything is done under time pressure of arbitrary deadlines. Students have to complete their courses in a fixed timeframe, projects need to be finished according to pre-established schedule: yet no particular *scientific* value is achieved by respecting these deadlines. Often more truly scientific value would be realized by taking more time to reflect and having the courage to abandon a wrong track and start anew.²⁷ Yet this becomes impossible due to the managerial focus on sticking to the curriculum and the conditions of the grant. This means that both during studies and research, there is no time for reflection or contemplation, let alone questioning any presuppositions, and little possibility of recovering the original meaning and value of science. Husserl already pointed out in the *Prolegomena* that science makes use of “shortcuts and surrogates used to economize thought”,²⁸ for practical reasons, to make difficult and tedious scientific labor faster and easier. These “algorithmic methods” replace “genuine deductive mental labor”

with “mechanical operations on sensible signs.” In order to satisfy extra-scientific demands, we are driven to actually not think things through and rely on unthinking mechanical processes. As we saw above, Husserl then points out decades later in the *Crisis*: “Are science and its method not like an obviously very useful and reliable machine, that anyone can learn to operate correctly, without in the least understanding the inner possibility and necessity of this accomplishment?” (Husserl 1970, p.52) And, under artificial time-pressure, that’s exactly what we do. Through the mathematization, technization, and then mechanization of science itself, the practical results have grown a hundredfold, but at the expense of genuine thought.²⁹ In other words, to portray this in the starkest terms possible: we don’t know what we are doing, but we’re doing a lot of it! Philosophy as rigorous science no longer seems possible in this context. How can we make it possible again in the future?

There is a great need for a radical rethinking of the value of science, the role of technology in society, the meaning of life on a rational basis (Husserl 1970, p.299; “*rationalen Lebenssinn*”, Hua VI, p.347): a need for wisdom. To counteract the quantified, algorithmic, and automated scientific praxis we need genuine thought:

Hence technization and specialization are necessary and at the same time — if the counter-movement aimed at clarification up to the universal horizon, i.e. the philosophical domain, is lacking — then this is a decay. (Hua XXVII, p.209)

While what are hailed as our current scientific achievements would not have been possible without a pervasive application of technical means and machines, just *thinking* has become a way of resisting the growing demand for practical problem solving that leads to *prosperity* alone. Husserl realized (quite correctly) that the expectation that science should be useful to society is not illegitimate. The problem is that science is (can be, should be) more than that. Indeed without any deeper reflection, without *Besinnung*, science (and society) cannot function, let alone flourish. So what should we do, where is this wisdom to be found? While every country seems to have some form of a “Science Agenda”,³⁰ we lack a truly “Scientific Agenda”, which stems from a radical and normative reflection on what science should be.³¹ The word “agenda” itself carries a normative component in its Latin etymology: “the things we should do”. Doesn’t that first require a rigorous problem analysis? Shouldn’t we be asking questions *about* science rather than only posing questions *to* science? Where are the philosophy of science, the history of science, the ethics of science in the various national and supranational “science” agenda’s? What is also lacking is the awareness that any achievements of scientific reason are merely stepping stones towards a hidden shore. There can be no ultimate finality, no last box to check on our “to do” list: no “finish” line to pass and then celebrate. Science, philosophy, reason always proceed onwards and beyond without end:

[To say that] philosophy, science in all its forms, is rational—that is a tautology. But in all its forms it is on its way to a higher rationality; it is rationality which, discovering again and again its unsatisfying relativity, is driven on in its toils, in its will to attain the true and full rationality. But finally it discovers that this rationality is an idea residing in the infinite and is *de facto* necessarily [only] on the way; (Husserl 1970, p.339; Hua VI, p.274)

It seems to me that it is precisely this kind of analysis and deeper reflection on our scientific praxis, this kind of *Besinnung*, what Husserl can still offer to us. *Besinnung* involves a deliberate (self-)reflection aimed at recovering and elucidating the historical and teleological structures of experience, a “questioning back”,³² into the ultimate meaning of life and how all our actions “make sense” (*Sinn*) in that context. *Besinnung* can therefore also be rendered as “sense-investigation” or explication of the sense of an action or entity. Husserl at various points also links this to epistemic and even moral responsibility (“*die auf Verdeutlichung und Klärung gerichtete, die rechtfertigende Besinnung*” Hua XXIX, p.376), the capacity to bestow meaning to acts from the most original sources of evidence (e.g. Hua XXIX p.165). *Besinnung* hence is a process that is not merely contemplative, but also clarifies and explains action. Husserl pleads for (and provides) this kind of historical and critical *Besinnung* to recover the original meaning of our philosophical and scientific ambitions (Husserl 1970, p.17 f.). The tenor of his inquiry can inspire us to work this out in further detail for our own time and contexts. This might bring about a change in scientific culture, extending to policymakers as much as practitioners, which might ultimately make philosophy as rigorous science possible once more.

For Husserl, philosophy as a universal, rigorous science has a clear purpose, which is tied to the exercise of that very same reason that makes us human.³³ One might argue with Husserl (and Aristotle) that science (in the broad sense of the German *Wissenschaft*, which includes the humanities, the *Geisteswissenschaften*) is essentially what we should do as human beings: seeking knowledge, using our reason correctly according to a rigorous method is an essential part of making sense of and giving meaning to a human life and humanity as a whole.³⁴ Science cannot just be limited to being a means that leads to better medicine, more fuel-efficient cars, faster computers, etc., not just an item in the national budget to be funded through cost-benefit analysis. The practice of science, and specifically philosophy, as universal questioning of the meaning of everything, is itself a goal. By limiting science, we limit who we are and can be as humans. As Husserl underscores: the crisis of the sciences is therefore essentially also a crisis of humanity.

In the current context with fake news, unjustified doubts about scientific expertise, curtailment of free, curiosity-driven research in favour of application and profit, worldwide, Husserl’s warning against positivist, managerial, profit-focused thinking, in both science and science policy, remains surprisingly (or depressingly) relevant.

We would do well to heed the message of Husserl's *Crisis*, if philosophy as rigorous science is to have any future.

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Notes

¹For an illuminating discussion of the manifold nature of this crisis, see Heffernan (2017). On Husserl's analysis in the philosophy of science also having political ramifications, see Woelert (2013).

²Also see Heffernan (2017, p.234). Adolf Reinach fell in Flanders on 16-11-1917, Johannes Daubert was reading the *Ideas* while at the front (Hua Dok III/2, 72). Husserl's son Wolfgang fell near Verdun on 08-03-1916 (Hua Dok I, 200), Gerhart was heavily wounded (Hua Dok I, 209) and lost sight in one eye. Moreover, Husserl observes that a change in the public valuation of science was unavoidable after the war (Husserl 1970, p.6).

³Compare Hua VI, p.3: “die Wissenschaftlichkeit aller Wissenschaften einer *ernstlichen und sehr notwendigen Kritik* zu unterwerfen”. Italics spaced in the original. Translations modified without notice.

⁴A similar attempt has been made by Woelert, see his (2013, p.488): “In applying Husserl's insights concerning the technization of thought to contemporary issues and contexts of governance, this paper further argues for the direct, maybe in view of recent shifts in governance practices heightened, political relevance of crucial elements of Husserl's philosophy.”

⁵For a detailed comparison of the conceptions of “philosophy as science” of Brentano and Paulsen, see Ierna (2026). In some respects, Husserl seems closer to Paulsen than to Brentano.

⁶See e.g. Hua Mat IX, p.7.

⁷Husserl (1970, p.17): “The belief in the possibility of philosophy as a task, that is, in the possibility of universal knowledge, is something we cannot let go. [...] And yet, how do we hold onto this belief, which has meaning only in relation to the single goal which is common to us all, that is, philosophy as such?” The German (Hua VI, p.15) has “*die Philosophie*” (Italics spaced in the original), suggesting even more strongly the unity of philosophy as the one and only unity of all sciences.

⁸And the scientist should disregard and eliminate all subjective thoughts, all reason, all value, etc. from their inquiry: “As for the spiritual sciences [*Geisteswissenschaften*], on the other hand, all the special and general disciplines of which treat of humanity's spiritual existence, that is, within the horizon of his historicity: their rigorous scientific character requires, we are told, that the scholar carefully exclude all valuative positions, all questions of the

reason or unreason of their human subject matter and its cultural configurations.” (Husserl 1970, p.6; compare Hua VI, p.4).

⁹Also see Husserl 1970, p.6 n. 5 on the difficulty of translating “*Geist*” and its derivatives.

¹⁰See e.g. Hua XXXII, p.176: “the delusion of research into the human spirit by following a natural scientific method as the supposedly only valid one” (“*das Wahngelbilde einer Geistesforschung nach naturwissenschaftlicher Methode als der angeblich allein gültigen*”).

¹¹It is in modern times that philosophy acquires this new, encompassing sense: “the formal meaning of the one *all-encompassing science*, the science of the totality of all beings. Sciences in the plural, all those sciences ever to be established or already under construction, are but dependent branches of the One Philosophy. [...] this new philosophy seeks nothing less than to encompass, in the unity of a theoretical system, all meaningful questions in a rigorous scientific manner, with an apodictically intelligible methodology, in an unending but rationally ordered progress of inquiry.” (Husserl 1970, p.8 f.; Hua VI, p.6) Italics spaced in the original German.

¹²Husserl 1970, p.9: “Positivism, in a manner of speaking, decapitates philosophy.” Also see Moran (2012, p.71).

¹³With respect to the orientations mentioned by Heffernan (2017, p.232), I would hence agree with the inclusive approach to the nature of the crisis: “The paper proposes that Husserl’s *Krisis* of the European sciences should be identified both as a *Krisis* of their scientificity and as a *Krisis* of their meaningfulness for life.”, specifically indeed that the issue of scientificity is again an issue of (lack of) meaning and value, not of technical correctness or failure of the scientific method, as Heffernan likewise indicates (2017, p.239): “The dissolution of this kind of philosophy [as a discipline that once encompassed the sciences] and the breakdown of the relationship between it and the sciences, he argues, generated the *Krisis* of the sciences understood as the loss of their scientificity *in the sense of* the loss of their meaningfulness for life.”

¹⁴“I too am certain that the European crisis has its roots in a misguided rationalism. But we must not take this to mean that rationality as such is evil or that it is of only subordinate significance for mankind’s existence as a whole. [...] The “crisis” could then become discernable as the *apparent failure of rationalism*. The reason for the failure of a rational culture, however, as we said, lies not in the essence of rationalism itself but solely in its *exteriorization* [*Veräußerlichung*], in its entanglement in “naturalism” and “objectivism.” (Husserl 1970, p.290 & p.299)

¹⁵On the significance of measurement for objectivity (and objectivism), see Husserl 1970, p.27 f.

¹⁶Also see Woelert (2013, p.495): “for Husserl such a technization affects not merely the sphere of scientific rationality, but human culture as whole. This is mainly due to Husserl’s aforementioned view that modern culture is grounded in science”.

¹⁷Husserl 1970, §9. Also see Moran (2012), p.69 f. and p.76 f.; Mazijk (2019), p.530 f.

¹⁸Husserl 1970, p.54: “dominate all further developments of views about the world up to the present day”. Also see Mazijk (2019, p.528 f.) and Woelert (2013, p.489).

¹⁹See e.g. Hua VI, p.37; also see Moran (2012, p.86).

²⁰Husserl 1970, p.60: “Galileo *abstracts* from the subjects as persons leading a personal life; he abstracts from all that is in any way spiritual, from all cultural properties which are attached to things in human praxis. The result of this abstraction is the things purely as

bodies; but these are taken as concrete real objects, the totality of which makes up a world which becomes the subject matter of research.” Italics spaced in the original German.

²¹Husserl 1970, p.56. Hua VI, p.57: “*sinnesentleertes technisches Denken und Tun*”. On the use of cognitive tools (“*Denkzeuge*”), both in the sense of physical machines as well as “spiritual machines” (“*das System der allgemeinen Arithmetik, dieser wunderbarsten geistigen Maschine*”, Hua XII, p.350; Hua CW V, p.30), also see Krämer (1992, p.336): “From time immemorial, technology has not only included tools, but also tools of thought. These tools of thought are not merely tangible artifacts such as the abacus, slide rule or calculator, but first and foremost include symbolic aids: the invention of writing as a support for memory formation and transmission; the use of formal languages to solve problems; the construction of logical calculi to perform automatic proofs” (“*Von alters her gehören zur Technik nicht nur Werkzeuge, sondern auch Denkzeuge. Diese Denkzeuge reduzieren sich nicht auf gegenständliche Artefakte wie Abakus, Rechenschieber oder Rechenmaschine, sondern umfassen allererst die symbolischen Hilfsmittel: Die Erfindung der Schrift als Stütze von Gedächtnisbildung und Überlieferung; der Einsatz formaler Sprachen beim Problemlösen; die Konstruktion logischer Kalküle zum automatischen Beweisen*”).

²²Also see Woelert (2013, p.490): “such a machine can be effectively used by any trained human operator who does not have understanding of this machine’s inner workings and construction [...] technization implies a potential loss of truly scientific thinking—scientific thinking understood here as a form of enquiry that persistently endeavors to have true understanding of its constitution, including that of its own methods, and that of their genesis and the sense of truth they bestow.”

²³The consequent apparent “democratization” of science carries its own problems, see e.g. Krämer (1992, p.337): “The use of algorithms is the popularization strategy of the spirit. [...] The popularization of the spirit through symbolic machines is based on the trick of making the knowledge of how to solve a certain problem independent from the knowledge of the “nature” of this problem.” (“*Die Algorithmik ist die Popularisierungsstrategie des Geistes. [...] Die Popularisierung des Geistes durch symbolische Maschinen beruht auf dem Kunstgriff, das Wissen, wie ein bestimmtes Problem zu lösen ist, unabhängig zu machen von dem Wissen um die “Natur” dieses Problems.*”)

²⁴See Woelert (2015, p.1 f.): “Recent times have seen, in the majority of developed countries, a proliferation of formal performance-based assessment and funding mechanisms that are used for the purpose of governing the core activities of the relevant individual and organizational actors in the public science system: researchers and their institutions. [...] there appears to be a widely shared belief that such mechanisms are the best available means to ensure that public funds are spent on scientific research that delivers the best ‘value for money’—regardless of whether the focus is on research quality or impact.”

²⁵Also see Hua V, p.95 f: “thus the sciences become as we know them now, factories of very valuable and practically useful propositions. [...] The progress of science has not enriched us with treasures of insight. They have not made the world in the least more intelligible; it has only become more useful to us.” (“*so werden die Wissenschaften zu dem, als was wir sie kennen, zu Fabriken sehr wertvoller und praktisch nützlicher Sätze. [...] Die Fortschritte der Wissenschaft haben uns an Schätzen der Einsicht nicht bereichert. Die Welt ist durch sie nicht im mindesten verständlicher; sie ist für uns nur nützlicher geworden.*”) Also see Ströker (2005, p.224).

²⁶On such output based governance metrics, see Woelert (2013, p.500): "Such use of metrics constitutes a specific form of the mobilization of formalizing rational thought and formalized rational knowledge for governance purposes." Also see Woelert (2015, p.10).

²⁷The focus on output metrics also produces perverse incentives to "game the system", see Woelert (2013, p.502). From a quasi-Kantian perspective they also might be viewed as impermissible maxims which contradict themselves: "When a measure becomes a target, it ceases to be a good measure." (known as *Goodhart's Law*). Also see Woelert (2015, p.15): "they stimulate strategic behavioral responses by individual or organizational actors, and as a result of which they cease to be a valid and useful performance measure".

²⁸Hua XVIII, p.37: "*denkökonomische Abbreviaturen und Surrogate*".

²⁹Cf. also Woelert 2013, p.488; Woelert 2015, p.16 points out that at least in part the increase in productivity is merely an artifact (in the sense of a measurement error) of the quantified governance system itself: "All these adaptation strategies just described, in tacitly orientating research away from outcome and quality concerns, clearly have a detrimental effect on the efficiency and effectiveness in which scientific research is conducted and communicated — yet at the same time lead to an increase in those outputs that are intended to measure the actual performance of the national scientific system. The underlying problem is evident. If mechanically relying on output-based governance mechanisms, one runs the double risk of mistaking a proliferation of ultimately dysfunctional strategic adaptations for an increase in actual research performance, and of falsely regarding such proliferation as evidence that the use of such mechanisms has been effective."

³⁰This is generally an agenda imposed on the scientific community and not formulated by the scientific community itself. Whether democratic or authoritarian it is as externally imposed control mechanism on scientific praxis, to steer or curtail scientific freedom, both of teaching and of research. Also see Woelert (2015, p.3): "It has been widely noted that many governments have made increased efforts in recent decades to more directly intervene in the coordination and control of publicly-funded research activities [...], and to enact in this process a more direct, 'substantive' form of authority [...] over the setting of research objectives and priorities."

³¹As Ströker (2005, p.222) puts it: "modern belief in progress seems to be blind to its own aims rather than oriented towards a given or set ultimate purpose", i.e. we do not know what or why we want, but only that we want "more", and p.223: "Future, made predictable and planned by science, here primarily implies a progression in an open-endless scientific horizon.", an aimless *forward*, without a *toward*.

³²Hua XXIX p.345: "historical reflection by going back to investigate the constitution of meaning" ("*historische Besinnung, durch Rückfrage nach der Sinnbildung*"). Compare Hua V, p.139: "a radical reflection through the systematic development of the method of questioning back to the ultimate conceivable presuppositions for knowledge" ("*eine radikale Besinnung [...] durch die systematische Ausgestaltung der Methode der Rückfrage nach den letzten erdenklichen Erkenntnisvoraussetzungen*"). Also see Ströker 2005, p.225.

³³Cf. Hua VI, p.13 f. Compare Hua V, p.139: "Philosophy is, in my view, the universal and, in a radical sense, "strict" science. As such, it is science from ultimate justification, or equivalently, from ultimate self-responsibility" ("*Philosophie gilt mir, der Idee nach, als die universale und im radikalen Sinne "strenge" Wissenschaft. Als das ist sie Wissenschaft aus letzter Begründung, oder, was gleich gilt, aus letzter Selbstverantwortung*").

³⁴Hua XXVIII, p.229: “The pursuit of a rational life belongs to philosophy as the corresponding science of the ideas and ideals belonging to the idea of reason and of rational living existence.” (*“Dem Streben nach einem vernünftigen Leben ist Philosophie zugeordnet als die entsprechende Wissenschaft von den zur Idee der Vernunft und des vernünftigen Lebensdaseins gehörigen Ideen und Idealen.”*)