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Naturalism and transcendentalism in the naturalization of phenomenology

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Abstract

In this article, an account is given of the relation between naturalism and transcendentalism in the current project of naturalizing phenomenology. This project usually takes the transcendental point of view to be in conflict with the naturalizing attitude and the contemporary sciences of cognition thus seem to require cutting Husserlian phenomenology from its anti-naturalist roots, i.e., naturalizing it. Yet, in abandoning both the anti-naturalist *and* the transcendental attitude, the naturalizing project has dropped the epistemological concerns and has concentrated on naturalizing phenomenology's descriptive *results* concerning consciousness and subjective experience. This omission of Husserlian epistemology has a number of consequences for the naturalizing project itself. We want to examine these consequences, and, further, we want to see whether it is possible to combine a transcendental perspective with a naturalistic one. This amounts to asking whether it is possible to naturalize the transcendental–epistemological, and thus to give a naturalistic account, not only of subjective and conscious experience, but also of the epistemological part of Husserl's project.

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1. Naturalism and transcendentalism

This text aims to give an account of the relation between naturalism and transcendentalism in the current project of naturalizing phenomenology. Usually, this project takes the transcendental point of view to be in conflict with the naturalizing attitude. The general idea is that “Linking Husserlian descriptions of cognitive phenomena and the contemporary sciences of cognition thus seems to require cutting Husserlian phenomenology from its anti-naturalist roots, that is to say, naturalizing it” (Roy, Petitot,

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Pachoud, & Varela, 1999, p. 43). Husserl's anti-naturalist roots are usually identified with his transcendentalism, and it is true that both are closely linked. This link is an integral part of his epistemological project: to find an account of how human subjectivity and objectivity are related. Yet, the naturalizing project, in abandoning both the anti-naturalist *and* the transcendental attitude, has dropped the epistemological concerns and has concentrated on naturalizing phenomenology's descriptive *results* concerning consciousness and subjective experience.

This omission of Husserlian epistemology has a number of consequences for the naturalizing project itself. We want to examine these consequences, and, further, we want to see whether it is possible to combine a transcendental perspective with a naturalistic one. This amounts to asking whether it is possible to naturalize the transcendental–epistemological, and thus to give a naturalistic account, not only of subjective and conscious experience, but also of the epistemological part of Husserl's project.

Here is an outline of our argument. We start off with Husserl's view of the relation between psychology and transcendental philosophy, in order to provide the basic lines of discussion. Second, we concentrate on the methodological part of naturalizing phenomenology. This means that we examine the role of the transcendental reduction, and try to show what a method without the transcendental reduction amounts to in the naturalizing project. In particular, we focus on the relation between a naturalized phenomenology and introspectionism. Third, we ask what the rights of a transcendental philosophy may be nowadays, and whether its basic problem of “the constitution of the objective world” is still valid. Fourth, we present the basic ideas of Petitot, who takes a physicalist attitude without abandoning transcendental philosophy. In his work, the transcendental problem of constitution is partly solved in a dialogue with Husserl, and the function of a transcendental philosophy in relation to the naturalistic attitude is reconsidered. Naturalizing Husserlian phenomenology indeed requires us to cut his phenomenology off from its anti-naturalist roots. Yet, this should not mean that it is to be cut off from Husserl's epistemological and transcendental project. A naturalization of phenomenology should take Husserl's epistemological–transcendental project into account, instead of exclusively focussing on subjective experience.

2. Husserl: the fateful separation of phenomenology and psychology

“Natural human understanding and the objectivism rooted in it will view every transcendental philosophy as a flighty eccentricity, its wisdom as useless foolishness; or it will interpret it as psychology which seeks to convince itself that it is not psychology.” This is the view of Husserl (1970, p. 200), who considers the relation, or rather the separation, between transcendental philosophy and psychology as a fateful one.¹ Transcendental philosophy had arisen out of reflections on conscious subjectivity. It meant to investigate how the world, both the scientific and the everyday one, is *known*, i.e. how it achieves *ontic validity* for the conscious subject. In other words, transcendental philosophy had recognized that the development of a “purely mental approach” to the world was necessary.

¹We do not follow here Husserl's Prolegomena to pure logic (Husserl, 1900–1901) or his Philosophy as a rigorous science (Husserl, 1910–1911), which are less balanced and more combative.

But why then did the philosopher not turn to psychology? Why is there a separation between transcendental philosophy and psychology? Someone trained in Husserl's phenomenology will answer that the human-empirical subjectivity, i.e. the human as psychophysical being, is not a transcendental subjectivity—because the human being, both soul and body, *belongs to* the world which is constituted by transcendental subjectivity. It is true that for Husserl the distinction between empirical and transcendental subjectivity has always been “inevitable.” Still, although the difference is inevitable, the identity between them is for Husserl (1970, p. 202) equally incomprehensible. “I myself, as transcendental ego, ‘constitute’ the world, and at the same time, as soul, I am a human ego in the world”. Is this just an absurdity, or is it a paradox that can be solved via inner experience and its analysis?

According to Husserl, psychology cannot give us any benefit in solving this problem, because it follows the path of an objectivistic, universal science *more geometrico*. Psychology has modeled itself in accordance to the natural sciences, but because of the failure of this undertaking, it gave birth to a psychophysical dualism. If psychology had recognized its proper task, then it would have automatically become phenomenology. Psychology would have recognized the transcendental problem, or the “enigma of all enigmas.” “The enigma is precisely the taken-for-grantedness in virtue of which the ‘world’ constantly and pre-scientifically exists for us, ‘world’ being a title for an infinity of what is taken for granted, what is indispensable for all objective sciences” (Husserl, 1970, p. 204). The enigma is about the possibility of the world of experience; psychology hasn't been able to solve this enigma precisely because it *assumes* and *presupposes* the world of experience, an attitude common to everyday life and science. In order to give up this attitude, and thus to enter the transcendental field in which the conditions of possibility of the experience of the world are examined, we need the *transcendental reduction*. With the transcendental reduction, the transition from psychology to transcendental philosophy is accomplished.

On the other hand, a transition in the reverse direction is also possible, i.e. from transcendental philosophy to psychology. This transition takes along the *results* obtained from the transcendental reduction, but abandons the transcendental *attitude*. “By anticipation, one can say: If I myself effect the transcendental attitude as a way of lifting myself above all world-apperceptions and my human self-apperception [i.e. the empirical world of the sciences, in which subjectivity is conceived as psychophysical], purely for the purpose of studying the transcendental accomplishment in and through which I ‘have’ the world, then I must also find this accomplishment again, later, in a psychological internal analysis—though in this case it would have passed again into an apperception,² i.e., it would be apperceived as something belonging to the real soul [*als Realseeisches*] as related in reality to the real living body” (Husserl, 1970, p. 206).

But why is it then, that the “warriors against psychologism” do not want to be involved any more with psychology, not even psychology that is based on inner experience? According to Husserl, the true reason lies in the fact that psychology has not understood its proper task. First, the transcendental reduction is mainly a method by which the naïveté of the usual, natural and scientific attitude is broken through. Psychology has so far remained stuck in naïveté and has failed to recognize the “enigma of all enigmas.” Second, and related to the first, psychology has been working with a Cartesian heritage. On the one hand, psychology has seen it as its task to be a science parallel to physics, and therefore it

²An apperception is a particular *interpretation*.

adopted the *method* of physics. On the other hand, psychology has conceived of the soul as something real, similar to the corporeal nature, the *object* of the natural sciences. Although such a psychology has brought to light many remarkable facts about the life of the human soul, it has not taught us anything about the proper essence of the mind.

But what about the psychology that uses inner experience or empathy as its method? This form of psychology did not harmonize with the physicalistic current in psychology, because the latter had arrived at a parallelism of methods (the *mos geometricus*): both the domain of the body and the soul had to be investigated in terms of causal laws, and body and soul were merely connected to each other in the same sense as two pieces of a body. Yet for Husserl, this is too remote from our life-world experience. Therefore, we have to go back to pure experience. Then it turns out that “For the ego, space and time are not principles of individuation; it knows no natural causality, the latter being, in accord with its meaning, inseparable from spatiotemporality” (Husserl, 1970, p. 218). Introspectionist psychology³ lacked a proper method in order to become a science, or rather, it inevitably failed to use the scientific method prescribed by the ideal of physics.

Husserl resists a characterization of the psychic in terms used for the characterization of physical objects, and considers a study of the psychic by the methods of natural science as improper. In other words, the naturalization of the psychic is an invalid project, i.e. it does not capture the essence of its object of investigation. The way the psychic is characterized stands in opposition to the way corporeal objects are characterized. “In any case, we can already say in advance, on the basis of insight, that the psychic, considered purely in terms of its own essence, has no [physical] nature, has no conceivable in-itself in the natural sense, no spatiotemporal causal, no idealisable and mathematisable in-itself, no laws after the fashion of natural laws; here there are no theories with the same relatedness back to the intuitive life-world, no observations or experiments with a function for theorising similar to natural science—in spite of all the self-misunderstandings of empirical experimental psychology. But because the fundamental insight has been lacking, the historical inheritance of dualism, with its naturalisation of the psychic, retains its force [...]” (Husserl, 1970, p. 222).

Thus far Husserl’s diagnosis of the “fateful” separation of transcendental philosophy and psychology. The main tenets can be summarized as follows. First, the investigation does not merely concern conscious subjectivity, but the question how the world achieves *ontic validity*, i.e. how there can be an objective world for a subjective consciousness. Psychology should have investigated this possibility of the experience of the world. Second, and related to that, psychology modeled on the ideal of physics and natural science in general does not recognize the proper essence of the psychic, i.e. that consciousness constitutes the world. Third, the paradox of the constitution of the world by the ego while the ego belongs at the same time to that world, is constitutive for the phenomenological project. Fourth, to solve the paradox and to do justice to the proper essence of consciousness, we need the transcendental reduction. The transcendental reduction would have led psychology automatically into transcendental phenomenology. Fifth, psychology can make use of the *results* of phenomenology, but is not itself transcendental phenomenology unless it uses the transcendental reduction. Sixth, in light of the conception of psychology as a science parallel to physics, introspection is rejected.

³Husserl probably has Wundt in mind, whose name is mentioned once in the whole *Crisis*. Külpe and the Würzburg School are not mentioned at all.

The main question today about naturalizing phenomenology is “to what extent it is possible to do phenomenology outside of the transcendental stance...” (Depraz & Gallagher, 2002a, p. 2). This question is plainly provocative if one thinks of Husserl’s (1973/1999, p. 26) radical refusal to take any of the positive sciences as a foundation for his project. He labels such an attempt “to ground epistemology on psychology, or any positive science [as] nonsense, not only at the start but at any point along the way”.

It is generally agreed that phenomenologists are responsible for the opposition between naturalism and transcendentalism. Yet there is an equally strong tendency on the naturalistic side to preclude the transcendental from psychology. It is this move in particular and its consequences that we want to examine. Given this situation and the recent project of a naturalization of phenomenology, one should ask the following questions. First, is it necessary to oppose naturalism and transcendentalism? A weaker version of this question is whether or not the questions revealed by the transcendental reduction are relevant for the naturalizing project. Second, what are the consequences of abandoning the transcendental reduction for the naturalizing project? Is the plain omission of the transcendental something unproblematic for the project of naturalizing phenomenology?

3. Phenomenology as the study of subjective experience

3.1. *Phenomenology as a description of first-person experience and as an epistemological project*

Braddock (2001) claims that phenomenology should not be defined by its *method*, the transcendental or phenomenological reduction, but by its *research object*, first-person experience. This way of approaching phenomenology would make it much easier to integrate with the cognitive sciences.

Most often, phenomenology is considered to mean naïve and common sense first-person reports of conscious experience. From this perspective phenomenology is simple and easy. However, common sense reports are considered unsatisfactory to map the complex domain of human subjectivity, which requires more sophisticated research methods. According to Varela (1996), to escape from the naïveté of common sense reports, we need a more rigorous *method*. Varela wants to develop a naturalistic version of the phenomenological reduction (see below). This, however, is precisely what Braddock resists. In his view, “it is a mistake to think that, since phenomenology investigates first-person subjectivity, its methods are of necessity first-person methods and its evidence is of necessity subjective *self-evidence*. In short, Varela moves illicitly from *what* phenomenology is about to *how* it must proceed” (Braddock, 2001, p. 5).

Instead, Braddock pleads for an “indirect phenomenology,” of which phenomenological pathology is a prime example. Phenomenological pathology interprets the experience and behaviour of patients with dysfunctions in consciousness in order to make the structure of normal human experience more explicit. In this context, Braddock refers to the phenomenology of Merleau-Ponty and says “But what strikes me about Merleau-Ponty’s description of ‘our task’ is that there is no suggestion of limiting the process of phenomenological bracketing to personal reflection. What is required of bracketing is only that ‘it slackens the intentional threads which attach us to the world and thus brings them

to our notice' (Merleau-Ponty, 1962, p. xiii [sic—this probably should be p. xv])” (Braddock, 2001, p. 8).

The difference in method, however, between Husserl and Merleau-Ponty is not in the first place a difference between a direct and an indirect phenomenology. It is grounded in the *feasibility* of the transcendental reduction—an issue that Braddock does not address. Merleau-Ponty’s rejection of the reduction is only understandable *against the background* of Husserl’s reduction. On the same page in *Phenomenology of perception*, we learn that “The most important lesson which the reduction teaches us is the impossibility of a complete reduction” (Merleau-Ponty, 2002, p. xv). The lesson that the failure of the reduction teaches us is that we are not an absolute mind, but that we are in the world. This means that the phenomenological study of human subjectivity is obliged to include our embodiment and our “being-in-the-world.” The world and the human being’s body cannot be reduced to a pure phenomenon for consciousness; the threads can only be “slackened,” not reduced. Body and life-world resist the radicalism of the reduction. Braddock’s article presents a strange move, which we will encounter time and again: “...what starts out as phenomenology as defined in the Husserlian tradition, ends up as more or less the kind of informal phenomenology that is currently practiced in the cognitive sciences...” (Gallagher, 2002a, p. 4).⁴

Braddock, however, must have a reason for cutting the issue of the reduction down to direct versus indirect phenomenology. We find his reason in the following: “We have dropped the aspiration for a phenomenology as first philosophy, after all, and we might as well take full advantage of the freedom to gain access to subjectivity in any way possible” (Braddock, 2001, p. 10). In other words, in order to make use of phenomenology today, we should separate phenomenology from its *epistemological* project.

Husserl’s basic, epistemological question is the relation between consciousness and world. If we abandon this epistemological motivation, what is left over is a description of consciousness and subjective experience. Husserl’s phenomenology, however, is in the first place an epistemological project, for which the methods of reduction are essential. What Braddock proposes, therefore, is not a mere change of method, but a redefinition of the phenomenological project from first philosophy to a description of consciousness and subjective experience.

We do not reject the goal of describing conscious, subjective experience, but we want to point out that change of method is not just a change in the way of access to subjectivity. If someone implicitly or explicitly separates phenomenology from its epistemological project, he or she should also indicate the consequences—the Husserlian project is being redefined—and the reasons for dropping phenomenology as first philosophy. We do not think this requirement is excessive in the context of the project of naturalizing phenomenology. Descriptions of human subjectivity and consciousness may well be integrated into the cognitive sciences, but doing so does not entail that Husserlian phenomenology itself has been naturalized. Actually naturalizing phenomenology would imply naturalizing the epistemological part as well.

This does not mean that Braddock is wrong when he says that we do not have to limit ourselves to self-evidence via first-person reflection in order to obtain knowledge about

⁴Gallagher also turns to a version of phenomenology inspired by Merleau-Ponty, but he differs from Braddock in the way the phenomenological data are used. For Gallagher they are a framework for setting up experiments, not just data to be analyzed (see also below).

consciousness. But we do not agree with his claim that “one is likely to overstate the reforms⁵ that will be necessary before phenomenology can take its rightful place as a serious contender in the investigation of the mind” (Braddock, 2001, p. 14). The reforms have been made already, by separating subjectivity and reflection in the domain of phenomenology from epistemology. By failing to make this point, Braddock waters down the phenomenological project. Consequently, “it turns out that naturalized phenomenology is not so wildly different from other approaches” (p. 15) and that “a good deal of work currently being done in cognitive science is straightforwardly phenomenological in nature.” (p. 16).⁶

3.2. Varela and Gallagher: phenomenological reduction and introspectionism

Varela (1996) explicitly binds method and subject matter; he situates himself in the domain of theories which give an explicit and central role to first-person accounts and to the irreducible nature of experience, without at the same time assuming a kind of dualism. His main concern is “the nature of the circulation between a first person and an external account of human experience, which describes phenomenological position in fertile dialogue with cognitive science” (p. 333). Varela proposes a “working hypothesis” to promote circulation between external and phenomenological analysis, which produces reciprocal constraints between the two fields. A basic misunderstanding that stands in the way is interpreting phenomenology as a form of introspectionism, which it is “most definitely not,” according to Varela (1996, p. 334). Varela points to the irreducibility of consciousness, illustrating his claim with Searle’s remark: “There is, in short, no way for us to picture subjectivity as part of our world view because, so to speak, the subjectivity in question is the picturing” (1992, p. 95, quoted in Varela, 1996, p. 334). Moreover, Varela rightly calls this an *epistemological* issue.

Our question is whether Varela, with his stress on the phenomenological reduction, is restoring phenomenology’s epistemological concerns. Our reason for this question is the following. Husserl gradually discovered that the only means to answer his epistemological questions about the relation between subjectivity and objectivity resided in developing a rigorous philosophical method (consisting of various reductions) that led him away from any form of naturalism and laid bare the field of transcendental subjectivity. In the resultant transcendental attitude the a priori conditions of any possible experience (the picturing, as Searle calls it) could be discovered. What is special about the phenomenological reductions is gaining another point of view on consciousness and its relation to the world. The world is reduced to a phenomenon and the question at stake is how pure consciousness constitutes the objective world.

⁵Braddock refers here to Varela’s requirement that someone doing cognitive science should have a certain degree of mastery in the phenomenological reduction.

⁶Braddock’s proposal for an indirect phenomenology is susceptible to Gallagher’s (1997) critique of heterophenomenology. In order to interpret someone else’s phenomenology, one relies on his or her own phenomenology. In other words, phenomenological experience is required to justify the “scientific” interpretation of heterophenomenological or indirect approaches. “Heterophenomenological interpretation is not only, by design, quite removed from the original experience to be interpreted, but may in fact impose the results of a previous and now anonymous phenomenological exercise” (Gallagher, 1997, p. 199; see also Gallagher, 2002b). See further below.

For Varela, the point of the phenomenological reduction “is to turn the direction of the movement of thinking from its habitual content-oriented direction backwards toward the arising of thought themselves. This is no more than the very human capacity for *reflexivity*, and the life-blood of reduction” (Varela, 1996, p. 337). Yet he does not mention that the *object* of consciousness and its constitution (the content-oriented direction) are for Husserl just as much a theme of investigation. On the other hand, he explicitly says that “This [the phenomenological reduction] does not require us to consider a different world but rather to consider this present one *otherwise*” (1996, p. 336). In this consideration of the world, there seems to be no restriction to reflecting on the way that thoughts arise. Does the phenomenological reduction then still mean a form of *reflexivity*, or does it mean more than that?

We know that for Husserl the reductions lead to a change in the epistemological status of both consciousness (which is no longer considered as a part of the subject as a natural human being) and its object (which is no longer an empirical fact, but constituted by transcendental consciousness). We also know that Husserl’s aim was to explain the fundamental correlation between consciousness and its object, and for doing that the epistemological shift is indispensable. Yet, within a naturalistic attitude, the fundamental correlation between consciousness and its object can never be clarified, because it is always *assumed*.

Accordingly, Varela emphasizes that phenomenology differs from introspectionism because of the reduction, and that introspectionism still falls into the natural attitude. The very reason to mobilize the phenomenological reduction is to seek “the opposite effect of an uncritical introspection” (Varela, 1996, p. 338).

But must introspection by necessity be uncritical? Is the aim of the reduction to enhance the introspectionist method? There are other ways to remedy the defects of introspection (see below), and we doubt that Varela’s naturalistic version of the reduction can keep itself distinct from introspection.

Varela sees the difference between reduction and introspection as follows: “Thus PhR [the phenomenological reduction] is not a ‘seeing inside’, but a tolerance concerning the suspension of conclusions that allows a new aspect or insight into the phenomenon to unfold. In consequence this move does not sustain the basic subject–object duality but opens into a field of phenomena where it becomes less and less obvious how to distinguish between subject and object (this is what Husserl called the ‘fundamental correlation’)” (1996, p. 339).

By contrast, for Husserl the reduction is not just a way to operate without presuppositions. It opens up a *transcendental* domain, in which it becomes clear that the fundamental correlation between subject and object is one of *constitution*, constitution being the pre-eminent transcendental theme.

Varela is not willing to take this step towards the transcendental domain and the issue of constitution. Instead, he interprets the fundamental correlation as a fading of the subject–object distinction. He does use the term “transcendental,” but too vaguely to get us anywhere: “PhR takes us quickly into the evidence that consciousness is inseparably linked to what goes beyond itself (it is ‘transcendental’ in the Husserlian language)” (1996, p. 339). Without moving into the transcendental domain, we have no means to demarcate between introspectionism and phenomenology. Although Varela says that phenomenology is not a “seeing inside,” what it actually is remains limited to working without presuppositions. Varela does not turn to the (transcendental) problem of constitution,

and that is the reason for his vague interpretation of the fundamental correlation and the notion of “transcendental.” It was not until Husserl took the transcendental turn that he could make a satisfactory distinction between psychology (including introspectionism) and phenomenology.

The only solution left for Varela is to argue that the reduction gives us a “critical” method for reflection. Moreover, it remains unclear *why*, in Varela’s proposal, the phenomenological reduction should be *naturalized* in order to be in dialogue with the cognitive sciences.

Gallagher also interrogates the relation between phenomenology and cognitive science and the possible contribution of phenomenology to a science of consciousness. He supports Marbach’s claim that “cognitive science needs to take its presuppositions from something more sophisticated than folk psychology” (Gallagher, 1997, p. 196) if it wants to be consistent with introspective reports. Yet it should be remarked that it will not be so simple to supply the cognitive sciences with another source of presuppositions, in this case a phenomenological one. One should not forget that the cognitive sciences themselves are a *model* and as such drag along a complete metaphysics. This implies that the cognitive sciences do *not* suffer from a gap which needs to be filled in by phenomenological insights. Folk psychology is more than able to supply the cognitive sciences with a firm background. To change the source of presuppositions is therefore to alter the cognitive sciences themselves.⁷

In any event, Gallagher’s proposal may not really be aiming to replace the source of presuppositions of the cognitive sciences. He rather agrees with Varela that the task is “to sort out correlations and contradictions between phenomenological and *neuroscientific* accounts in such a way that these accounts mutually constrain, enlighten, and enrich each other” (Gallagher, 1997, p. 206, italics added). In his proposal, phenomenology can exert this weak constraint over the cognitive sciences,⁸ for example in suggesting connections between dynamical process levels that are not expected from the results of empirical studies alone.

We do not deny that phenomenology may fulfill this task. The research done by people like Gallagher and Varela is clearly inspired by the descriptive results of phenomenology (specifically the work of Husserl and Merleau-Ponty), and it yields admirable results. Yet this is not our point. The point is that Gallagher seems to have trouble defending his version of phenomenology against the objection of “reflection’s susceptibility to error and the proclivity to slide from description to theory” (Gallagher, 1997, p. 206). According to Gallagher, Husserl himself has made this mistake in his analysis of time-consciousness, because “there seems to be no *phenomenological* evidence that retentional–protentional processes actually exist in consciousness” (p. 207).

⁷Neurology is also not free from metaphysics, but it is easier to link with phenomenology than the cognitive sciences are. I owe these remarks to A. Mishara (personal communication). As Dupuy (1999) explains, “What gives coherence to the many different research programs that go under the name of ‘cognitive science’ today is the philosophical work being done in connection with them. Without ‘cognitive’ philosophy there would be work in psychology, in linguistics, in neurobiology, in artificial intelligence—but no science of cognition” (p. 539). The expression “folk psychology” too often suggests that there is no underlying view at all.

⁸A strong constraint would imply settling isomorphic correspondences between the personal phenomenological account and the causal mechanisms on subpersonal levels. Such isomorphic correspondences are often unwarrantedly seen as an *explanation*.

In order to say what is inaccurate in Gallagher's remark, we need the following passage: "The phenomenologist may rightly claim that some such structure [the retentive–protentive] must exist or else it would be impossible for us to experience temporal objects; but this is theory rather than phenomenological intuition. Even if the theory is right and there are retentive functions, are they not more likely to be subpersonal operations? William James (1890), for example, describes very similar structures but theorizes that they are neuronal functions—and thus unavailable to phenomenological reflection" (p. 207).

In this passage, a lot is said implicitly. First, Gallagher seems to cut phenomenology back to a description (via phenomenological intuition or reflection) of conscious experience. Second, and related to that, he restricts Husserl to descriptions concerning such experience, and rejects his conclusions concerning the a priori structures of consciousness. But the proviso "or else it would be impossible for us to experience temporal objects" rightly states a part of phenomenology's proper project: an investigation of the necessary or a priori conditions of any possible experience. Gallagher does not want to take the a priori (and eventually transcendental) conditions into account. But in turning his back on this domain of phenomenology, he faces toward introspectionism again. Indeed, Gallagher refers to William James, who it is well known opposed any sort of transcendentalism (for more details, see [Villela-Petit, 1999](#)).

We have commented on the respective passages from Braddock, Varela and Gallagher because they serve as an example for the way in which the epistemological part is cut from Husserlian phenomenology. Although phenomenology is defended in these projects, it is only a partial naturalization of the phenomenological project because the epistemological questions are not explicitly dealt with. At most, it is an attempt to bring the descriptive *results* of phenomenology concerning subjective experience in line with the cognitive sciences. This is in line with the possibility of using phenomenological results in psychology, as Husserl explained in his *Crisis* (see above). Rarely does anyone claim to do more than that, but to present it as a naturalization of phenomenology either gives rise to unwarranted criticism (e.g. Gallagher's criticism of Husserl's analysis of time-consciousness) or a misunderstanding of what Husserlian phenomenology really amounts to (e.g. Varela's use of the phenomenological reduction).

To put it bluntly, there is no Husserlian phenomenology without the transcendental-epistemological project (see the second part and also the next part), and to reduce phenomenology to a description of conscious and subjective experience is a misunderstanding or at least a limitation; it should not be labelled as a naturalization of Husserlian phenomenology. Yet, this is not the end of the discussion.

Overall, there seem to be three options for naturalizing Husserlian phenomenology.

First, enhance introspectionism and make it more reliable. In practice, the versions of naturalized phenomenology that we discussed above are not different in principle from introspectionism—or, in the case of heterophenomenology, they implicitly presuppose a kind of introspection.

Second, take the epistemological phenomenological project seriously and try to naturalize it. This would amount to naturalizing the transcendental and cannot be equated with naturalizing subjective experience.

Third, shift to a non-Husserlian kind of phenomenology. This third road is often chosen. Like the first option, this implies a limitation of Husserlian phenomenology to its descriptions of subjective experience and consciousness.

Following the third option, Braddock turns to a phenomenology in the spirit of Merleau-Ponty and, in the end, Gallagher also pleads for a kind of “existential cognition” (McClamrock, 1995), which is more inspired by Merleau-Ponty than by Husserl. “The right view of the reduction is not, as in Husserl, to bracket off the world in order to discover the pure, worldless structures of consciousness, but rather, as in Merleau-Ponty, to use the distance supplied by the reduction as a heuristic device to reveal the genuine play of the world, the often unconscious background of the world implicit in cognitive processes” (Gallagher, 1997, p. 212). The move to Merleau-Ponty is easily done, precisely because the difference between Husserl and Merleau-Ponty is effaced from the beginning: Husserl’s transcendental domain is not taken into account.

The first option is also explicitly present. Gallagher (1997, 2002a, b) explains that experiments using introspection are subject to the following difficulties. The categories used by the subjects to sort their introspective experience are either devised by the experimenting scientist who draws the categories from his own phenomenology, or they come from a more anonymous phenomenology devised by other scientists in other experiments.⁹ A possible solution is to minimize dependency on pre-established categories, instructing subjects “to set aside standard (folk psychological) conceptions and theories, instructing them to focus on the first-order experience itself, and asking “open” questions...”¹⁰ (Gallagher, 2002b, p. 374). A second rule for obtaining scientific introspective techniques is to “triangulate,” i.e. interpret introspective results in combination with results from other kinds of experiments and observations. Gallagher (2002a) calls this “enhanced heterophenomenology,” a heterophenomenology in which the source of the phenomenological categories is controlled. He clearly considers phenomenology as a method for making introspection more rigorously methodological; Gallagher (1999) explicitly presents the phenomenological reduction as a way of obtaining more reliable introspection.

Although there is no difference here anymore between phenomenology and an enhanced form of introspection, Gallagher (2000) defends the phenomenological method against the view that it is just a form—or the worst form—of introspection. According to Gallagher, “The constructive contribution of phenomenology involves more than simply identifying correlations between experience and neuronal processes, since, in fact, correlations can only move us close to the precipice of the explanatory gap” (2000, p. 1). In contrast, we should start where experience is already naturalized, and Gallagher suggests starting with embodied experience (i.e. both the experience of the body and the way the body experiences). His method is not just introspection, but an appeal to empirical confirmations and clarifications that confirm phenomenological insights, which are in turn used to interpret the empirical data (a hermeneutical, but not a vicious circle).

Gallagher provides us with a very nice analysis of the distinction between body image and body schema,¹¹ which can be found on both the empirical and the phenomenological level. He shows that body image and body schema can be interpreted naturalistically, and

⁹This is why “indirect phenomenology,” including Braddock’s conception, does not work. See Gallagher (2002a).

¹⁰Gallagher (2002a) compares this method of asking open questions to Varela’s method of reduction.

¹¹The *body image* is a conscious or almost conscious representation or image of the body, which mostly concerns parts of the body and not the body as a whole, and which separates the body from its environment. The *body schema* is not conscious and backs up our locomotion and a considerable part of our conscious activities, it is not personal, it functions rather globally and the interaction with the environment is very often central.

that the body schema, as a necessary condition of experience, can be empirically demonstrated. This strategy is in fact a combination of the first and the third option: phenomenology is defended against the charge of introspectionism by turning to a non-Husserlian form of phenomenology, specifically a phenomenology of the body and bodily perception inspired by Merleau-Ponty.

The difference with the first option, the one that may be called “enhanced heterophenomenology” is that the experiments are designed in the light of phenomenological insights. “The idea would be to front-load phenomenological insights into the design of experiments, that is, to allow the insights developed in phenomenological analysis (modelled on Husserlian or more empirically oriented phenomenological analysis, e.g., Merleau-Ponty) to inform the way the experiments are set up.” (Gallagher, 2002a, p. 6). This is called “front-loaded phenomenology” or phenomenologically enlightened experimental science. The strength of this approach is that phenomenological insights are here not merely part of the data to be analyzed, but part of the framework for interpreting results. However, one should not be misled by the fact that Husserlian phenomenology is not excluded; Husserlian descriptive *results* can be used, but the Husserlian method and concern still are left behind.

Gallagher and Varela themselves offer a diagnosis for this shift from Husserlian phenomenology to Merleau-Pontian phenomenology: “There are many thinkers well versed in the Husserlian tradition who are not willing to consider the validity of a naturalistic science of mind... On the one hand, such negative attitudes are understandable from the perspective of the Husserlian rejection of naturalism, or from strong emphasis on the transcendental current in phenomenology. On the other hand, it is possible to challenge these attitudes from perspectives similar to the one taken by Merleau-Ponty (1962, 1964), who integrated phenomenological analyses with considerations drawn from the empirical sciences of psychology and neurology long before cognitive science was defined as such” (Gallagher & Varela, 2001, pp. 17–18).

We do not think this diagnosis is entirely correct. As we explained, the above presented versions of naturalized phenomenology only aim at naturalizing *a limited part* of (Husserlian) phenomenology, viz. the descriptions of subjective conscious experience, while leaving Husserl’s epistemological–transcendental project behind. This limitation to the descriptive part leads to unjust reproaches against Husserl (for instance, for “theorizing,” as we saw above) and a laboured use of the reductions, which were precisely designed by Husserl to lead into a transcendental phenomenology. It is not certain that Merleau-Ponty has “freed” himself entirely from the transcendental project (cf. his *The Structure of Behavior*, 1983 [1942]), but his phenomenology is much more manageable in the frame of the cognitive sciences. Yet, Gallagher and Varela are correct in saying that “Although Husserl defined phenomenology as a non-naturalistic discipline, the idea that the results of his transcendental science might inform the natural sciences is not inconsistent with his own intent” (Gallagher & Varela, 2001, p. 20). But we should also ask whether it is impossible to combine a transcendental and a naturalist approach, i.e. whether transcendentalism and naturalism must remain separate.¹² The advantage of

¹²Concerning this point, we think that Merleau-Ponty has given the initial impetus for reconciling transcendentalism and naturalism. Here, however, we will stick to the discussion about Husserlian phenomenology.

untying anti-naturalism and transcendentalism would be that Husserl's *whole* project, including the epistemology, would be open to naturalization.

4. The rights of a transcendental philosophy

4.1. *The transcendental reduction: intentionality, constitution and meaning*

[W]e need to clarify what Husserl means by the transcendental reduction (*epoché*), in order to better understand his position as well as the decisive nuance which makes phenomenology a phenomenological philosophy and not simply a descriptive psychology of intentional experience (Villega-Petit, 1999, p. 512).

Everyone knows that the pre-eminent subject matter of phenomenology is the theme of intentionality. Saying that it is about intentionality already implies more than saying it is about subjective and conscious experience. To explain this, we need again the equally important notions of constitution and meaning, in relation to the transcendental or phenomenological reduction.¹³ Intentionality is in the first place an active operation (a *Leistung*), viz. the operation of constitution. This means that consciousness is not a passively receiving instance; the object of consciousness is not merely passively given to consciousness, but is the result of intentional activity by consciousness. One should not be mistaken about this: the intentional correlates of consciousness are not the empirical-real objects, but *meanings*.¹⁴

The function of the transcendental reduction precisely consists in uncovering this process of meaning-constitution. As Botero (1999, p. 455) says, “Transcendental reflection ‘frees’ empirical consciousness from its dogmatic, naturalistic involvement and thus makes it fully aware of its meaning-constituting functions”. All meanings have their genesis in transcendental subjectivity, which is a name for the a priori conditions of possibility of any possible experience. Naturalizing phenomenology then, would mean naturalizing these very a priori conditions of experience itself and, by consequence, naturalizing the processes constitutive of meaning.

The link between the conditions of possibility and constitution is very tight in Husserl's philosophy. “To uphold the rights of a transcendental phenomenology consists in bringing to light the very *constitution* of the experience of an object for a consciousness by showing how the object is, in this way, given intuitively to the consciousness. Unlike constitution, condition of possibility maintains the dualism between the phenomenal and that which conditions it. Constitution, on the other hand, rejects just such a duality by engaging phenomenality on the level of its original constitution” (Depraz, 1999, p. 465). This also explains why Husserl's phenomenology is inevitably transcendental. The transcendental

¹³We will not enter here into the discussion about the several kinds of reduction. For the sake of simplicity, we distinguish two reductions. First, the phenomenological–transcendental reduction, which brackets all claims about the existence of empirical subjects and objects and reduces them to mere phenomena (this is not the same as denying their existence!). Second, the eidetic reduction, which searches for the invariances or essences or necessary conditions of (the constitution of) those phenomena. Until now, we have only mentioned the transcendental or phenomenological reduction.

¹⁴Analytic philosophy has put meaning on the same footing as the intentionality and the sense of linguistic sentences. The phenomenological conception of meaning is much broader and does not share these characteristics with semantic meaning. For Husserl, the semantic meaning of sentences is rather *derived from* this broader notion. For an analysis, see Salanskis (1999) and Roy (1999).

should be understood as the a priori *that pertains to constitution*. Constitution, in turn, should be understood as *Simmgebung* (meaning-bestowal): the way consciousness establishes the object *as* a unity of meaning.

An introspectionist method is very unlikely to reveal this, precisely because it doesn't use the transcendental reduction. Without the transcendental reduction, the objects appear as *given*, as *already there* for consciousness, a view characteristic for the natural attitude. Phenomenology does not deny this finding, but brings to light that, at the same time, consciousness is the source of this givenness of the object. Within a non-transcendental attitude, one has no way to indicate this paradox, let alone offer a solution to it. Phenomenology as self-reflection should thus not be understood as an introspectionist reflection, but as a reflection that uncovers the essential structures of a transcendental consciousness, i.e. the a priori conditions of the constitutive nature of consciousness. With regard to the project of naturalizing phenomenology, "It is in the name of this sense accomplishment that Husserl is a transcendentalist, and, by the same token, hostile to any naturalistic conception. It seems then clear that if something must in all urgency be studied with the ends of the present debate in view, it is the Husserlian notion of sense accomplishment" (Salanskis, 1999, p. 496).

The transcendental domain is *not* a region (in the Husserlian sense) of the world. After the transcendental reduction we do *not* obtain a viewpoint on a particular part of the world, as we do in the case of psychological reflection which gives us access to the domain of subjective experience. We do gain a radically *different* point of view on the whole world, which appears in a particular relation to transcendental subjectivity. In the following passage, Husserl shows the necessity of the transcendental reduction in order to obtain the transcendental point of view, in which we see that the world is an intentionally constituted correlate of transcendental consciousness. "And yet it will be revealed that the region of the absolute or transcendental subjectivity "contains in it" [*in sich trägt*"] in a special, very particular way the real universe, respectively all possible real worlds and all worlds in any broader sense, viz. "contains them in it itself" through real and possible 'intentional constitution'."¹⁵

In short, the transcendental reduction should enable us to discover the relation between the subjective and the objective, or how the objective and the experience of it are constituted by the subjective. The main finding of the transcendental reduction is that the objective world cannot be assumed, but that we have to examine its "being given" in the first place. That the objective world is constituted in a process of meaning-accomplishment, is not and cannot be a result of psychological reflection.

Emphasizing the importance of this transcendental current in Husserl's phenomenology does not necessarily entail, as Gallagher and Varela claim, a rejection of the validity of a naturalistic science of mind (see above). On the other hand, they are correct in saying that there is a very strong connection between his anti-naturalism and his transcendental attitude. One possibility is to include his transcendental and epistemological project in the naturalizing project. This means that the key concept of constitution should be re-examined in a naturalistic frame. Combining the transcendental and the naturalistic

¹⁵Husserl (1950, p. 73), my translation of a passage not included in Kersten's translation: "Und doch wird sich zeigen, daß die Region der absoluten oder transzendentalen Subjektivität in einer besonderen, ganz eigenartigen Weise das reale Weltall, bzw. alle möglichen realen Welten und alle Welten jedes erweiterten Sinnes "in sich trägt", nämlich in sich durch wirkliche und mögliche "intentionale Konstitution"."

(rather than the subjective and the naturalistic) burdens us with a different task, but one that is more directly tied to Husserl's project. The project of naturalizing subjective experience is not abandoned with this move, but is approached from a different and more encompassing point of view.

4.2. Husserl and naturalization: the problem of constitution

In Petitot (1996a, b), it is particularly clear that the transcendental has to do with the constitutive. Petitot refers to Kant, who, in examining the problem of constitution, discovered that there are *prescriptive principles*, and not just *descriptive* ones, for physical reality. For Kant, this led to a transcendental *subjectivism* and a form of idealism (moderate idealism, because of the thing-in-itself). In Kant, the constitutive remained founded in a *cognitive basis* (such as a representationalist theory, the theory of mental faculties, etc.). Yet, the prescriptive may be “desubjectivized,” so that the subjective idealism is given up (cf. *infra*).¹⁶

Petitot distinguishes three kinds of reality. First, ontology, i.e. the view that a substantial and independent reality exists. Second, the strong objectivity of physics from Newton to Einstein; i.e., the view that there exists an independent reality in the sense that measurements do not interfere with the phenomena. Yet this reality is not independent from the spatio-temporal formation of the phenomena; in this view, being is veiled by the phenomenon. Third, the weak objectivism of quantum mechanics, in which measurements do interfere with the phenomena.

If there are forms of phenomenal givenness that play a constitutive role for objectivity, than we encounter the problematic question: how can we reach objectivity? According to Petitot, “To answer this question, physicists have spontaneously rediscovered the transcendental thesis: *there exists a legality proper to the observable phenomena as such*. It is not a matter of searching for an objective explanation of the phenomena, starting from an underlying reality that is ontologically inaccessible. Objectivity has to be defined as an order of legality. Prescriptively defined in this way as legality, objectivity is distinguished from any ontology.”¹⁷

There is a difference between phenomena and experienced objects. Experienced objects exist only as qualified in accordance with *norms* and *rules*.¹⁸ This means that the phenomena are usable in an experiment or a theory only *if* they are qualified as objects beforehand. And this is not a matter of *description*, but of *prescription*. The object is a normative concept, and is required as a condition of possibility for any scientific activity. These conditions of possibility are precisely the constituted nature of objects. For Petitot, it is the error of ontological realism to confuse the prescriptive dimension with an underlying ontology.

¹⁶Petitot compares this to the situation in quantum mechanics, in which the phenomena exist only when measured by an apparatus. This, however, does not lead to a situation in which physical reality is reduced to a “solipsism” (subjective idealism) of the apparatus.

¹⁷My translation of Petitot (1996b, p. 206): “Pour y répondre, les physiciens ont retrouvé spontanément la thèse transcendantale: *il existe une légalité propre des phénomènes observables en tant que tels*. Il n'a pas à chercher une explication objective aux phénomènes à partir d'une inaccessible réalité ontologique sous-jacente. On doit définir l'objectivité comme un ordre de légalité. Ainsi prescriptivement définie comme légalité, l'objectivité se distingue de toute ontologie.”

¹⁸Petitot refers here to the eidetic-constitutive rules of Husserl. Regions of being (for example physical object, animate being, spiritual being) are defined by such eidetic-constitutive rules.

But how are phenomena “legalized”? The fundamental idea is the following: “It [the idea of legalization] consists essentially in *interpreting the categories of objectivity on the basis of instances of givenness of phenomena*, i.e. on the basis of their forms of manifestation. As this interpretation is operational only if it is *mathematical*, these forms have themselves to be mathematized. A *mathematical hermeneutics of the objectifying categories* thus operates... in each objectivity in the transcendental sense. This hermeneutics eliminates the *sense* of those objectifying categories (i.e. their metaphysical usage); it rests on the mathematization of instances of phenomenal givenness...”¹⁹

Particularly striking about this proposal is its twofold but apparently paradoxical function. First, it has to take into account that being is veiled by the phenomena. Second, the concept of phenomenon has to be desubjectivized. In these regards, it breaks away from both ontology (see above) and psychology.

By now, we know that the object has *objective sense* only if it is related to a constitutive strategy. This constitutive strategy, which should be mathematized in order to be operational, starts from the manifestations or the phenomena. The correlate of such constitutive acts of legalization is a normative conception of the object. To put it briefly: the object is the correlate of the conditions of possibility of experience, which pertain to the constitution of the object from the phenomena. This is a general outline of the epistemological task of a transcendental theory of the possibility of experience and objectivity. This task is in its generality not different from Husserl’s project. But the attitude toward the possibility of naturalization is not the same.

4.3. Husserl and naturalization: the problem of phenomenality

Is, from the point of view that we have been discussing, the naturalization of phenomenology an impossible project? According to Petitot (1995), none of Husserl’s objections against naturalization have retained their validity, and asserting that naturalization is impossible *in principle* is dogmatic in view of the essential unpredictability of scientific progress. Yet the naturalization of the mind, consciousness and intentionality is a long-term project. Petitot proposes a *physical* genesis and foundation of the phenomenon, a so-called *phenophysics* of the dynamics formative of the phenomena. Phenomenology has given eidetic descriptions via the methods of transcendental and eidetic reduction¹³. These descriptions should function as *constraints* for naturalistic explanatory theories. Actually, the phenomenological descriptions formulate a *research programme* for such theories. Petitot does not deny the importance of the reductions. But once the descriptions are obtained, he maintains that a reversal is perfectly legitimate. This does not contradict what Husserl claims (see above); a naturalization does not necessarily have to deny the meaning of the phenomenological project, nor the specificity of its methods. Yet, this reversal does not mean that Petitot turns to psychology in the first place.

¹⁹Petitot (1996b, p. 206): “Elle consiste essentiellement à *interpréter les catégories de l’objectivité à partir des instances de donation des phénomènes*, c.a.d. à partir des formes de la manifestation. Comme l’interprétation n’est opératoire que si elle est *mathématique*, il faut que ces formes soient elles-mêmes mathématisées. Dans toute objectivité au sens transcendantal... opère donc *une herméneutique mathématique des catégories objectivantes* qui élimine leur *sens* (leur usage métaphysique) et repose sur la mathématisation des instances de la donation phénoménale...”

Naturalizing the phenomena, or the process of phenomenalization, requires a natural science. The question is which type of physics or psychology we will need to understand phenomenal manifestation viewed as a *natural* process. To choose physical theory implies that the phenomenal manifestation has a certain *autonomy* in relation to consciousness. The physico-mathematical basis for such a research programme for natural morphologies (phenomena) was developed more than thirty years ago.²⁰ This basis can solve the problem Husserl saw for the possibility of a descriptive eidetics of experiences (*Erlebnisse*).

According to Husserl, a *mathematical* eidetics of experience is impossible. Phenomenology requires a different eidetic discipline. For Husserl, what we intuit in the stream of consciousness, for example the corporeal things, is “fluid” (*fließend*) and the description of it is of necessity vague. “The most perfect geometry and the most perfect practical mastery of it cannot enable the descriptive natural scientist to express (in exact geometrical concepts) what he expresses in such a simple, understandable, and completely appropriate manner by the words ‘notches’, ‘scalloped’, ‘lens-shaped’, ‘umbelliform’, and the like—all to them concepts which are *essentially, rather than accidentally, inexact* and *consequently* also non-mathematical.”²¹ The ideal essences of geometry are opposed to the *morphological* essences of the stream of consciousness and the phenomena therein. The morphological essences serve pure description, in opposition to the exactness of geometrical essences. Accordingly, phenomenology is a *descriptive* eidetic doctrine (*Wesenslehre*). “Transcendental phenomenology, as a descriptive science of essence, belongs however to a *fundamental class of eidetic sciences totally different* from the one to which the mathematical sciences belong” (Husserl, 1950/1998, pp. 169–170).

Petitot says that Husserl has very well demonstrated the way in which the geometrical and physical objectivation of the world has destroyed the vague morphological essences of the sensible manifestation, and how, in consequence, they have been made mere appearances which are to be studied by psychology. Or more accurately, the qualitative dimension of the world was considered relative to the subject and, at the same time, physics was taken to be able to explain the morphological appearances causally, via a psychology of sensation and perception (Petitot, 1994, p. 17, 1996a, p. 37).

But, in contrast to Husserl, Petitot claims that Husserl’s “vague morphological essences” are perfectly susceptible to a physicalistic treatment, as long as one takes the qualitative macrophysics of complex systems into account, not just their microphysics (Petitot, 1995, p. 641). In other words, the “appearances” are founded in an appearing of a morphological nature, which is itself objectively conditioned. The phenomena may not be separated from a so-called underlying objectivity; there is no separation between the manifestation and physical being. This is also what Husserl has been saying time and again: the phenomena are not mere appearances, and the physical thing is not alien to what appears to the senses. The above-mentioned theories²⁰ enable us to understand better the physical nature of the phenomenalization of the qualitative structures of the world. In consequence, the opposition between geometry and phenomenology, developed in *Ideas I* (Husserl, 1950/1998), is no longer valid.

²⁰Petitot (1995) refers to catastrophe theory, the bifurcation of attractors of non-linear dynamical systems, theories of symmetry breaking and critical phenomena, the theory of (self)-organization, non-linear thermodynamics, dissipative structures, etc. See also Petitot (1994).

²¹Husserl (1950/1998, p. 166). Compare to his *Crisis* (Husserl, 1936/1970; see above), in which he maintains that psychology cannot follow the method of the natural sciences.

According to Petitot, we must first develop a geometrical account of *perceptual intentionality*—a mathematical schematization (via a morphological geometry) of the eidetic descriptions of the phenomena of perception. The important point here is that such physico-mathematical models of the perceptual phenomenon actually are “*genetic naturalistic models of the synthetic a priori of the noema of perception as constituted*. By consequence, they are *constitutive* and can be interpreted as a *naturalization of the human consciousness*.”²²

4.4. Husserl and naturalization: the problem of meaning and the cognitive sciences

Once a naturalistic theory of the manifestation or the form is obtained, there is a road toward naturalizing *meaning*. According to Petitot (1995), “before being a signification in the semantic sense, meaning is a layer of being which is built upon the layer of being of the form. Semiotic ideality is built upon morphological ideality.”²³ Already on the level of natural forms, meaning is present: forms and Gestalts are intrinsically meaningful.

This implies that the problem of meaning may be gradually solved once we have found out how to implement the algorithms resulting from the mathematical schematization and associated with perceptual intentionality.²⁴ In order to naturalize meaning, we have to examine the possibility of a transition from the morphological to the semantic. There should be a transition from a “phenomenological *physis*” (as in the morphodynamical models of the manifestation) to a “physics of meaning.” Petitot offers the hypothesis of morphological information objectively present in the environment which may be reconstituted by sensory transduction and serve as a basis for cognitive symbolic processes.²⁵

This brings us to the cognitive sciences. Here, we shift from an external approach to naturalization to an internal approach, one that is directed to the mental. Petitot sympathizes with the computational approach. Concerning visual perception and the phenomenology of perception, a great deal of work is already being done to produce a computational treatment of mental contents. But intentionality still has not been naturalized, because there is not yet a naturalistic account of meaning. In this sense, the computational mind remains separate from phenomenological consciousness.

The problem posed by intentionality is twofold. First, once we have left the domain of strictly visual perception, how do acts of consciousness produce the pole of unity and

²²Petitot (1995, p. 647): my translation of “Ces modèles physico-mathématiques de *phénoménalisation* sont des modèles *génétiques naturalistes a priori synthétiques du noème du perçu en tant que constitué*. Ils sont par conséquent *constituant* et peuvent être interprétés *comme une naturalisation de la conscience humaine*.” A treatment of the adumbrations of perceptual experience can also be found in Petitot (1995). For a more elaborate account of the naturalization of perceptual intentionality, see Petitot (1999). The noema of perception can be interpreted as the experienced object (as experienced).

²³My translation of Petitot (1995, p. 638): “...avant que d’être une signification au sens sémantique, le sens est une couche d’être qui s’édifie sur la couche d’être de la forme. L’idéaliété sémiotique s’édifie sur l’idéaliété morphologique.”

²⁴For the issue of perceptual intentionality and a mathematical schematization of morphologies, see Petitot (1995, 1999). Inventing mathematical algorithms for the a prioris of perception (e.g. concerning the relation between extension and quality) is not an easy job. The a prioris are a set of problems that *constrain* a possible theory of perception.

²⁵Formulated in Petitot (1997, p. 231). The basic idea is that there is a morphological level capable of mediating between the physical and the symbolical.

identity of the object? Second, how does consciousness constitute the thesis of existence and reality attributed to an external world?²⁶ These problems of constitution outline a further vast research program for the cognitive sciences. At the same time, these transcendental problems of constitution have come within the reach of the cognitive research programme, by broadening the mathematical-eidetic approach to the domain of experience.

4.5. *Cognitive sciences and transcendentalism*

What does it imply to naturalize the transcendental a priori pertaining to constitution? First, the transcendental issue has not disappeared. On the one hand, the transcendental problems of constitution are included in the research domain of the cognitive sciences and of the morphodynamical theories. The cognitive sciences seem to be able to transform a number of philosophical problems into a research domain susceptible to a naturalistic treatment. This happens via the mathematization of a number of constitutive a priors, up to now mainly in the field of visual perception. In other words, the transcendental a priors lose their transcendental function. On the other hand, according to Petitot, “the cognitive sciences have to face the critical problem of their transcendental constitution, as any mathematized natural science should do.”²⁷ The mental may well be naturalized, but the transcendental as such has not been. We need an epistemology for the cognitive sciences themselves.

Second, these two aspects indicate that the transcendental shifts from the subjective domain (i.e., the domain of a cognitive epistemology) to an “objective epistemology.” Petitot (1991, p. 119) defends a “transcendentalism without a subject.”

5. Conclusion: naturalized phenomenology and transcendentalism

Our conclusion is twofold. First, the epistemological–transcendental part of Husserlian phenomenology deserves more attention than it has gotten by now. Instead of naturalizing the descriptive part alone (see the third part), i.e. a description of subjective and conscious experience, the transcendental problem of constitution should be included in the research programme of the natural sciences. Trying to naturalize the a priors pertaining to constitution gives us a criterion for demarcating naturalized phenomenology from an introspectionist psychology, which cannot discover the issue of constitution.

Second, the naturalization of the a priors pertaining to constitution seems to be a feasible project, although there remain important problems concerning the way in which the object (outside the domain of perceptual intentionality) is constituted, the way in which ontic validity is achieved, and the way in which meaning is constituted. On the other hand, there is a shift from a cognitive epistemology (a transcendental theory of the subject) to an objective epistemology (a transcendental theory of mathematized natural science). The issue of transcendentalism retains its importance, but shifts to another level. The link

²⁶On the similarities and differences between phenomenology and the cognitive sciences, see Petitot (1994, 1995).

²⁷My translation of Petitot (1995, p. 655): “... comme toute science naturelle mathématisée, les sciences cognitives doivent elles-mêmes affronter le problème critique de leur constitution transcendental.” For Petitot, however, this is a Kantian rather than a Husserlian task.

between anti-naturalism and transcendentalism is partially untied: transcendentalism with a subject²⁸ can be naturalized, but at the same time we need, on a higher level, transcendentalism without a subject.

We have one remark left, concerning Merleau-Ponty and transcendentalism. There are other routes besides mathematization to naturalizing phenomenology; e.g. via a theory of embodiment. Are these projects able to handle the transcendental problems of phenomenology in a non-mathematical fashion? We think this is possible, and refer to Gallagher's research. For example, in Merleau-Ponty (1983 [1945]) the body schema functions as an a priori of experience, and Gallagher (2000; see also Gallagher & Cole, 1998) has been able to demonstrate the existence of a body schema empirically. Not everyone, however, will agree that Merleau-Ponty's phenomenological theory of the body and perception contains transcendental elements (or in particular that the body schema fulfills a transcendental function). The difference between Husserl's and Merleau-Ponty's transcendentalism may be expressed in "vertical" versus "horizontal" terms. Whereas in Husserl, the transcendental is situated at the high, abstract level of transcendental subjectivity, in Merleau-Ponty the transcendental is situated at the level of the body.²⁹ On an explicit level, Gallagher rejects transcendentalism and this is precisely one of the reasons why he turns to Merleau-Ponty. Our response is that it would be worthwhile to examine in what way Merleau-Ponty's theory of the body is intertwined with the transcendental problem of constitution. Moreover, we suggest that an attempt to naturalize the transcendental that pertains to the lived body would yield a more powerful account of the body.

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²⁸Transcendentalism with a subject is not the same as a subjective idealism. Husserl's transcendentalism was tied to a transcendental subject, but was not a *subjective* idealism.

²⁹This situatedness of the transcendental on the level of the body makes it less easily understandable why it is transcendental.

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