

On the possibility and reality of introspection

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Introduction

The reliability and accuracy of introspective research has been and is still a topic for hot debate (Hurlburt & Schwitzgebel, 2007). In the history of philosophy and psychology, conflicting claims have been made about whether this exploration of the so-called “inner” realm can be made reliable at all. According to the Cartesian, empiricist, and phenomenological lineage, consciousness is necessarily infallible about itself. Husserl (1913) thus replaced the standard psychological division between inner and outer perception he had inherited from Brentano, with a division between *certain* (immediate and complete) and *uncertain* (mediate and incomplete) perception within the flux of lived experience. Perception of immediate lived experience is certain because the *way it appears* coincides with the *way it is*, whereas perception of spatial objects is uncertain because at each moment they present themselves through partial profiles (or “adumbrations”: *abschattungen*) whose spontaneous ontological interpretation can later be disconfirmed. The opposite view, however, has gained prominence during the past century. From the behaviorist rejection of introspection to the thorough doubts expressed by Schwitzgebel (2011), the common view has been that as soon as we try to report our experience, we fall into confusion, we gain no true knowledge, and we even tend to confabulate (Nisbett & Wilson, 1977).

But are these seemingly opposite positions really incompatible? There might in fact be no true contradiction between them, provided one realizes they rely on very different definitions of knowledge, and different conceptions of what is to be *expected* from introspection. Introspective (or rather first-person) reports by single individuals may indeed be flawed when they are taken at face value, as exhaustive descriptions of, and objective knowledge *about*, the cognitive processes taking place in these individuals. What they do is nothing more than reflectively expressing knowledge *by acquaintance* of elementary (pleasure, pain, fear, joy), or elaborated (temporally sequential, spatially distributed, proprioceptive or emotive) experience. But as such, they have a crucial epistemic role to play. Although first-person reports may fail to be self-sufficient pieces of knowledge (beyond acquaintance), they remain the unique and inescapable basis of any further empirical knowledge of ourselves and of our environment. First-person access is the testimony of our being-in-the-world, and the source of every claim of the availability of a surrounding world. This universal inescapability and fundamental importance of first-person access should be no surprise, but it is often underrated in current epistemology.

One too often forgets that first-person reports are indispensable to ascribe functional meaning to most neurophysiological patterns (Lachaux, 2011; Kriegel, 2013), and to guide research in such field. One also too often loses sight of the fact that even the “objective experimental data” of natural sciences are nothing else than convergent *first-person reports* of a certain type. Actually, these data identify with specific first-person reports about having witnessed that a certain controlled phenomenon falls into one or another category defined by a preliminary intellectual framework (blue or red, positive or negative, On or Off, spin projection +1/2 or -1/2, etc.). In particular, measuring is tantamount to *reporting* that some meter-reading is seen to be included in, or excluded from, a given numerical interval. What gives objective data or measurements their reliability is nothing else than the coarseness of the categories in which first-person reports are constrained to fall, assisted by instrumental amplification of coarseness. Indeed, this coarseness makes final mistakes and disagreements virtually impossible: everybody can agree that this meter-reading falls in a certain numerical interval, even if there is persistent disagreement about associated nuances of color, emotive content, or interpretation.

It is now clear that reliability by no way requires the complete *elimination* of first-person reports. First person reports remain the *de facto* starting point and

ultimate warrant of the whole system of knowledge. The only question that remains open at this point is the following: is it possible to extend the domain of reliability of first-person access beyond the very coarse framework that is sufficient for perceiving *properties of public objects*? Can one extrapolate this domain of reliability towards more subtle aspects of experience that would afford information about the very process of perception, valuation, mental strategy, self-monitoring (and more generally cognition), though without claiming to disclose immediately cognitive processes as they are?

Even about the latter question, there are pessimistic and optimistic views that rely on different theories of mind and consciousness. The pessimistic view derives from a “scarce” view of mind and consciousness, according to which most mental processes being unconscious, they are doomed to remain forever inaccessible to first-person access. The optimistic view, instead, derives from an “abundant” view of consciousness, according to which most (or all) mental processes are *experienced* yet not always *attended* and *reflected upon* (Marcel, 2003; Block, 2011). In the latter case, one must only find a way to unfold the unattended experienced material, and bring it to full reflection¹. Then, once a large field of experience is thus reflected and expressed (beyond the narrow circle of the objectifying coarse categories), the following task is to find renewed criteria of reliability and intersubjective agreement that would turn this extended reflection and expression into an acceptable source of knowledge. Is the latter program feasible? Lots of in-principle objections have been formulated against it in classical and modern literature. But since these objections target an abstract image of introspection rather than introspection *per se*, we want to quickly overcome them and see if a concrete project of rebirth of introspection can meet them *in practice*. We will thus list these objections in turn (Petitmengin & Bitbol, 2009; Vermersch, 1999) and outline some replies new introspection has in store for them, in addition to some theoretical rebuttals based on contemporary philosophy of science. We will focus on one of the currently available methods that we ourselves practice: the elicitation interview method² (Vermersch, 1994; Petitmengin, 2006). Our aim is to show that, irrespective of its alleged theoretical “impossibility”, introspection is a living reality.

¹ The word “reflection” has to be used with caution, in view of its spurious connotations of detachment and look. This point will motivate an extensive discussion below.

² The expression « elicitation interview » translates the French original name of the method: « entretien d’explicitation ».

1. Is it necessary to transform a subject into an object?

The most archetypal objection against introspection is that it is impossible to observe one's own experience, because this presupposes a split between subject and object while in this case the object is nothing else than the subject itself. A very early form of this objection was formulated by Socrates himself, in the *Charmides* (167 c-d), in order to challenge a widespread conception of wisdom as self-knowledge: "Suppose that there is a kind of vision ... which in seeing sees no colour, but only itself and other sorts of vision: Do you think that there is such a kind of vision? Certainly not!" (Roustant, 2009, p. 78). According to the Platonician dialogues that are most likely to express Socrates' position, then, there is no such thing as self-vision, self-hearing, and by extension self-knowledge. But the most well known version of the objection was stated by Auguste Comte (the creator of positivism): "As for observing ... intellectual phenomena in their process of execution, there is an obvious impossibility. The thinking individual cannot split himself in two parts, one who reasons and the other one who looks at the reasoning. The observed organ and the observing organ being in this case identical, how could observation take place?" (Comte, 1830/2001).

We must point out from the outset that this kind of objection is directed against introspection as prejudice says it *should be*, rather than against introspection as it *is in fact* practiced. The prejudice is that part of the subject engages in second-order observing or monitoring of first-order mental processes. But, against this prejudice, many results, including from neurophysiology (Overgaard et al., 2006), are consistent with the idea that introspection merely involves a modified version of those very first-order mental processes. However, we do not want to discard the Comte-like objection too quickly. Instead, we will develop this objection and this prejudice one step further, and then compare it with a similar problem in the history of the interpretation of quantum mechanics. Such lateral strategy will substantiate our reply.

An important correlate of the alleged splitting of subject and object in introspection was stated repeatedly in the history of psychology : "suppose a particularly persistent introspectionist should desire to introspect the reporting or secondary series, would he not have to assume a third series, and so on, *ad infinitum* and *ad nauseam*?" (Ten Hoor, 1932). This threat of infinite regress pertaining to "inner observation" had been identified and discussed

much earlier by Harald Höffding (1905), a Danish philosopher who was a major inspiration of Niels Bohr, one of the most important creators of quantum mechanics. As a consequence, Niels Bohr (1934) tended to make a strong analogy between: (i) the situation of an introspector who wishes to observe herself by splitting into a subject part and an object part, and (ii) the situation of an experimenter in quantum mechanics who is (instrumentally and interpretationally) intermingled with microscopic phenomena, yet wants to observe them. In both cases, said Bohr, one witnesses a kind of dialectic between (a) the actual inseparability and (b) the alleged necessity of separation between subject and object. *De facto* inseparability imposes strong constraints on any attempt at enforcing some sort of artificial distinction between subject and object for the sake of knowledge. Indeed, as soon as some divide between object and subject is conventionally imposed *despite* their actual inseparability, part of the object to be known happens to be cut off (because it is conventionally retained on the subject-side of the divide).

However, this dialectical strategy advocated by Bohr is very disputable. Isn't it possible to do without any artificial separation of subject and object, yet approaching microphysical and experiential phenomena in a scientific way? As we argued in previous work (Bitbol, 1996, 2000, 2002), this can perfectly be done provided one does not attempt to objectify a putative property behind each *singular* phenomenon, but only the structure that enable us to anticipate phenomena of each *class*, and under each *type* of circumstance³. Such an alternative approach will be developed in section 4, as part of our discussion of the kind of objectivity that can be reached by introspective inquiry. Meanwhile, we have to probe further into the claim that the standard Comte's objection to introspection misses its target. To that purpose, we must be more accurate about the very definition of introspection, and show that once it is appropriately characterized, it automatically escapes the objection.

Are we really doomed to the dualist picture of inner and outer realms that would fully justify using the term "intro-spection" about a certain mental act of meta-awareness or "reflection"? Is this picture that makes it so easy to formulate Comte's objection doing justice to the real work of introspection? As a preliminary move, we wish to point out that few philosophers of the turn of

³ In quantum mechanics, it is well-known (to the dismay of realist philosophers of science) that the project of objectifying "properties" behind phenomena can hardly be worked out. Yet, one objectifies a universal anticipative structure which is nothing else than the state vector, that generates probabilistic predictions by means of the Born's rule.

the nineteenth and twentieth century, who determined the cultural background of the first wave of introspectionist psychology, took seriously this picture.

Thus, instead of taking the dualist picture for granted, the German Neo-Kantian philosopher P. Natorp (1912) gave a detailed account of how the dual organization of knowledge (object and subject, outer and inner) may arise from the undifferentiated continuum of experience. According to him, this occurs by way of a double-faced process in which objectivation comes first, and subjectivation arises as the by-product of the former. Objectifying means picking out the component of experience that remains invariable across personal, spatial or temporal situations; or at least the component of experience that vary in the same way (i.e. in a law-like way) irrespective of the personal, spatial or temporal situations. The “subjective” domain is then marked off by contrast and difference with the objectified part of experience. It includes whatever is left in experience after the objective domain has been delineated. Accordingly, the subjective domain evolves with the process of objectification, and it receives as many characterizations as there are delineations of objectivity. This means that accessing the domain of subjectivity is not just a gift, but a *discipline* symmetrical to the discipline of objectification. One can access this domain by pondering about the (subjective) conditions of possibility of objective knowledge. One can also reach it by suspending the fragmentation of the field of experience into coarse categories required for objective knowledge, and by relaxing the interest of knowledge initially directed towards restrictive parts of experience.

Yet, despite this philosophical critique, most of the overt characterizations of introspection given by the psychologists themselves remained in line with dualism. The two-realms and two-directions-of-gaze model was still pregnant at the turn of the nineteenth and twentieth century. Wilhelm Wundt (1901) thus wondered “how can our own mental life be made the subject of investigation like the objects of this external world of things about us?”. Similarly, Edward Titchener (1912) approved the idea that “introspection is simply the common scientific method of observation, applied from the standpoint of a descriptive psychology”. He then stated the different directions of gaze by which one should characterize the two kinds of “observation”: “the method of psychology is observation. To distinguish it from the observation of physical science, which is inspection, a *looking-at*, psychological observation has been termed introspection, a *looking-within*” (Titchener, 1916, p. 20). Later textbooks of psychology usually retained the standard conception of introspection as *observation of some internal occurrence*, e.g. “introspection

is most simply defined as the direct observation of one's own mental processes" (Moore & Gurnee, 1935, p. 30). The paradigm of detachment thus pervades even introspective psychology.

It is on this unsophisticated epistemological ground that nuances and doubts grew up. Wundt resisted from the outset the rough definition of introspection as "inner observation", and rather referred to "inner perception", thus accepting a distinction first introduced by Brentano (Brentano, 1874/1944). According to Brentano, inner observation cannot be the "true source of psychology", for observing a mental event by fully focusing one's attention towards it would just lead to its disappearance. The true source of psychological inquiry is then inner *perception*, that does not require that attention be focused on some mental object, but only that, when attention is focused on some (usually external) object, it remains broad enough to notice other events such as the mental processes that underlie the act of attending. One can thus perceive a vibration of the telescope while *observing* a planet. This defocusing of the field of attention performed in "inner perception" has also been called "non-observational awareness" (Marcel, 2003). As for Titchener, he relied on the "introspective habit" of trained subjects, who were able "not only to take mental notes while the observation is in progress, without interfering with consciousness, but even to jot down written notes" (Titchener, 1916, p. 22). But what is this special ability trained subjects acquire when they perform introspection in the style of Tichener? A reasonable assumption, in line with Brentano's and Wundt's characterization of "inner perception", is that it is the ability to detect laterally occurrences that are not in the main focus of attention.

This, at any rate, fits remarkably well with E. Husserl's characterization of phenomenological reduction, which is the chief method to give access, not to the "inner world", but rather to the *whole field of pure experience* before exclusive intentional focusing has narrowed down the region of our full awareness. Phenomenological reduction, says Husserl (Husserl, 2002, p.11), helps revealing the "sides" (or the margins) of our experience that are overlooked as long as exclusive concern for objects prevails. Husserl insisted on the full openness of the subject to the manifold of lived experience during phenomenological reduction (Depraz, 2008, p.103). Even when Husserl used a metaphor of "splitting" of the subject in reflection, he mentioned that, by such splitting, I become "*at the same time* plainly seeing subject and subject

of pure self-knowledge⁴. Later on, this move was confirmed by M. Merleau-Ponty, according to whom the phenomenological attitude means (in terms borrowed from Bergson) that, “instead of wanting to raise ourselves above our perception of things, we plunge into it to dig it out and *enlarge* it” (Merleau-Ponty, 1989, p. 22; Bergson, 1934, p. 148).

True, one must not overlook Husserl’s own forceful denial that the phenomenological enquiry relies on some variety of introspection. He gave three major reasons for this denial: (i) Introspection, he wrote in his *Ideen I*, arises from a state of *positional* consciousness (which means that in this case consciousness *posits* an intentional object, be it in the focus or in the margin of attention); by contrast, in the genuine phenomenological stance, consciousness remains “non-positional”⁵. (ii) Being “positional”, and therefore directed towards some sort of transcendent object, introspection remains fallible as any empirical investigation is; by contrast, being non-positional and therefore immersed in immanence, the phenomenological stance is supposed to reach absolute certainty. (iii) Phenomenology is not concerned by single events of mental life, unlike the primary step of introspection; it aims at elucidating the invariants (or “essences”) of lived experience.

But, notwithstanding these differences, part of Husserl’s characterization of the phenomenological stance supports a new understanding of introspection. Introspection here appears as (or is replaced by) a mental state in its own right, a state of broadened awareness, rather than being taken as a homonuclear act of observation of some other mental act or mental state. “Reflection” in a phenomenological sense no longer means a sort of specular (transcendent) observation, but rather a *modification of consciousness*, a *transmutation of lived experience as a whole*, a series of immanent *modes of capture of essences* (Husserl, 1913/2004, §78). To stress the difference without breaking lexical continuity, we can give a slightly different name to this renewed concept of “reflection”. We propose “coreflection”. The latter neologism may prove useful to convey two semantic shifts. According to the first shift, we are no longer concerned by a mere asymmetric revelation of the “seeing subject” by the “subject of self-knowledge”, but by their symmetric co-definition within the experiential field of somebody who has practiced the

⁴ E. Husserl, Erste Philosophie (1923/4). Zweiter Teil: Theorie der phänomenologischen Reduktion. [First philosophy (1923/24). Second part: theory of phenomenological reduction.] Ed. R. Boehm, Martinus Nijhoff, 1959. French translation: E. Husserl, Philosophie première, P.U.F., 1972, p. 156

⁵ See a discussion in (Flajolié, 2006).

phenomenological “reduction”. According to the second semantic shift, the so-called “reduction” represents in fact an enlargement of the span of experience, and this can be evoked by the three first letters of the word “coreflection”: “cor” for the Greek “khôra” which Plato used in the *Timaeus* to mean space, or interval.

Full realization of this alternative status of introspection is commonplace nowadays. G. Ten Elshof (2005) thus claims that introspection can still be considered as a kind of perception, provided one recognizes that the essential act of any perception is not only redirecting attention but also *changing its span*. Similarly, by making a cogent synthesis of Brentano’s and Wundt’s thoughts, J. Sackur (Sackur, 2009) defines introspection as a process of perception *expanded* to what is usually neglected, or to what is usually at the periphery of the attention field. Introspection, far from being like a gaze on some object (be it focused or expanded), is tantamount to (re) establish an intimate and close *contact* with what is to be explored (to wit the field of lived experience) (Petitmengin & Bitbol, 2009). The metaphor of the sense of touch (with closed eyes), or smell (Kriegel, 2013), here replaces the metaphor of the sense of vision.

Two major developments of our *Weltanschauung* and of the cognitive sciences can explain why this alternative, non-observational and non-visual, conception of introspection is now much easier to accept than it was at the beginning of the twentieth century. One of them is our growing familiarity with contemplative methods, whose aim is to stabilize attention and use this stabilization in order to get a precise knowledge by *acquaintance* of the subtlest aspects of mental processes⁶. Along with this perspective, the idea of “non-positional” consciousness, or of intimate contact with experience, as opposed to the old-fashioned observational view of introspection, is no longer problematic. Thus, according to A. Wallace, “Unlike objective knowledge, contemplation does not merely move towards its object; it already rests in it” (Wallace, 2006).

The other development that makes the non-observational conception of introspection easier to accept can be found in the cognitive sciences. It is the widespread recognition (Schooler, 2002) of a background short-term cognitive

⁶ In meditation, stabilizing attention is allowed by long sessions of concentration on a single felt or imagined process (such as breath or pictures); and contact with the manifold processes of mental life is realized not only by broadening the field of attention, but also by dropping “all aim and objective” in full, open, non-directional, mindfulness. See e.g. (Genoud, 2009; Wallace, 1998).

unconscious (Hassin, Uleman & Bargh, 2006), in addition to the long-term affective unconscious delineated by Freud. Provided the word “unconscious” is not taken at face value, but rather identified to “unreflective”, this allows one to confirm the image of focus and margin of conscious awareness that sounded so problematic during the first wave of introspective psychology (Bode, 1913).

Recent methods of verbal report and introspection fully take this conception into account. The elicitation interview method (Vermersch, 1994; Depraz, Varela & Vermersch, 2003; Petitmengin, 2006; Petitmengin & al., 2009) that we currently practice can be characterized as a strategy for progressively unfolding initially “pre-reflective” aspects of lived experience, by asking subjects to rehearse and even to *re-enact* this experience while broadening their field of attention. Here, *retrospection* (as opposed to “thinking-aloud” protocols) is systematically used. But this is not only to meet the traditional objection according to which observation disturbs the observed process if it occurs simultaneously to it (an objection automatically inactivated by the rejection of the observation conception of introspection). This is also to enable patient expansion of awareness, part after part of a selected slice of experience. The success of such procedure confirms that episodic recollection is an excellent way to reinstate immersion within a broadened field of experience (Marcel, 2003). Another, very different, method has also been developed to overcome the problem of bringing to awareness as many pre-reflective aspects of experience as possible. Its name is “descriptive experience sampling method” (Hurlburt & Heavey, 2006). It consists in interrupting subjects in the course of their tasks by means of a beep triggered by a random timer, and asking them to report on whatever was going on in their minds a few seconds before the beep. This allows something like “tomography” of moments of experience of which subjects remain usually unaware (because when no beeping occurs, they immediately switch to the most relevant aspects of their main target rather than pondering upon its experiential context).

To sum up, there are two crucial points on which the current definition of introspection differs from the classical one, thus offering it a better opportunity of development: (i) overt cultivation of contact with and growing awareness of an all-pervasive experience, rather than observation directed towards some “inner” sphere of processes; (ii) techniques for encompassing pre-reflective (or “cognitively unconscious”) parts of experience in successive fields of attention. Both moves might motivate rejection of the word “intro-spection”

and use of alternative expressions instead (e.g. “expanded mindfulness”), but it is convenient to keep the old word with us in order not to minimize a certain amount of historical continuity.

2. Does introspective examination disturbs its “object”?

Let's come now to the objection that introspection alters the mental process to be known. There are at least three varieties and many sub-varieties of this objection.

A. Observational distortion

The attitude or operation of introspection *disturbs* the mental flux to be known. This objection was already formulated by Hume: “it's evident this reflection ... would so disturb the operation of my natural principles as must render it impossible to form any just conclusion from the phenomenon” (Hume, 1739 / 1978, Introduction). And it was considered as a problem to be solved by the introspectionists: “If you try to report the changes in consciousness, while these changes are in progress, you interfere with consciousness” (Titchener, 1916, p. 22).

B. Temporal distortion

This objection comes in two major guises that we will now document.

B.1 One problem is a discrepancy between the fluent nature of experience and the request of stability of knowledge contents. Kant (1786/2002, Introduction) thus claimed that there can be no knowledge of the soul, because the latter develops in time, whereas one should be able to immobilize it somehow in order to extract some knowable invariant. A different (somewhat reciprocal) difficulty was pointed out by Wittgenstein (1964/1980). According to him language, whose use is extended in time, can by no means catch experience in its present unstable actuality.

B.2 Another problem (that may be a consequence of the first one) is that what can be captured and mastered in experience is only its *past* unfolding. G.H. Mead and J.P. Sartre (2000) thus pointed out that the “I” itself can only be considered as a reconstruction, or that the “I” is always in the past. But if this is the case, isn't there a risk of deformation or oblivion? Can't there be a *posteriori* falsification of the history of lived experience, by the processes that

D. Dennett calls “Orwellian” and “Stalinesque”⁷? Isn’t experience thus replaced with a rational reconstruction made out of prejudice?

C. Interpretative distortion

The categories that subjects apply when they describe their own experience are theory-laden (Gopnik & Meltzoff, 1994; Robbins, 2004). This is a real problem since, as shown by Nisbett and Wilson (Nisbett & Wilson, 1977; Johansson et al., 2006), subjects are very bad at theorizing about their own mental processes. Moreover, the use of words alters the experience to be described, and they are even likely to be unable to capture anything properly in experience (this is the charge of *ineffability*).

This series of objections is not as threatening as it looks. Indeed, observational, temporal, and interpretative distortions can only be called “distortions” with respect to experience as it is in itself, previous to any attempt at observing, catching, and interpreting. In other terms, the previous objections rely on some version of the myth of the “given” (Garfield, 1989). But if we distance ourselves from this myth, a very different picture arises.

An examination of the claim according to which certain processes are “disturbed” (Jack & Roepstorff, 2002) by observation and/or verbalization can be taken as a first step towards the new picture. Speaking of a process *an sich* that is unfortunately disturbed by the coarse instruments we use in order to have access to it, only makes sense if there is a way of accessing it independently of these coarse instruments. But if there is nothing even in principle to compare with the instrumental outcomes, this is wild speculation. Such a simple remark is (or should be) a keystone of the interpretation of quantum mechanics. True, the metaphor of an object disturbed by the experimental contraption has usually been accepted by physicists in the first years after quantum mechanics was formulated; and it is still used in popular science books. But it became clear in the following years that, if taken seriously, this metaphor could only lead to the accusation of “incompleteness” of quantum mechanics. This accusation in turn fed the persistent dream of a “hidden variable theory”. The metaphor of disturbance was then soon

⁷ Retrospective alteration of history can be obtained in two ways, according to Dennett. In the Orwellian way, somebody first makes one conclusion based on partial evidence, and then changes her memory of having made this previous conclusion in order to accommodate further evidence. In the Stalinesque way, somebody does not make any intermediate conclusion but entirely reconstruct the whole sequence ex post facto, when all the evidence is available.

discarded by Bohr, and replaced by the claim that a phenomenon is co-defined by the experimental conditions of its manifestation, rather than disturbed by them. Here, the phenomenon is taken as inseparable of its experimental context. The new physics is seen as bearing immediately on technologically holistic phenomena, rather than meditately on putative properties “revealed” yet “distorted” by the apparatus.

A similar move has been suggested for introspection. Husserl’s sharp reply against the early opponents of introspection (Husserl, 1913/2004, § 79) was exactly along these lines. He noticed that when one casts doubts on the possibility of faithfully capturing lived experiences in reflection, one thereby presupposes some form of *knowledge* about what are these lived experiences *prior to any reflection*. But this is either self-contradictory (if knowledge of experience can only be obtained by reflection), or self-mandatory (if one is summoned to define alternative, and elusive, ways of self-knowledge). The only way out of this dilemma, as expressed by B. Shanon (1984), is then to accept that introspection bears directly on reflective experiences rather than indirectly on the experience the reflection is supposed to be about. To be sure, not caring for anything like representational faithfulness of reports is provocative, but this decision has the merit of pointing towards alternative epistemologies and alternative strategies. One such strategy is precisely to emulate the epistemological approach of standard quantum mechanics, and elaborate an overtly non-representational science of experience.

3. Is one systematically mistaken about one’s own experience?

Part of this objection is grounded on the observation that it is very easy for subjects to go astray about the *stimulus* that was applied to them in order to trigger a certain experience. Titchener himself, in his defence of systematic introspection, was extremely diffident about the ability of subjects to identify a stimulus: “The subject may see what was not there at all, may fail to see much of what was there, and may misrepresent the little that he really perceives; introspection adds, subtracts, and distorts” (Titchener, 1912; Schwitzgebel, 2004). More recently, criticisms have been formulated against the propensity subjects have to say that they see more than they can evidence (Dennett, 1992, 2002), or against their inability to see major parts of what occurs in front of them if their attention is distracted (as shown by experiments of “change blindness” (Silverman & Mack, 2006)). However, this

charge might well be excessive or misplaced. In a non-representationalist epistemological framework, the issue of the truth or reliability of introspective descriptions is likely to be given a completely new meaning.

The first criterio of truth that comes to mind under the presupposition of a representationalist theory of knowledge, is that introspective descriptions should be faithful to the experimental or environmental *input* that triggered the experience reported. This (too) simple idea has long been criticized in old introspectionism, and replaced with the criterion that an introspective description should only be faithful to a slice of experience (rather than to what it is an experience of). Titchener thus wrote: "The question, ... so far as the validity of introspection is concerned, is not whether the reports tally with the *stimuli*, but whether they give accurate descriptions of the observer's experimental consciousness; they might be fantastically wrong in the first regard, and yet absolutely accurate in regard to conscious contents" (Titchener, 1912). Here, it looks like Titchener accepts the correspondence theory of truth which goes along with a representationalist epistemology, although he applies it to "conscious contents" rather than to "*stimuli*". We will come back to this point soon, but let us first dig more carefully into what the followers of the American introspectionist school called "the *stimulus error*" (Boring, 1929, p. 33).

This prescription *not* to seek correspondence between introspective data and *stimuli* might well have been directed against the first German school of introspection, namely Wundt's. But even in this case, the criticism is excessive. Indeed, with the help of the instruments of his laboratory, Wundt focused his inquiry on very limited introspective reports having the form of judgments of time-characteristics (duration or simultaneity), number, and intensity of *stimuli*. And, under strict experimental control, his introspecting subjects turned out to be reasonably faithful to the *stimuli* that were imposed to them (Wundt, 1901, p. 31). A modified version of Wundt-like introspection has been revived recently with considerable success (under the name "quantified introspection" (Corallo et al., 2008)), and it also yields a positive outcome about the accuracy of simple reports. Here, the reports bear not on the stimuli themselves, but on the time spent by subjects to perform a certain task involving simple stimuli. The suspicion of inaccuracy about *stimuli*, being partly misplaced, is then not sufficient to motivate the rejection of introspection.

Another indication that introspective reports may be less inaccurate about their *stimuli* than is usually thought, can be found in disguised introspective work of the allegedly behaviorist era. One such research casts doubts on a widespread anti-introspectionist prejudice of cognitive scientists (after Dennett): the prejudice according to which subjects are systematically wrong about their pretending to see a whole scene extended in space, since they are in fact unable to describe most details of this scene when they are asked to do so. A classical work by G. Sperling (Sperling, 1960)⁸ indeed showed that things might be much more intricate than this, and less challenging for first-person access. Sperling briefly confronted subjects with a 4x4 table of letters, and asked them to report the letters they could remember. Subjects usually claimed they had an iconic memory of the whole table, but, irrespective of the size of the table, they could hardly report more than 4 letters out of it. Was their claim of being able to see the whole table after its presentation completely illusory? Further inquiry ruled out this negative interpretation of the initial reports. Subjects were asked to concentrate on a single line in the table, and to list the letters of *this* line. The outcome is surprising: subjects were able to report about 3-4 letters of *any* line chosen at random by the experimenter. So, we are inclined to accept that they indeed had a short-term iconic memory of the whole table. Accordingly, it was advocated recently (Block, 2011) that the initial introspective report of the subjects was much more accurate than what is usually suspected.

The way this accuracy was brought out is also very instructive: (i) put subjects in a situation of success rather than a situation of failure (i.e. choose the task in which subjects display optimal performance); (ii) help them by asking focused questions about what they lived, rather than dispersing their attention by abstract questions. This is precisely the strategy that is followed in the method of interview we practice (Petitmengin, 2006).

Another *locus classicus* of the criticism of introspection, from which J.B. Watson inferred that a true science of mind could only be grounded on the study of behavior, is the famous unresolved quarrel of “imageless thought” (Ogden, 1911; Woodworth, 1906). This time, the threat to introspectionism looks even more serious than before, since the issue no longer bears on the ability of introspective reports to be faithful to the stimulus that triggered experience, but on their faithfulness to experience itself. In the heyday of introspectionism, the researchers of Titchener’s school at Cornell University

⁸ Quoted and discussed by J. Sackur (Sackur, 2009).

claimed to have brought out the presence of sense elements, kinesthesiaic feelings, and images associated to every thought process (Titchener, 1909), whereas the researchers of the Würzburg school, such as Külpe, Mayer, and Orth (Humphrey, 1951), declared that there exists imageless and even “nonsensory” thought. These conflicting claims were associated with mutual methodological criticism (Nahmias, 2002). As K. Danziger pointed out (Danziger, 1980, 1994), this quarrel showed how “theoretical differences could readily be made to take on the form of differences in the data themselves”. But careful examination of the texts in which the debate about imageless thought developed has shown that the nuclear proto-interpreted data could after all be isolated from the school-related theoretical bias, and that in this case, no true divergence persisted (Hurlburt & Heavey, 2001; discussion in Goldman, 2001). Subjects of both schools indeed reported the existence of “vague and elusive processes, which carry as if in a nutshell the entire meaning of a situation” (Titchener, 1910/1980, p. 505-506), but they did not *interpret* these reports the same way; and both school probably missed a more faithful description of them in terms of “felt meanings” (Gendlin, 1962).

More than a failure of introspection, this indicates what kind of work should be done in order to reach a possibility of intersubjective agreement: stepping down on the scale of rational reconstructions, explanations, or generalizations, and sticking to the “how” of experience (Petitmengin, 2006). In any experimental science, identifying “facts” requires a process of descent along the hierarchy of theory-ladenness; not of course in order to reach a utopic realm of “pure non-interpreted content”, but only to pick out a level of interpretation that is beyond discussion in a certain state of culture and research.

But how exactly can one ascertain the “faithfulness” of first-person reports, independently of any relation with the stimuli that triggered experience? One may distinguish two levels of faithfulness assessment: (a) signs of reliability, and (b) criteria of validity.

(a) As we have just seen about the “quarrel of images”, there is one index whose presence leads to strong suspicions: this is lack of consensus about general structures of lived experience. Conversely, one may take consensus about structures as an index of faithfulness, although this consensus might well be partly induced by theoretical (or sub-theoretical) prejudice. To avoid the latter bias as much as possible, we need *individual* signs of reliability that may help us to increase the degree of credibility of each interview taken apart. Such signs are currently in use, and their significance has been carefully

discussed (Vermersch, 1994; Petitmengin, 2006; Hendricks, 2009). They are detected in the form of bodily attitudes and rhythms of speech that evoke actual contact with one's experience during the process of reporting. However, one must keep in mind that such signs are taken as good ground for reliability only because they are connected with first-person access of the interviewers to the experiential correlates of similar signs within their own bodies. This suggests that faithfulness of first-person reports can be ascertained only by intersubjective criteria; there is no external "absolute" evidence.

(b) The same can be said when criteria of validity, or even *truth*, of these reports are sought. Indeed, there is at least one thing that we can say for sure: there is no way of comparing directly an experience *an sich* and its alleged report. This is obvious for experimenters, but this is also clear for subjects themselves, since their own act of "comparison" is a new experience in which the former experience to be reported is merged and recast. So, how can we sort out this difficult epistemological situation? By relying on sound epistemology, rather than on the old representationalist and dualist epistemology.

To take a significant step in this direction, we may conveniently come back to Kant. The age-old objection of skeptics according to whom we have no "absolute" access to things (no access apart from the causal relations we have with them), and that therefore we can say nothing about what they are *in themselves* apart from the effect they have on us, was addressed by Kant in a very innovative way. He first acknowledged that we indeed have no apprehension of objects apart from our very procedure of access (Kant, 1800/1988). Then, instead of trying to prove the correspondence between knowledge contents and some independent object "out there", he *defined* the object as whatever is shaped by the class of perceptual/intellectual operations used in the act of knowing. The stable component of experience is considered "objective" *by definition*, and not in virtue of its (doubtful) correspondence with some extra-experiential reality. This suggests that skepticism about any region of knowledge cannot be overcome by relying on some external warrant, but only by using *internal criteria*.

Accordingly, when we look for criteria of validity of first-person reports able to resist to skeptical doubts, we bypass the fruitless search for their *correspondence* with putative "private objects" and rather try to establish criteria of *self-validation*. We also exploit the opportunities of *mutual validation* offered by articulating the domain of first-person reports with several areas of

cognitive science.

This strategy fits with current philosophy of science, which is undergoing a major paradigm shift. The traditional debate about whether scientific theories are able (or not) to provide us with a faithful description of an independent reality is fading away. Experimental gestures, mathematical practices, and social debates are no longer seen as mere neutral windows opening on “pure”, “independent” reality. Instead, they are understood as an interfacial matrix of on-going agency, out of which strategies of theoretical prediction and conceptions of reality able to guide them co-emerge (Pickering, 1995; Gooding & al., 2005; Galison, 1987). Here, as in Kant, answering skeptical doubts no longer amounts to display a one-one correspondence between theoretical symbols and real properties. It rather requires to find patterns of technological actions that have stabilized, have been adopted collectively for their success, and have then been connected to one another in coherent networks. The new kind of answer to skepticism relies on a pragmatic coherentist conception of truth, rather than on a correspondence theory of truth.

The same attitude towards skepticism can be adopted when the validity of first-person reports is at stake (Shanon, 1984; Piccinini, 2003; Piccinini, 2009; Petitmengin & Bitbol, 2009). These authors pointed out that standard critiques just show that introspective data cannot usually be evaluated on the basis of correspondence; and that this is not to be wondered about or regretted, since after all no other data, including in experimental science, are *really* evaluated this way. The alternative is then evaluation on the basis of performative coherence, where “coherence” can concern several levels of practice: internal coherence in self-assessment and report; interpersonal coherence in dialogue (see above); and triangulated coherence in a network connecting introspective reports with experimental (neurological) practice.

This retreat from the correspondence theory of truth to an extended version of the coherence theory of truth however does not mean that there is no prospect to *improve by way of coherence the probability of correspondence* between an introspective report and the experience it is meant to describe. The elicitation interview method is especially suited for that purpose, in view of its ability to focus the attention of subjects on the aspects of their experience which they better access, and avoid overinterpreting them. It has thus been shown that one can considerably improve the standardly defined faithfulness of first-person reports precisely in the experimental situation that has been taken for more than thirty years as the archetypal

rebuttal of introspection, namely in the Nisbett & Wilson (1977) setting. This improvement, that raises the correspondence between an initial experience of choice of presented faces and the later report of this experience from about 30% to about 80%, has been obtained by inserting an elicitation interview between the moment of the choice and the moment of the final report (Petitmengin & al. 2013).

4. Can knowledge about subjects be somehow objective?

The fourth and final group of objections focuses on the purely subjective status of introspective descriptions, and on the fact that the situation it concerns is irreproducible. Thus, according to Wundt's early but harsh criticism, unless it is constrained by a strong experimental environment of control, introspection is doomed to extreme idiosyncrasy: "introspective reports offer no means for independent checks by which they may be evaluated. Indeed, the reports are irreplicable not only by others but even by the particular introspector himself" (Shanon, 1984). If this is so, a verbal report of introspection only concerns the person who reports at a certain time; it teaches us nothing about other persons, and perhaps not even about oneself at any other time.

This is probably the most serious objection of all, but as we will soon see, the renewed conception of objectivity that arises from a non-representationalist view of science also suffices to meet it.

The challenge is expressed as follows: what do these strange tales told by subjects about their own experience teach us about the world? Isn't their significance restricted to each one of the subjects who provide them? Shouldn't one therefore understand the reluctance of mid-twentieth-century psychology towards the participative, empathic or idiosyncratic aspects of introspection that only worsen the wandering of the science of mind in the swamp of subjectivity? In order to persuade ourselves that this objection is not as devastating as it seems, we can use once again a certain similitude between introspective psychology and microphysics. The questions just raised indeed remind us of two related questions a Copenhagen quantum physicist might have asked. According to Bohr's analysis, each quantum phenomenon is a unique and irreversible event arising from the interaction between a micro-object and a macroscopic measuring apparatus at a certain time; moreover, there are only few and very stringent circumstances in which

the phenomenon can be reproduced when the measurement is repeated on the same object. What do such isolated micro-phenomena teach us about the object *as it is in itself*, independently of the measuring apparatus and its interaction with it? Isn't their significance restricted to single runs of the micro-experiment? This puzzlement by no means hindered the development of quantum mechanics into one of the most powerful physical theories in history. We then just have to find out what, in the methods of physics, made this overcoming of the (virtual) objection possible even before it was formulated.

To begin with, one must remember a consequence of Kant's redefinition of objectivity: objectivity is not something to be found ready-made *out there*, but a project of operational extraction of invariant structures out of a cluster of appearances. So, the issue as to whether or not single events teach us something objective is to be decided on a methodological, *not* on a metaphysical plane. Extracting invariant or covariant structures relies on a process of ascent in generalization and theoretical abstraction, symmetrical of the process of descent which is necessary to reach a nucleus of discourse that can be considered as "factual" or "data-like". In other terms, objectivity is generated ("constituted" writes Kant) by selecting an appropriate level of generality or coarseness, such that invariant structures may be extracted at that level. In the domain of validity of quantum physics, this procedure is implemented thus. One first renounces objectivation at the level of individual phenomena occurring in space-time (this is the reason why the ordinary concept of minute point-like bodies endowed with local properties is in jeopardy). Then, one ascends towards the level of statistical variables. Indeed, the strict reproducibility and indifference to measurement order, is usually missing at the level of individual values, is recovered at the level of their statistics. Finally, one ascends a step further, towards the upper level of formal tools able to generate as many statistics as measurement types, and as many probability assessments as measurement tokens. These formal tools are nothing else than the state vectors in a Hilbert space. State vectors are precisely the maximal invariant structures used by quantum physicists; they therefore play the role of objective entities without bearing the smallest resemblance with our archetypal image of the objects of physics, namely material bodies.

The procedure should be the same for introspection: descent and ascent.

(1) Descent towards minimally interpreted descriptions of the subtlest lived events, without any attempt at asking the *subject* to reconstitute her own cognitive processes (which are actually just as little accessible to subjects as

to scientists), or to explain her “reasons” *in abstracto*, or to stipulate her intended meaning. In other terms, a very careful process of phenomenological reduction must be asked to, or induced in, the introspecting *subjects*.

(2) *A posteriori* ascent of the *scientists* who are analysing the introspective reports construed as data, towards structures generic enough to be seen as stable and invariant across subjects and circumstances. As B. Shanon (1984) cogently pointed out, “While single pieces of data provide only a limited, haphazard view of the phenomenological domain of interest, the corpus in its totality can reveal regular, systematic patterns. The corpus reaches a state in which an increase in the number of tokens ceases to increase the variety of types”.

This two-step procedure is exactly the one we apply when we practice the method of elicitation of experience by interviews: (i) guiding subjects towards exquisite contact with their experience and undoing any rational reconstructions that may interfere with their task of description; (ii) retrieving the data extracted from these disciplined descriptions and extracting generic structures out of them.

Conclusion

We gather from these objections and sketchy replies that the most crucial weakness of the introspectionist wave of the turn of the nineteenth and twentieth centuries is likely to have been its unconditional acceptance of the classical, dualist, representationalist theory of knowledge. But since then, many blows have been struck against this theory by contemporary epistemology and cognitive science (Varela, Thompson & Rosch, 1991; Thompson, 2007). It is now time to take this momentous turn into account when dealing with introspection, both by a proper conception of what can be expected from it, and by some concrete methods able to implement this conception. Under a non-dualist/non-representationalist assumption, what is expected from introspection is definitely *not* to monitor the “inner” realm in the same way as natural sciences monitor the “outer” realm. Instead, introspection here becomes just a historic name for a program of changing the focus of attention within the one and all-pervasive field of lived experience, from the narrowly focused state and coarse-grained categories needed by natural sciences to a broader range of interest and refined categories. Introspection should then be aimed at disclosing the initially

unreflected and unattended part of lived experience, and thereby throw light on experienced (yet usually unnoticed) counterparts of the cognitive processes. Ability to bring this information to a satisfactory level of reliability is conditional upon elaborating criteria of mutual performative coherence between the various expressive data obtained in a session of assisted introspection. It also relies on a process of extracting generic structures that have intersubjective value, beyond individual reports. All these features are *de facto* realized by a few recent methods of first-person access, especially by the elicitation interview technique we practice.

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