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Validating and Calibrating First- and Second-person Methods in the Science of Consciousness

1. Introduction

After more than a century of neglect, the last two decades have seen a significant amount of progress in the science of consciousness (Seth, 2010). This resurgence of interest has been largely driven by the availability of increasingly sophisticated neuroscientific methods. However, as the field is maturing it is becoming evident that further scientific progress will not depend on improvements in brain measurement technology alone. Additionally, there are two major outstanding challenges that need to be addressed. We still need a better theory of consciousness that could inform the design and interpretation of experimental studies. And we also need a more systematic way of accessing and measuring the phenomenology of consciousness, i.e. our lived experience. The latter challenge takes a special place because a rigorous method of obtaining phenomenological data may turn out to be a powerful catalyst for the field as a whole. Only with increasingly refined verbal reports about *what it is like to be conscious* can we hope to better understand the detailed data that neuroscience is providing about the complex brain mechanisms underlying lived experience and delimit the phenomenological facts that a theory of consciousness must take into account.

Accordingly there have been a growing number of attempts to go beyond standard questionnaires and informal post-experimental

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debriefs in efforts to understand the lived experience of our subjects in the science of consciousness (e.g. Varela & Shear, 1999a; Jack & Roepstorff, 2003a; Roepstorff & Jack, 2004a; Overgaard, 2006; Overgaard *et al.*, 2008; Petitmengin, 2009). Some of the most striking contributions in this new area of research have been made in the context of Varela's (1996) *neurophenomenology* research program, where a key element is the use of specialized methods of 'becoming aware'. This can happen in the first-person alone, for example by using gestures following Husserl's phenomenological tradition (e.g. Varela, 1999) or by training the participants to become aware of their experience (Lutz *et al.*, 2002). It can also happen in the second-person context, for example with an interview technique that employs verbal and bodily gestures to facilitate the participants' ability to report the content and dynamics of their experience (e.g. Petitmengin *et al.*, 2007). These developments in consciousness science are largely independent from, although compatible with, a recent reappraisal of introspective practices in psychology (e.g. Locke, 2009).

In this paper we will concentrate on two of the most common second-person methods in the science of consciousness, namely the *Descriptive Experience Sampling* (DES) method practised by Hurlburt, Heavey and others (e.g. Hurlburt & Heavey 2006; Hurlburt 1993), and the *Explicitation Interview* (EI) method practised by Vermersch, Petitmengin and others (e.g. Vermersch, 2009; Petitmengin, 2006; Petitmengin & Bitbol, 2009). After a survey of recent advances in the use of these methods in the science of consciousness, we identify a key problem that stands in the way of further progress: the DES and EI methods are driven by fundamentally different conceptions of consciousness, and these have important methodological ramifications. We suggest one possibility to obtain an objective measure that may help to resolve this methodological dispute.

2. Validating first- and second-person methods

One effective way to evaluate the scientific validity of the phenomenological results of first- and second-person methods is to see whether they help us to do better science or not. In other words, it is not necessarily important that we can validate phenomenological reports by having recourse to our own experience, it is sufficient that we can do better work as a result of having them.

An analogy with modern physics might be helpful here: it may be difficult to intuitively understand why the material universe works the way it does on the quantum scale, namely in a way that is utterly foreign to our everyday experience, but quantum physics is nevertheless

validated by the fact that it allows us to do extremely precise experimental work. Similarly, even if a study of phenomenology brings to light categories and concepts for which we lack personal understanding, and/or there is an uncertainty of measurement, these issues do not immediately spell the end of the scientific investigation of lived experience as long as these findings are coherent, replicable and enable us to do better science (Froese *et al.*, submitted). The important question is whether these phenomenological results can form a productive relationship in concert with other aspects of the cognitive sciences.

2.1 Using the existing phenomenological literature

Phenomenological data may offer an improved or alternative understanding of an experiment and/or some of the key puzzles of the field (e.g. Petitot *et al.*, 1999; Gallagher, 2005; Zahavi, 2006b; Gallagher & Zahavi, 2008). Perhaps more importantly, phenomenologically clarified understanding can inform new experimental procedures, an approach which Gallagher (2003; Gallagher & Sørensen, 2006) refers to as ‘front-loading phenomenology’. For instance, Gallagher (2000) suggested a distinction between the sense of bodily ownership and the sense of agency based on a phenomenological analysis of the experience of involuntary movement, and a number of experimenters have designed studies on the basis of this distinction (Overgaard *et al.*, 2008, pp. 108–109). The writings of phenomenologists who are practised in Husserl’s method of becoming aware in the first-person, namely the ‘phenomenological reduction’ or *epoché* (cf. Depraz, 1999; Depraz *et al.*, 2003), thus provide one source of concepts for ‘front-loading’ experiments.

It is also possible to draw on interview based qualitative research. Methods such as the Explicitation Interview (EI, Petitmengin, 2006) and Descriptive Experience Sampling (DES, Hurlburt & Akhter, 2006) can provide phenomenologically refined material that may inspire novel experiments. For example, Doucette and Hurlburt (1993) found that bulimic patients demonstrated a remarkable fragmentation of attention when compared to control participants, such that DES in bulimics demonstrated an ability to equally attend to several internal experiences whilst controls demonstrated a more singular focus. This alteration of attention had not been previously reported in the literature on bulimia, and it may be possible to validate this patient specific first-person report through appropriately designed behavioural experiments.

2.2 Helping participants to become aware of their current experience

In some cases it may not be possible to rely on existing phenomenological research to generate a testable experimental hypothesis. For example, the phenomenon of interest may not yet have been studied at sufficient depth or may occur under a novel experimental protocol or case. Here it may be beneficial to train the participants themselves to become better aware of their experience, and to come up with their own descriptive phenomenological categories which can then be used experimentally.

The feasibility of this approach was demonstrated in a study by Lutz, Lachaux, Martinerie and Varela (2002). They tested subjects on a well-known illusory depth perception task under the hypothesis that the variation in behavioural and physiological results could be accounted for by some as yet unknown aspect of the first-person report. The experimenters extensively trained subjects to become aware of and report their experience during stimulus presentation. The training consisted of asking the subjects open questions which would redirect their attention toward their mental processes, until they found their own stable experiential categories.

On the basis of similarity in the descriptions, the experimenters were able to cluster these reports into three states of readiness. When subjects performed the actual task they gave a brief verbal report of their experience after each stimulus presentation, which allowed classification of the trials according to the previously identified clusters. The authors found that the objective measure of reaction time to realization of the illusion was significantly correlated with the degree of preparation reported by the subjects. The experiential categories also accounted for a large amount of the variability of the neurophysiological measurements, thereby demonstrating the viability of a three-fold approach consisting of mutually informing behavioural, neurophysiological (EEG) and phenomenological data.

The phenomenological data obtained by Lutz and colleagues was validated by its correlation with other objective measures and enabled a more informed understanding of the EEG variability. However, by the same token it appears that the phenomenological training, 'front-loaded' design and first-person reports did not add any specific new insights, since similar results could have been obtained by simply using categories based on reaction times, if longer reaction times were treated as a behavioural marker of mental unreadiness. Lutz and colleagues admit this shortcoming of their work, but they highlight that

more can be potentially done with the experiential reports: ‘The more ambitious goal is to find a rigorous way to integrate a more sustained and careful examination of subjective experience, including its temporal structure’ (Lutz *et al.*, 2002, p. 1590).

The key advantage of this phenomenological approach is that it can be sensitive to qualitative differences between individuals and between different types of mental events, brought out via training. Lutz and colleagues could have extended this study by developing more detailed experiential distinctions from their existing data. For instance, there may be variation in the third-person measures related to differing sources of distraction, such as the inner speech of a thought, a visual memory, or attentional fatigue. Such differences may not have been detectable by reaction times alone, or via a pre-specified subjective scale of ‘readiness’ and ‘awareness’ (e.g. Christoff *et al.*, 2010).

In constrained experimental situations, even relatively untrained introspection obtains useful phenomenological reports, and where reporting biases do exist these are systematic and can be replicated (e.g. Marti *et al.*, 2010). Indeed, in some experimental settings training may not be needed at all; the Perceptual Awareness Scale (PAS) (Ramsøy & Overgaard, 2004) uses experiential categories based on *untrained* participant reports and provides a useful complement to alternative subjective measures such as confidence reports and post-decision wagering (e.g. Sandberg *et al.*, 2010; Overgaard *et al.*, 2010; Overgaard *et al.*, 2006; but see also Dienes and Seth, in press). These findings pose a clear challenge to specialized first- and second-person phenomenological methods: Under what experimental conditions can they measurably outperform ‘naïve’ methods such as describing PAS and confidence ratings?

2.3 Interviewing participants about their past experience

One possible set of conditions involves past experiences (episodic memories). In some cases it will not be possible to train subjects to become better aware of their experience by repeated exposure to the experience and reporting, a requirement for application of the ‘naïve’ methods described above. For example, the target experience might not be readily accessible in a laboratory setting; the experience may not be easily replicated, for practical and/or ethical reasons. In these cases methods such as DES and EI may help subjects to become aware of a past experience that has originally taken place elsewhere. In the DES approach individuals take notes directly after the occurrence of the experience and these notes form the basis for a subsequent

expositional interview. By contrast, the EI method aims to facilitate an evocation state in which the individual is able to re-live the past experience with greater awareness. Both methods aim at accessing detailed phenomenological reports of an individual's past experiences that can inform the design and interpretation of a psychological or neuroscientific investigation specifically tailored to that individual.

As a case study, consider the use of the EI method in an investigation of epilepsy (e.g. Le Van Quyen & Petitmengin, 2002; Petitmengin *et al.*, 2006; Petitmengin *et al.*, 2007), motivated by the unpredictable nature and onset of epileptic events. Finding out what happens in an individual's experience during and before the onset of a seizure presents a particularly difficult challenge to phenomenological research, as the disruption of the seizure itself often impairs the ability to recall what happened afterwards. Nevertheless, Petitmengin and colleagues enabled some individuals to become aware of aspects of their preictal experience of which they previously had no reflective awareness, via the discovery of a set of characteristic experiential markers. These markers occurred at different times ranging from a few seconds or minutes before the seizure (auras) up to 24 hours earlier (prodromes). Accordingly, the temporal range of neurophysiological measurements was extended and a desynchronization of the neuronal populations was observed, relating to the epileptogenic focus, up to 5 hours before the seizure onset (Le Van Quyen *et al.*, 2005).

During the EI it was also found that some patients occasionally spontaneously adopted different types of behavioral and cognitive countermeasures for stalling or preventing a seizure. The possibility of bringing the patient's spontaneous countermeasures to reflective awareness through the interview process could constitute the beginnings of a non-pharmacological, cognitive behavioral therapy of epilepsy (Petitmengin *et al.*, 2007).

Once again, however, the specific contributions of the EI method can be questioned. Previous explorations of patients' preictal lived experience had uncovered the existence of prodromes, without the need for specialized interview techniques. It is also possible that prodromal fatigue could have been picked up by alterations in psychophysical responses, e.g. via a psychomotor vigilance task, (Drummond *et al.*, 2005). Similarly the authors cite earlier neuroscientific studies which had already discovered the existence of characteristic neurophysiological markers hours before the seizure (note also that it is general practice to record EEGs in pre-op epileptic patients over an extended duration, thus this practice is itself not novel to the Petitmengin study). It is encouraging to find that the

phenomenological method has produced an insight which agrees with or confirms what has already been reported in the literature without any reference to phenomenology, but it is not clear whether any special interview technique was really required to draw these conclusions.

In summary, existing studies have played a crucial role in demonstrating the possibility of incorporating phenomenology into the current scientific framework, but it is important to try to go beyond correlating phenomenological data with a pre-existing body of knowledge. We are not aware of the existence of any ‘killer experiment’ which would conclusively demonstrate that a first- or second-person approach to gathering refined phenomenological data of a participant has led to a substantial breakthrough in consciousness science. In particular, it remains to be shown whether these specialized approaches lead to insights that can be cashed out in scientific terms, over and above what could have simply been achieved by informally asking untrained participants about their experience.

3. Calibrating first- and second-person methods

As well as establishing whether phenomenological methods can provide unique scientific insights, it is also important to examine whether one specialized phenomenological method is better than another. A systematic response to both these questions requires a way of objectively calibrating the effects of different first- and second-person methods in relation to an independent standard.

3.1 Descriptive Experience Sampling (DES) and the Explicitation Interview (EI)

The Descriptive Experience Sampling (DES) method was originally developed by the American psychologist Russ Hurlburt (Hurlburt, 1993; Hurlburt & Heavey, 2006) in order to investigate the naturally occurring experience of a person as objectively as possible. The standard DES procedure is to fit a participant with a small electronic device (a ‘beeper’), which emits a ‘beep’ through a headphone at random intervals during the day (usually 5–6 times in 24 hours) while the participant is occupied by his usual activities. This ensures that the experience is captured in a natural setting.

The participant is given a small notepad and instructed to immediately take notes about what was going on in their experience at the time just before the beep was heard. This is followed by an ‘expositional interview’, typically within 24hrs of collecting the samples, by an interviewer who is skilled at bracketing presuppositions

about the nature of experience, and then the process is repeated over a number of days. The aim of the expositional interviews is not only to collect accurate phenomenological data, but also to train participants to become better aware of their experience so that they can report it more adequately after the next iteration (Hurlburt, 2009). This method can therefore be considered as one possible way of realizing Husserl's phenomenological project in a scientifically rigorous manner:

DES seeks out, explores, and describes the very phenomena experienced by actual people doing everyday things in natural environments. DES tries to encounter those phenomena faithfully, exactly as they present themselves, as free from distortions as possible; it is therefore an uncomplicated intention: just describe the experiences that were occurring at the moments of the beeps. DES is pure phenomenology in a simple, straightforward sense: to the phenomena themselves! (Hurlburt & Akhter 2006, p. 294)

The EI method was developed by the French psychologist and psychotherapist Pierre Vermersch (1994) as a means of transcending the limitations of scientific analysis based purely on behavioural data and by training individuals to become better aware of their professional practice. It draws on insights from a number of related methods, ranging from the original work of the introspectionists, to therapeutic and mindfulness practices (Petitmengin, 2006). This method has recently been brought to wide attention in the English speaking scientific world in the context of Varela and Shear's (1999) edited book *The View from Within* (e.g. Vermersch 1999; Petitmengin-Peugeot, 1999), and has been further promoted by Claire Petitmengin and others (e.g. Petitmengin, 2006; 2009; Petitmengin *et al.*, 2007; Petitmengin & Bitbol, 2009).

The main goal of the EI method is to facilitate the re-living of a specific past experience in greater detail by helping the participant to enter a so-called 'evocation state'. In this state the past experience is re-evoked by the participant so that it once more becomes lived as-if present; the interviewer is then tasked with guiding the participant's attention to previously unnoticed or forgotten aspects of that moment:

In the context of an interview, to guide the interviewee towards a concrete evocation of a past situation or a situation that has just occurred, the interviewer helps him to rediscover the spatio-temporal context of the experience (when, where, with whom?), and then with precision the visual, auditive, tactile and kinesthetic, olfactory and possibly gustatory sensations associated with the experience, until the past situation is 're-lived', to the point that it is more present than the interview situation. (Petitmengin, 2006, pp. 244–245)

The DES and EI approaches are to some extent complementary. For example the EI method could also make use of ‘beeper’ sampling on occasion, and both methods make use of a similar investigative structure. However, there are also some fundamental theoretical and methodological disagreements between the methods. We discuss the points in common next, followed by the points of contrast.

3.2 *Common methodological issues*

The DES and EI methods, and perhaps second-person approaches in general (e.g. Depraz *et al.*, 2003; Petitmengin & Bitbol, 2009), share a similar three-fold structure of investigation, illustrated in Figure 1. According to this second-person framework, the ‘first-person’ approach to the study of experience is embedded within a ‘second-person’ interview context, such that the recall and introspection of the interviewee can be systematically guided by a skilled interviewer. When these methods are applied in consciousness science, the interview itself is embedded within a ‘third-person’ research project that determines what type of person and/or type of experience is being investigated, and which provides the wider scientific context in which the interview transcript is analysed.

It is important to keep this three-fold structure in mind when it comes to validating and calibrating second-person methods because it suggests that there are several distinct methodological areas which are vulnerable to bias:

- Bias 1 Third-person impositions: This bias has at least three aspects. The investigator has to decide (i) *who* to study. This choice determines a whole category of subjects, such as people with epilepsy (e.g. Petitmengin *et al.*, 2007) or with disturbed affect (e.g. Hurlburt, 1993), as well as suitable individuals within that category. The investigator also has to decide (ii) *what* to study. This can be a broad category, such as any ‘inner’ experience of the world and/or the self (e.g. Hurlburt & Heavey, 2006), or something more specific, such as the experience of imagination or intuition (e.g. Petitmengin, 2006; Petitmengin-Peugeot, 1999). Finally, it also must be decided (iii) *how* to study. The problem here is that the goals of the research may implicitly bias the approach of the interviewer, and thereby potentially exaggerate bias B2.
- Bias 2 Interviewer beliefs: The interviewer has a significant influence on the interviewee, and this can be both advantageous and detrimental. On the positive side, the interviewer is able to systematically guide the interviewee in order to help them avoid

reporting on the content of beliefs and thoughts rather than their experience. On the negative side, there is a danger that the reformulations and interventions of the interviewer can suggest words to the interviewee which misconstrue their experience.

- **Bias 3 Interviewee beliefs:** No interviewee will be without pre-suppositions; they will be more or less familiar with their experiences and more or less skilled at reporting it. (Try it for yourself: am I thinking, believing, imagining, or perceiving that I'm reading this sentence? Or am I living an experience that is not adequately expressed by any of these categories? How can I tell the difference?) In addition, interviewees may alter the reports of their experience because they are keen to please the interviewer, or they may be disinclined to fully cooperate, perhaps because of trust issues (Roepstorff & Jack, 2004b). In addition, it is possible that the participant forms an interpretation of the purpose of the study and unconsciously changes their behaviour accordingly. These issues can be summarized under the broad and well-known headings of demand artifacts and the unavailability to introspection of causally relevant processes, as first identified in the classic paper by Nisbett and Wilson (1977).
- **Bias 4 Analyst's interpretation:** The theoretical assumptions and concepts of the analyst will determine how the outcome of the interview (the raw data) is interpreted on many levels. On the most basic level, they inform the distinction between actual data (e.g. reports of experience) and noise (e.g. inauthentic reports; reports of non-experiential phenomena). This data will then have to be sorted according to how relevant they seem to the goals of the study, where relevance is subjectively determined the implicit values of the analyst over and above the explicit criteria of Bias 1.

These methodological issues are illustrated in Figure 1.

All of the potential biases will affect the second-person study of experience to some degree, although the extent of this detrimental impact can be significantly mitigated when proper care is taken to control for them. The issues implicated in achieving this control are diverse and involve:

First- and second-person

- **Bias 2 and 3:** How best to administer appropriate training to interviewees (e.g. Hurlburt, 2009; Petitmengin, 2006; Varela & Shear, 1999b).

- **Bias 2:** How best to become aware of the phenomenological characteristics of the second-person interview approach itself by applying it in a reflexive manner (e.g. Petitmengin & Bitbol, 2009).

Third-person

- **Biases 2 and 4:** How best to measure and compare the reliability, consistency and validity of phenomenological reports obtained by different interviewers (e.g. Hurlburt & Heavey, 2002).
- **Biases 1 and 4:** How best to measure the reliability, consistency and validity of phenomenological reports of individuals in relation to behavioural (e.g. Hurlburt *et al.*, 2002) and neuroscientific measures, for example by means of ‘triangulation’ (e.g. Jack & Roepstorff, 2002; 2003b) and ‘mutual constraints’ (e.g. Lutz & Thompson, 2003; Bitbol, 2002; Varela, 1996).

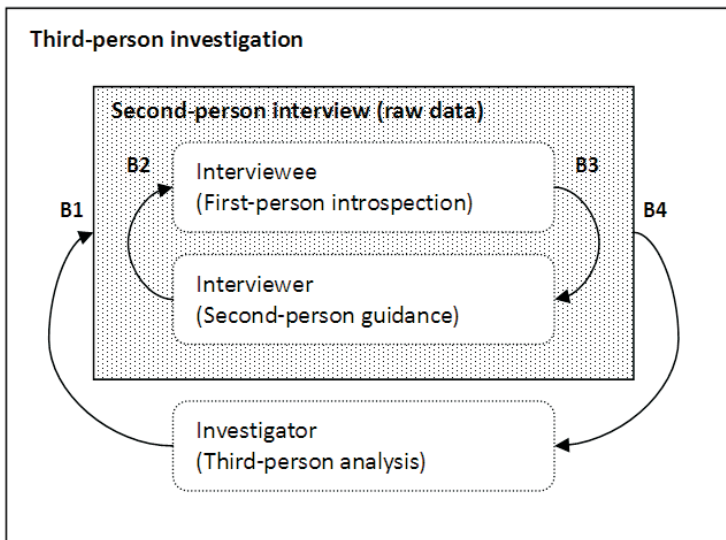


Figure 1. The DES and EI methods share a three-fold structure of investigation. There are a number of influences which could be subject to bias (B): The investigator decides with whom and for what purpose the interview should take place (B1), the interviewer guides the interviewee (B2), the interviewee may be misleading the interviewer, consciously or unconsciously (B3), the investigator will have to interpret the transcript according to assumptions of relevance (B4). See text for more details.

It is beyond the scope of this paper to summarize all of these different ways of dealing with potential biases (see, e.g., Seth *et al.*, 2008; Sandberg *et al.*, 2010; Marti *et al.*, 2010). And, biases aside, second-person methods are now sufficiently established for broad usage (e.g. Depraz *et al.*, 2003; Petitmengin 2009). Moreover, as we have argued already, the validity of the experiential reports that are generated by such methods can be assessed and validated, at least indirectly, by relating them to relevant behavioural and/or neurological measures.

3.3 Methodological differences between EI and DES

Despite the growing popularity of phenomenological analysis in consciousness science, there is little agreement about what constitutes a rigorous second-person method of investigating experience. The debate (using terminology of the phenomenological tradition in philosophy) centres on the following fundamental question: *Can past pre-reflectively lived experience be re-lived reflectively in the present?*

This question involves at least two aspects of contention: (i) whether it makes sense to speak of pre-reflective experience at all, i.e. is there any experience that is consciously lived but of which we are not thematically (or focally) and reflexively aware, and (ii) even assuming the existence of such pre-reflective experience, whether this assumption justifies second-person methods when investigating an experience that happened in the past.

According to the EI method, it is indeed possible to reflectively re-live an experience which was initially pre-reflective. In fact, its whole methodology is predicated on the assumptions that (i) pre-reflective experience exists, and that (ii) it can be subsequently re-enacted and re-lived when one is guided into an appropriate 'evocation state' by a suitably skilled interviewer.

Whether the experience explored has been lived just a few instants or a few years previously, retrospective access is necessary, as we have seen. The interviewer must therefore guide the interviewee towards the 're-enactment' of the past experience. This technique is the key [...]. (Petitmengin, 2006, p. 244)

The DES method disagrees with this characterization of the aims and scope of the second-person interview process. It advocates that subjects must first be trained to observe their experience, and that it is not possible to access experience that the subject was not already reflectively aware of beforehand. Contrary to the EI, DES is precisely designed so as to minimize retrospection:

The fact is that JT (like most first-time subjects) was *not* ready to observe [...]. So yesterday his original pristine experience came and went, was apprehended in a low-fidelity way, mixed with presupposition and self-presentation. *No amount of interviewing, no matter how skilled, could have reversed that.* Next time, however, he can, perhaps, do better. And the time after that, better still. (Hurlburt, 2009, p. 185)

Accordingly, the DES method is predicated on an assumed inability to re-live what was previously pre-reflective and it therefore puts its methodological focus on iteratively training subjects to be more reflectively aware of their experience and to avoid retrospective inquiry as far as possible. From the perspective of the EI method, on the other hand, such scepticism regarding the fidelity of descriptions of past experiences of an untrained subject is understandable but is ultimately misguided. Since this dispute goes to the very heart of the conflict between the EI and DES methods (and is also related to other areas of consciousness science, e.g. Lamme, 2010; Block, 2007), it is worthwhile quoting Pierre Vermersch, the original founder of the EI method, at length:

The whole of our life is surrounded by information which is acquired continuously in an involuntary, passive way. This information remains available depending on its usefulness, or if not it disappears from consciousness, but not from memory. We have here several ideas: the first is that of retention, as a permanent passive memorisation of elements of my lived experience; the second is that as the content of my lived experience is to some extent pre-reflective, and this is of course the case of retentions which are continuously acquired, I will only know it when I recognise it by its reflection. Its memorisation, if it has taken place, is in a way doubly unknown to me! I do not know it in the sense of not having reflective consciousness of it, but furthermore I do not know what has been memorised inside me. One can thus understand one of the main difficulties of retrospective introspection, which is quite discouraging for anyone attempting it alone: not only do I have the impression that I do not remember, but in any case, it appears to me with near-certainty (a false near-certainty) that nothing is available to be recollected. The resulting conclusion is that it does not work, and that it is impossible to carry out research by this method! When in fact one has 'simply' to create the conditions which enable the reflection of the lived experience. (Vermersch 2009, p. 41)

On this view, the DES approach has failed to replicate the insights of the EI method not because the latter is invalid, but because DES fails to create the right kind of conditions during the expositional interview (see Petitmengin, 2006, p. 253). From the perspective of DES, however, the validity of the results of the EI method is questionable because the facilitated recall may just as well have induced the

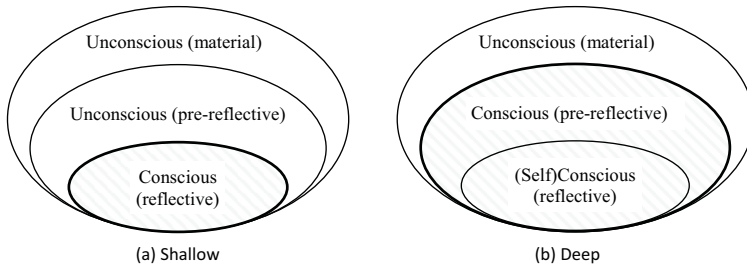


Figure 2. Two competing conceptualizations of consciousness: (a) In some research traditions the term ‘conscious’ refers to phenomena that are directly experienced during self-reflection (and, hence, are available to verbal report); (b) in other traditions those reflective phenomena are classified as being specific to *self*-consciousness since, on their view, the term ‘conscious’ encompasses pre-reflective experiential phenomena as well since our conscious experience also includes phenomena in addition to those we are paying attention to and reflectively aware of. We refer to these two conceptualizations as ‘shallow’ and ‘deep’, respectively.

participant to construct a fictional account of what happened (therefore compounding bias B2 and B3 in Figure 1). Ultimately, the DES and EI methods have not been calibrated with each other, perhaps because they differ in their core assumptions about the structure of consciousness.

3.4 Conceptual differences between EI and DES

A key conceptual difference between EI and DES appears to turn on their appeal to different conceptions of consciousness, which we refer to as ‘shallow’ and ‘deep’, as illustrated in Figure 2.

We define a ‘shallow’ conception of consciousness as one where the term conscious is only used to refer to phenomena of which a subject is reflectively aware, while everything else is referred to as unconscious. This view is especially popular in the cognitive sciences, where it is promoted by those who claim that some form of cognitive access is constitutive of consciousness, such as in the case of the higher-order thought (HOT) theory of consciousness (e.g. Rosenthal, 2005) and, perhaps, the global workspace theory of consciousness (e.g. Baars, 2005). A shallow conception is also closely associated with the computational theory of mind, since it is a natural complement to the idea of the ‘cognitive unconscious’, i.e. the idea that there can be a cognitive event without any phenomenological changes accompanying it.

A ‘deep’ conception of consciousness, on the other hand, is more encompassing. It certainly includes the phenomena which are of interest to the shallow conception, namely those which are reflectively lived and hence directly available to verbal report. But it treats the phenomena which are of interest to the shallow conception only as one specific type of experience (self-consciousness, or an explicitly thematized awareness of lived experience). On this deep view, consciousness also includes pre-reflective experiences, which are experiences that are lived but without the person being focally or thematically aware of them (this is sometimes also called intransitive consciousness; Zahavi, 2006a). On this view the idea of a ‘cognitive unconscious’ is somewhat problematic, as it may turn out that all cognitive events are pre-reflectively lived at least to the extent that they influence what, using Nagel’s (1974) famous turn of phrase, it is like to be that person.

It might seem that the distinction between shallow and deep conceptions of consciousness is merely a debate about which are the best labels for several categories of phenomena whose boundaries we may come to agree on, and that the problem can be resolved if we are careful to make explicit how we make use of the concept of consciousness in our arguments. Accordingly, Dienes and Seth try to strike a conciliatory tone when they note that:

[O]ne can assume that a person can be (in a very weak sense) conscious of a feature without assuming that they are conscious of it with a conscious mental state. [...] For HOT theory, it is only if the person is aware of seeing that the seeing is a conscious mental state. [...] There is no need to quibble over words; clearly, the distinction between those perceptual or learning processes that allow awareness of knowledge and those that do not is interesting, whatever terms one uses (conscious vs. reflectively conscious, etc.). (Dienes & Seth, 2010, p. 324)

There is indeed an interesting qualitative difference between these two classes of phenomena — those of which we are directly aware and those which we are not — and this difference merits scientific study no matter which words one chooses to describe them (e.g. conscious vs. unconscious; reflectively vs. pre-reflectively conscious; self-conscious vs. conscious, etc.). However, it is also the case that words are never merely words and that the term ‘conscious’ brings up widely different connotations and expectations than the word ‘unconscious’. For instance, as phenomenal (or experiential or lived) quality may be an essential aspect of consciousness, the distinction between conscious and unconscious conjures up the ‘hard problem’ of the absolute explanatory gap (Chalmers, 1996). The distinction between conscious

and unconscious is effectively asking: why is there something it is like to be the former but not the latter? And if we accept the shallow conception of consciousness, then this places the ‘gap’ within the mind itself, because only reflectively self-aware mental events are considered to be conscious, while the remaining mental events are treated as being as unconscious as generic material processes.

There are at least two consequences of such an intra-mind gap in the shallow conception of consciousness: (i) it may be misleading as to what is involved in the process of becoming reflectively aware, especially since the scientific explanation of such reflection has to carry the weight of the explanatory gap, and (ii) it deflects attention from other distinctions that could perhaps be more relevant for solving the hard problem of consciousness, such as what defines mentality, cognition, and living.¹ These problems are not new. According to Husserl’s phenomenological tradition in philosophy, which was inaugurated at the start of the last century, the shallow conception of consciousness is fundamentally misguided because it leads to an approach which tries to explain consciousness in terms of self-consciousness (Zahavi, 2006a). It is beyond the scope of this paper to assess the viability of a Husserlian phenomenological theory of mind which takes into account the existence of pre-reflective experience (Gallagher & Zahavi, 2008; Thompson, 2007); here we wish to focus only on the methodological implications of these two conceptions of consciousness.

One immediate consequence of the shallow conception of consciousness is that it restricts the potential domain of investigation. After all, how I make use of first- and second-person approaches to consciousness will depend on how I conceive of consciousness. And if I understand the concept of consciousness in terms of self-consciousness, then I will only use these methods to investigate self-consciousness and stop there. A deep conception of consciousness, on the other hand, will be a motivation for using these methods to extend the domain of investigation beyond that which is directly accessible to self-consciousness, and to bring previously implicit aspects of lived experience to focal attention.

From this difference in theoretical perspectives one can understand the diverging methodological choices of the EI and DES approaches. Thus, adherents of the EI method accept that there is a pre-reflective mode of lived experience (a deep conception of consciousness) and accordingly are interested in devising methods to access this

[1] There are compelling arguments to draw the relevant distinction at the organismic level. On this view, lived experience is an essential property of the living (cf. Hanna & Thompson 2003; Torrance 2007).

experience. Proponents of the DES method, on the other hand, conceive of consciousness so that its scope coincides with reflective self-awareness alone (a shallow conception of consciousness) and accordingly consider it a mistake to try to facilitate the process of becoming aware in a way that introduces previously non-reflective (and thus, on this view, non-conscious) elements. Instead participants are encouraged to limit their reports to those aspects of experience that were already in the focus of their attention at the time when the experience first took place.

Since there have been no conclusive demonstrations that either the EI or DES method is better suited for investigating lived experience, the distinction between a deep and shallow conception of consciousness at least enables us to understand their fundamental methodological differences in terms of competing intuitions about what it means to be conscious.

3.5 Toward an objective resolution of these differences

How do we resolve this methodological and conceptual dispute between DES and EI? Again, the problem is that an interviewer using the EI method may well obtain more detailed verbal reports than when using the DES method, but how can we know that these additional details were actually experienced previously, and whether they were pre-reflective experiences or already reflective experiences that were then forgotten? What if they are merely reports of falsified reconstructions that have been induced by the interview process (e.g. Nisbett & Wilson, 1977)?

In their critical review of the EI method, Hurlburt and Akhter (2006) acknowledge the potential benefits of getting subjects to undergo guided re-living of past experiences, but they prefer to err on the side of caution regarding the fidelity of this re-lived experience: ‘Pristine experiences can be remembered (approximately) and discussed (faithfully) but whether they can actually be replicated would somehow have to be demonstrated’ (Hurlburt & Akhter, 2006, p. 289). But is there a way to demonstrate the validity of the EI method of evocation and re-enactment?

The EI community has traditionally taken a pragmatic approach to resolving this worry. To start with, it can point to a growing body of scientific studies that generate at least some insight, as well as cases in which its method has significantly improved the livelihood of individuals coming from a variety of backgrounds (for a recent review, see Maurel, 2009). More provocatively, it has advocated addressing

methodological concerns by applying the EI method to itself in a second-order manner, a kind of introspection of introspection (e.g. Vermersch, 1999; 2009; Petitmengin & Bitbol, 2009). But neither of these responses is fully satisfactory, especially in the context of a methodological dispute regarding the scientific validity of experiential reports.

First of all, it may indeed be the case that the EI method conveys therapeutic benefits to the interviewee, but this says nothing about the process by which this feat is accomplished. One possibility is that it actually facilitates an insightful becoming aware of past pre-reflectively lived experience, but it is equally conceivable that the interview leads to the creation of a *cathartic fiction* that helps the individual to come to better terms with their situation.² In other words, the method may be of therapeutic value, but less interesting for a science of consciousness.

Similarly, from the perspective of DES it is not clear whether the EI practice of intentionally setting up the interviewee to have a particular experience, whether in ‘first-order’ terms by getting them to imagine (e.g. Petitmengin, 2006), to recall an intuitive experience (e.g. Petitmengin-Peugeot, 1999), to listen to a sound (e.g. Petitmengin *et al.*, 2009), or in ‘second-order’ terms by guiding them to become aware of becoming aware of such an experience (e.g. Petitmengin & Bitbol, 2009), does not reduce the scientific worth of these results by placing the participant in an artificial experimental setting rather than allowing their experiences to occur naturally in the field:

Science should do all it can to minimize the forces away from personal truths; in particular, at this stage in the science, we think it is quite risky to believe that observing manipulated experience will reveal the important features of consciousness. Observing manipulated experience might be adequate, but that should have to be shown, not assumed. (Hurlburt & Akhter, 2006, p. 294)

The potential biases of working with manipulated experience casts doubt on another possibility of verifying the EI method via introspection of introspection, such that it becomes a *second-order* second-person method: the aim is to become aware of and describe the experience of the process of becoming aware of and describing experience. This approach, pursued by Petitmengin and Bitbol (2009),

[2] Another unexplored possibility could be that the EI process falls somewhere in between the two extremes of truthful replication and fictional reconstruction, whereby the understanding of the past experience is enriched by new meaning. On this view, a second-person interview would be a special case of ‘participatory sense-making’ (De Jaegher & Di Paolo, 2007) which facilitates an individual’s retrospectively oriented sense-making.

Vermersch (2009) and other authors (Petitmengin, 2009), is a potentially valuable project, but these studies will just beg the question for someone who is not already convinced by the general approach: if we cannot trust what the method finds in the first place, why should we believe what it claims to find out about itself?

To this final conundrum the EI practitioner replies: in that case why don't you try to become aware of the process yourself and see whether you find your scepticism confirmed? But to this question DES responds as the ultimate sceptic, since it does not even trust the experience of the interviewer themselves: 'DES believes, to the diametric contrary, that it is *hazardous* to check validity against your own experience' (Hurlburt & Akhter, 2006, p. 292). It is unlikely that DES can actually justify this sort of scepticism, especially since its method fundamentally depends on recourse to the interviewer's own experience. How else would they know what 'inner experience' even is? But DES is right to point out the need for a more impartial assessment of the methodological situation.

One possibility, which so far has been explicitly avoided by DES, is to set the 'beepers' so that they go off again directly after a 'beep' in order to catch the participant in the act of becoming aware of their experience and describing it. It may turn out that in these moments participants are engaged in a brief retrospective re-living of the past situation that is evoked by the kind of gestures which the EI method tries to facilitate. But then again, DES may continue to reject these results as invalid because they are the product of a manipulated experience.

4. The Double Blind Interview (DBI)

What we need in order to resolve this methodological and conceptual dispute, and thus to calibrate the aims and scope of DES and EI with each other, is an independent measure of how accurate the description of a past experience can be. But here lies the very crux of the problem: 'At present, the science of experience has not worked out a method to measure the fidelity of an observation' (Hurlburt, 2009, p. 187). In this section we suggest a novel procedure, the Double Blind Interview (DBI), which may be a first step toward an objective measure of such fidelity.

4.1 Toward an objective measure of retrospective accuracy

Consider an experimental scenario based on the study of visual perception of crowded displays (e.g. Sperling, 1960; Lamme, 2010; Block, 2007). When participants are briefly presented with a display of a large number of items, they report having had awareness of the

whole display although it is no longer accessible to reflective awareness in all its details (they can typically only report about four items). How are we to interpret the apparent discrepancy between the verbal report of a conscious awareness of the entire scene and the behavioural ability to recall only a limited scene?

The deep conception of consciousness would hypothesize that participants were focally or thematically aware of the display *as a whole* (i.e. as a meaningful situation, Greene & Oliva, 2009), as well as a few specifically attended items, and that the other non-attended and non-reportable items were only experienced pre-reflectively. In other words, the participants were reflectively aware of the global properties of the display as well as of a few salient items, while the rest of the detailed visual scene was only experienced in a pre-reflective manner. On this view, they thus truthfully reported seeing the whole display because of the combined impression of reflective and pre-reflective experience, although they could only easily specify those items which had been reflectively experienced. Further recall would depend on being able to become reflectively aware of the pre-reflectively experienced details of the scene.

In contrast, the shallow conception of consciousness has two options. On the one hand, it could hypothesize that the verbal report about the rich nature of the visual experience is based on an illusion and that in actual fact, and contrary to how the experience appeared to the participants, they actually only experienced a few items (e.g. Kouider *et al.*, 2010; Dehaene *et al.*, 2006).³ It may seem counter-intuitive to assume that we could be wrong about how our own experience appears to us, but there are good reasons for accepting that this is in fact the case (see Schwitzgebel, 2007). We may, for example, confuse the content of a belief about a certain experience with the content of that experience itself. On the other hand, the shallow conception could hypothesize that the participants were in fact reflectively aware of all the items, but that the complete iconic memory of the scene is

[3] In this respect the 'shallow' conception of consciousness is closely related to theories of perception which conceive of the visual world as a 'grand illusion' (e.g. Noë, 2002). One popular idea is that the experiential presence of a detailed world is constituted by our sensorimotor skills which could potentially bring absent details into view (Noë, 2004). The 'deep' conception, on the other hand, would argue that many details of our visual world are not absent but merely pre-reflectively experienced. The concept of pre-reflective experience would therefore allow sensorimotor theories of perception to focus their account on the individual presence of objects within a multiplicity of profiles (Husserl's *Abschattungen*), while the holistic presence of the world as such is better understood as the potentiality of becoming reflectively aware of pre-reflective experience.

very fragile so that they quickly forget most items except for a salient few (e.g. Sperling, 1960; Coltheart, 1980).

It does not matter to our current purpose which of these three hypotheses, if any, turns out to be the correct interpretation of the data. Whether the reported experience of seeing all the detail is best conceived as veridical or illusory, pre-reflective or reflective is beside the point, at least for now, since we are interested in the fact that there was a report of an experience of rich detail that is no longer reflectively accessible in the present.

We now have an experimental paradigm which transcends the opposition between the shallow and the deep conception of consciousness. Both can agree that participants have reported experiencing a detailed display during its brief presentation and that immediately afterwards many of the details of this experience, for whatever reason, are no longer available to reflective consciousness. This paradigm therefore presents a suitable challenge for the second-person methods to facilitate the recovery of the details of this past experience by means of an expositional or evocative interview.

Although in practice a skilled interviewer will avoid guiding the interviewee in a leading manner, such an influence is difficult to rule out in principle. Fortunately, this type of bias (B2 in Figure 1) can be avoided by making sure the interviewer has no knowledge of what the correct details are, or even a knowledge of the range of possibilities. We therefore refer to this approach as the Double Blind Interview (DBI) method, since at the start of the interview neither the participant nor the interviewer can report all of the details of the display. If the interviewer can enable the participant to become more reflectively aware of the details of the past experience, and is also able to ascertain the authenticity of the verbal reports in the context of their second-person interaction, then they should have significantly more detailed knowledge about the display after the interview. That is, an interviewer skilled in the use of second-person methods should be able to construct a list of items which were likely in the experience of the participant (and a list of those items that were reported but should be rejected as confabulated or uncertain).

The final outcome of the interview can then be compared with the original display. This will give some indication of whether the interview process led to a false reconstruction or a veridical reliving. Of course, some care must be taken when interpreting the results. A false positive, i.e. an apparently authentic report about something that was not actually present, must be treated as ambiguous: it may be that the participant is accurately reporting their experience but that they did

not have a veridical percept of the stimuli at the time. Similarly, a slight mismatch may be indicative that this aspect of the experience was highly pre-reflective (deep view) or badly memorized (shallow view), rather than distorted by the interview process itself. A matching report, on the other hand, is strong evidence in support of the view that the interview process does not necessarily lead to a falsified reconstruction and that the participants did in fact experience more than they could easily report on their own. In other words, we need to beware of confusing the content of the stimulus with the content of the experience of the stimulus (the so-called 'stimulus error', Petitmengin & Bitbol, 2009, pp. 364–365). However, when participants are facilitated so as to report items of their experience that were in fact also part of the stimulus, then it is most parsimonious to assume that they report these items because they were in fact part of their original experience.

Accordingly, if it should turn out that there are some skilled interviewers who can improve the participants' ability to describe the crowded display in significantly more detail, then at least we have addressed the serious worry that the retrospective method is untrustworthy. We would also have the beginnings of a method of *measuring and calibrating* the level of skill of interviewers and interviewees in generating faithful reports of their experience. That is, a score for facilitated recall (calculated on the basis of an interviewer's ability to facilitate recall for a number of different participants, or on the basis of an interviewee's recall ability to be facilitated by a number of different interviewers, or some combination of the two) could be introduced as an explicit requirement for publishing verbal reports of lived experience. In this way readers would be enabled to objectively assess the level of introspective skill which played a part in the generation of the reports, and hence their reliability and authenticity.

Like any scientific result, measurable success at this or a similar task can stand on its own, without forcing a particular interpretation of the data. Of course, it would lend credibility to the EI method, especially since it claims to create the conditions for reflectively re-living a past experience in the present, but other interpretations that do not appeal to the notion of pre-reflective experience may also be possible. What is important in arbitrating the dispute between the EI and DES methods is that we can objectively measure the validity of their interviews without presupposing any commitment to a 'shallow' or 'deep' conception of consciousness. Once we have the phenomenological and objective data of the DBI method, it may be possible to begin to disentangle the deep and shallow conceptions of consciousness in an experimentally informed manner.

5. Concluding remarks

The science of lived experience is in many respects still in the early stages of development as a scientific tool. In other fields there are strict procedures which ensure that methods are objectively validated, the instruments are calibrated according to international standards, and any procedural and instrumental deviations from the norm are taken into account when describing the experimental method. The resulting data and its interpretation are understood to provide an accurate representation of the system under investigation.

Despite the valiant efforts of a few first- and second-person researchers, published work in consciousness science on the topic of lived experience is currently not held up to the full scrutiny of these validation and calibration standards. Moreover, the problem is as much an institutional one as a personal one: how many of us are skilled at telling apart the different facets of experiencing? When we report on our lived experience, how sure are we that we are actually talking about lived experience, rather than the content of a thought or a belief about the experience? And how do we tell the difference between them? The painful truth is that most of us do not know ourselves nearly as well as we would like to believe.

We may have developed sophisticated methods to study the neural and behavioural correlates of verbal reports, but how those reports are generated in the first place still remains mostly hidden inside the ‘black box’ of the experiencing subject. Accordingly there is an increasing need to match the sophistication of traditional (third-person) methods with a better understanding of the gestures that enable subjects to report their experiences in a more detailed and accurate manner. In this paper we have critically reviewed two promising candidates for this job, the Explicitation Interview and Descriptive Experience Sampling, and offered one possible objective measure, the Double Blind Interview, which could allow the validation and calibration of these methods.

At the same time it is reasonable to suppose that first-person and/or second-person introspection alone will never be a sufficient guide to the mechanisms underlying lived experience. However, when taken in conjunction with other behavioural and neural properties and signatures, especially those that bear an explanatory, informing or constraining relation to phenomenal properties (Seth, 2009; Froese *et al.*, submitted), introspective and especially second-person interview methods are likely to form an increasingly important part of the methodological toolkit in consciousness science.

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Pierre Vermersch

No Competition Between DES and EI

Reply to Froese, Gould and Seth

It is absurd and without any scientific interest to try to play off DES against EI, as if the question was to know if one method is better than the other in the absolute. All methodological inventions deserve to be tried and tested. But the question is how apposite are they to their object of study. However, Froese and Gould's article opens a range of issues that are important and interesting. I would like to contribute my own vision of the answers to these questions.

The key issue is that of the reliability of verbal reports, whether collected at the very time of the experience (DES) or *a posteriori* (EI). To answer this question, we must have elements of comparison, that is independent data sources. It is pointless to ask 'whether the subject really experienced what he is describing', because no one has the possibility of objectifying his/her experience and then comparing it to the verbalizations related to this experience. As researchers, what we know about this experience is what is said about it. However, it is possible to compare verbalizations with traces and observations concomitant with the experience of reference, and to assess the plausibility of what is said, given that every experience takes place in the world and must obey physical, temporal and logical constraints. And the more numerous these constraints are, the more they have the opportunity to unfold, the more they will enable us to corroborate the accuracy of what is said and to measure the distortions (which are just as interesting).

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In this discussion on reliability, I give therefore a key role to the ability of the different types of task or situations to facilitate this evaluation of verbalizations. I emphasize the interest of studying productive tasks, which are finalized, articulated, and of a length which is sufficient but not excessive.

I will not try to discuss the relative value of theories of consciousness. Whether a theory is true or not is not important. In the genesis of my approach, I did not start with the theory of my practice. I began with inventing a practice, and in so doing I collected verbalizations which surprised me, which did not fit with the limits of memory that I had been taught at university. In addition, the subjects who stated them were themselves surprised to discover what they were able to remember, even if they identified well that this belonged to their experience. The model of pre-reflective consciousness stemming from Husserl's phenomenology finally emerged as the only possible source of intelligibility for autobiographical detailed memory. This modelling may be wrong, but that is not what is important. What is crucial is the possibility to gather information on the experience of the subjects. If I do not put myself in the position to try it, to do it, I may *believe* that it is impossible and useless (Hurlburt), but this does not prove that it is impossible or useless.

A. Three types of studied situations and their implications for the possibility of assessing the reliability of verbalizations

Tasks or situations to be studied are first selected according to their relevance to the subject of study, i.e. they must enable the collection of empirical data that will bring us knowledge. But when we discuss methodology, we must carefully note the fact that researchers are inclined to study a privileged type of task. The positive consequence is that they can bring more and more precise conclusions on their subject of study. The negative one is that they may not realize they have developed theoretical discourses and methodological practices that are *ad hoc* to these types of situations and cannot be easily transferred to other situations. In my view, this is the case with Hurlburt; in other words, I have no criticism about his research, but his methodology seems to be *ad hoc* to his subject of study and cannot be generalized. In fact, it is especially appropriate to study states, addictions, and all subjects of study that are continuous throughout the day. If there is *continuity*, then all lived moments are equivalent, and it is possible to select them randomly while remaining relevant.

(1) The DES method. Specifying the experiences of reference randomly throughout the day, why not? It is an interesting and original idea in its principle and cannot be dismissed out of hand. Nevertheless in my view, it presents several limitations since it cannot suit all subjects of study.

- This method is not appropriate to study all situations: it is well suited for continuous situations (diseases, addictions, specific ways of relating to the world), but not for finalized and time-limited situations, such as performing a task or experiencing particular types of event (for example epileptic seizures), which have their own temporality, and can only be studied at the very moment they occur according to their own logic, or through retrospective access.
- In particular, this method will not enable us to study the activity which occurs in response to the solicitation of the beeper. It will not allow this since this activity is a time-limited event and (according to the criteria of the author) must be described just afterwards in order for the description to be reliable. To study the practice of the method, another method should be used.
- It is not sure that the method does not introduce a bias related to the wait for the beep all along the day, and a response mode which at the same time improves through repetition and deteriorates through habit. The beeper creates a predictable unpredictability, as we know it will happen, we just do not know *when* it will happen. It may therefore create an expectation, or even an attitude of preparation, unlike an unpredictable unpredictability, for which we cannot prepare ourselves because we do not even imagine it could happen. Among the biases introduced by the *provoked* methods, the beeper method installs a framework which is provoked by the researcher, unlike the *invoked* methods where the subject lives his experience without knowing that he will have to account for it one day. But to assess this waiting bias, we should have to leave the beeper method, in order to focus non randomly on the particular moments when the beeper rang.
- The method comprises two stages: 5 or 6 beeps during the day, and an interview which takes place no later than the next day. But to conduct this interview, one must induce the subject to refer precisely to each of the beeps. Certainly there are the notes that were taken just after the beep, but we then assume that reading his notes enables the subject to deepen his description. To conduct these interviews we abandon the beeper method.

(2) For my part — and in the case of most of the research that used EI — I mainly studied situations which were productive (a result is expected and must be produced), finalized (the subject has a clear objective), articulated (they are composed of distinguishable stages), temporally long enough to give rise to an unfolding of the experience, but not too much so as not to be a challenge for memory (cf. Maurel's inventory [2009]). These situations were well adapted to our subjects of study, but now they seem to me especially relevant when considering issues of reliability. I will come back to this question later in more detail.

(3) Finally, in the example suggested by Froese and Gould at the end of their article as a paradigm of double-blind approach, it is a perceptual task that is proposed. For me this task is unproductive, poorly finalised, poorly articulated (as a contemplative activity), almost an instantaneous event. To my mind it is the kind of task which, contrary to appearances, is particularly unsuitable for assessing reliability. Too much simplicity makes the analysis weak and insufficiently discriminating, although one can have the illusion that it will be sufficient to make a count as in any study on memory, in order to obtain an accurate and reliable assessment. In addition, we know now that the subject does not only memorize the experimental equipment which is proposed, but also the context, the elements of the situation which have 'affected' him. The subject is not a mechanical recorder, so if you want to know what he retrieves from his past experience, it is important to help him describe anything he retrieves and not only what the experimenter is expecting. Each element of the experience is intertwined with all the other elements, and awakening one of them may lead to awakening another (as with Proust's Madeleine).

B. Questions of validation

These three types of tasks do not represent all the types of possible tasks, but their differences at least enable us to formulate the problems of reliability more accurately. We have a type of situation which is continuous (Hulburt), a type of situation defined as a task, thus finalised, productive, articulated, and which lasts for a limited time (Vermersch *et al.*), and on the other hand a poorly finalized, unproductive, unarticulated, and instantaneous perceptual task (the authors).

From this point, we can come back to two issues raised by the authors. The first one is: 'But how do we even know that these additional details were actually experienced previously?'. The second one

is how to assess the reliability of verbalizations in relation to what has been experienced?

- The first question looks rational, but there is no way to answer it and to that extent it is irrational and unscientific. The only way to answer it would be to compare subjective data independently of verbalizations. However this comparison is impossible since there is no objective means of recording inner life (or at most neurophysiological signals that may correlate more or less precisely with the semantics of what is described). So there is no way to answer this question definitely. And any attempt to protect oneself from this potential bias is constrained by preconceived beliefs.
- The second question can be answered in many ways, which are all indirect. I could rephrase it, for example: Can I corroborate what someone verbalizes from his past experience? Can I detect and establish contradictions? Or impossibilities? Or inventions (whether they are reconstructions or not)? Here I come back to empirical questions about the possibility of assessing the accuracy of what is said. The basis of these responses is the comparison between two systems of independent data, in all their possible variants, of which I am going to make a brief inventory. But what is thus crucial is to get data which are independent of verbalizations.

To provide oneself with means of comparison, one needs to study situations that are not continuous. What is at stake is not only not to deprive oneself of studying all human situations, especially situations of work, sports, leisure, or education, but above all that finalized situations give rise to valuable means of validation.

To describe the experience associated with problem solving, realising an artistic or athletic performance, or performing a professional task, all in fact lead to numerous possibilities for assessing the fidelity of verbalizations. This is because they enable you to:

1. Collect and record traces and observables

Since what we are studying produces data which are recordable (gestures, movements, verbalizations, nonverbal expression, clues of mental actions), verbalizations must be consistent, and congruent with observables and what can be inferred from them.

Either (1a) they are consistent and therefore are corroborated.

In a study on the verbalization of a — long and arduous — process of problem solving, we videotaped the process of resolution, and then we

conducted repeated interviews over several months. At each new interview, the subject claimed not to remember anything, but successive interviewers always managed to obtain the same descriptive features, plus new information (Ancillotti and Morel, 1994). It is not rational to assert that something is impossible; at most we can establish the limits of what we obtain, and examine whether the method is consistent with the aims which are pursued. Nisbett and Wilson thought to prove the absence of introspection by asking subjects the reasons for their actions instead of the description of their actions, and they obtained the subjects' naive theories on what they did, not the description of their actions (Nisbett and Wilson, 1977).

Or (1b) they are not consistent, and in this case:

Either (i) they are contradictory, and in this case a lack of validation is established, but this type of information enables us to appraise the subjective distortion, it is thus important to know (negative information is just as valuable as positive information, as long as it can be clearly established).

Or else (ii) they are different, and in this case they highlight a facet of subjective experience that does not lead to observable facts but must nevertheless be taken in account if one wants to know if it has an actual effect on the realisation of the task.

For example, the goalkeeper says he stands in the middle, and the recordings show that he is always asymmetrical.

(a) What he says is objectively wrong; his verbalization of 'being in the middle' is wrong, as he is slightly off centre; however (b) his subjective evaluation of the 'middle' may be important, and needs to be taken into account in order to understand the effectiveness or ineffectiveness of his performance. Several studies are available where the recordings do not enable the researcher to observe anything of a given subjective event, neither in the voice or facial expression, nor in the content of what is verbalized, yet the subject verbalizes subjective events that have a significant effect on his performance (the example of the hurdle race [Gouju, Vermersch *et al.*, 2007], perturbations of the long-distance shopper [Cahour, Brassac *et al.*, 2007], tactical decisions in rugby playing [Mouchet, 2005]). All these examples cannot simply be classified under the heading 'unreliable', and they raise possibilities that nobody had envisaged and must be taken into account for future research.

2. *When you do not have recordings: corroborate the descriptions of acts.*

(2a) *Consistency between the verbalizations and the constraints on actions*

Even if you have no recordings, when investigating an invoked situation for example, the mere fact that the subject's activity is finalized, organized by a goal, the means to achieve it, and the necessary steps to reach it, enables us to compare what is said with the material, logical, and chronological constraints. We are then in the well known logic of a police investigation, where everything that the witness or the defendant says must be consistent with these constraints. You cannot even accuse yourself, if you could not be physically present, if you did not have time enough, if you did not have the means to be in the place, etc. However, if you bought a gun along the way, we can rightly infer premeditation.

(2b) *Contradictory questions on the basis of the properties of the action*

Moreover, the involvement in a finalized activity allows us to obtain verbal descriptions of properties of the action which can be confronted with questions that can be answered only if the descriptions are effective. This is partly the logic of critical interviews of the Piagetian type to make counterproposals to evaluate the child's claims; or of Schotte's questions to evaluate a pathology (Schotte, 1997). Guillaume's example (Guillaume, 1948), that we often used in the EI training, is very clear from this viewpoint. The task consists in learning a matrix of nine numbers, whose composition does not allow the subject to use a simple mnemonic device. While the subject is learning it by heart, one can observe gestures or signs of subvocalization, which give clues about the fact that he is using a memorization strategy of oral recitation, of number placement, or of visualization of rows or columns. But it is sufficient to ask him the four corners or the diagonal of the matrix, in order to know whether his access to his memory is of a visual type (in this case all the boxes are equally available in memory), or of a sequential type as for recitation or placement (in this case the subject is forced to scroll through all the intermediate boxes to access the next one and it takes much longer between each response).

(2c) Congruence of independent data sources

Lastly, in all cases, finalized productive situations provide a framework for comparing different subjects or different performances of the same subject. For example, C. Petitmengin, in her research on the acts of intuition (Petitmengin, 2001), by obtaining invariants about these acts in an independent way (the subjects do not know one another), highlights processes that become plausible simply because they are formulated in a similar way.

Of course, not all research studies lend themselves equally to this work of triangulation and intersection, or rather do not lend themselves immediately to it (see the example of Depraz [2009]). But the scientific value of a research project is in fact determined by the history of this type of research and by the way the research community independently confirms the same type of data or not. If we want to do methodology-oriented research, primarily aimed at assessing the reliability and the sensitivity of data collection, then we must choose suitable paradigms.

C. The interviewer's skills

The authors touch upon the issue of the assessment of the interviewer's skills. This is a good idea, but trying to evaluate it through the number of 'right answers' seems to me a bit limited and, in all cases, unrelated to the skill which is actually exercised.

The skill of an interviewer relies heavily on relational skills that enable him to get the subject to consent to relate to his past experience in a very detailed way. This allows him to guide the description towards a fine fragmentation of what has already been said, but which has been formulated with a global temporal mesh. This means that one of the essential skills of an interviewer consists of mastering a 'structural' categorial space of the description of any experience, which allows him, without inducing the content of the response, to hear what is not said, what is missing to be more precise, and to use prompts which *on the basis of what has already been said* lead towards more details. But one of the most important skills is probably to ask questions that do not induce the content of the answers. It is crucial not to suggest answers to the other and not to create false memories. Studies on testimony have clearly demonstrated how easy it is to create in another person memories of situations that never occurred, except in the representation they created on the basis of inductive questions suggesting their existence (Loftus, 1979; Loftus and Ketcham, 1991).

D. Beliefs about memory

Hulburt has strong beliefs about the unique qualities of a naive and immediate apprehension of experience. If they were true and well established, it would be a remarkable scientific result in the field of psychology of memory and testimony.

But to my knowledge this is not the case. In fact, this assumption is not very plausible, because if it was the case we would be a society of 'Alzheimerised' persons, and moreover this discussion could not take place.

However it is interesting to study how our relationship to past experience changes according to the time which has elapsed. It is interesting not only to examine the causes of forgetting, conservation, revival or emergence, but also to consider all the information that is still available when I do not think I remember anything. The simplest method, implemented by the approaches of hypermnesia, shows that it is enough to re-ask questions to enable new information to be recalled, which seemed not available any more and thus forgotten. We know that human memory may be spoilt by many errors (see Husserl and the motley character of memories [Husserl, 2001], and the inventory of these types of errors in Loftus and Ketcham [1991] and Schacter [1997]) or post hoc reconstruction (Piaget and Inhelder, 1968). But the fact that there may be errors does not lead to the conclusion that *everything* is wrong! In fact, if our memory was not pragmatically reliable in terms of meeting the needs of our personal and social life, there would be no personal and social life anymore. It is the relative stability of our memory that can establish the continuity of our consciousness, and when it is no longer the case we are hospitalized!

The question that arises is how to measure and control these errors and identify them as such, because their manifestation may be very interesting for research. Sometimes it is sufficient not to induce or suggest the answers in the questions we ask, in order to avoid creating 'false memories' (Loftus, 1979); in other cases it is sufficient to verify the 'source memory' (Schacter, 1997), i.e. to ask questions to help the subject to discriminate if what he is remembering belongs to a singular experience, temporally specified. But as we work on human beings, and not with machines, a specific feature of subjectivity is to include meaningful errors, and it is thus important to find ways to cross-check verbalizations with independent data, such as traces or observations.

Conclusions

The theoretical hypotheses on the two models of the unconscious seem to me impossible to invalidate directly for the time being. They are for the moment proposals of frameworks of intelligibility. On the other hand, Husserl's hypothesis concerning the existence of a passive memory (retention), seems to me more central. It is widely confirmed by the effects of its disappearance, as shown by the effects of all degenerative diseases like Alzheimers, where this function is no longer ensured. We involuntarily and constantly memorize everything we live, but not the totality of what we live, and the involuntary character of this process explains that I do not know everything that has been memorized in me. This raises the methodological question of the awakening of such retentions, which is always possible in principle. All studies on concrete memory, affective memory, autobiographical memory, and contextual memory, show that memories which appear to the subject as unknown (but are nevertheless recognized) may emerge. It would be foolish not to try to exploit this possibility on the basis of an *a priori* (and very unscientific) dismissal of it.

Before concluding that only one method is possible or better than any other, or that it is sacrilegious to proceed differently from what one advocates, it would be interesting to develop all possible methodological inventions, all mixed patchworks (video and interview, DES and EI, etc.), while focusing on their consistency with the object of study, the research question. The correct way forward can only be found by adopting approaches which are well-suited to their objects and produce fruitful results. The methodological anarchy seems to me beneficial, insofar as the rigour of a research project is a goal, a result, but one that cannot be established with certainty from the outset. Just as one cannot decide to paint 'a beautiful painting', by doing whatever has to be done from the outset (at best it will be well done!), one cannot decide to do rigorous research by deciding to do everything that is necessary from the outset (at most, it will get back to the huge stack of well done but uninteresting research).

Research is creation, multiple resummptions, slow adjustments, and it is pointless and even counterproductive not to allow oneself all possibilities (except for those who do not respect the ethical criteria). The identification of skills criteria for interviewers can wait, and I think it is typically a 'wrong good idea'. But the article by Froese, Gould and Seth has at least the merit of raising a debate which has until now been rather closed and sterile.

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Claire Petitmengin and Michel Bitbol

*Let's Trust the (skilled)
Subject!*

A Reply to Froese, Gould and Seth

The article by Froese, Gould and Seth is a survey rather than a commentary, dealing with the intertwined issues of the validity of first-person reports and of their interest for a science of consciousness. While acknowledging that experiential research has already produced promising results, the authors find that it has not yet produced ‘killer experiments’ providing a definitively positive answer to these two questions, and wonder what kind of experiment would allow it. Our response will address these two questions successively.

1. The interest of first-person reports¹

Assuming that their validation is possible, what exactly is the benefit of first-person reports? Taking as example the neuro-phenomenological experiment on 3D vision designed by Lutz (Lutz *et al.*, 2002), the authors ask why skilled first-person reports should be more useful for a science of consciousness than behavioural data on the one hand, and than naive reports on the other.

According to us, what Lutz’s experiment shows very convincingly is that the distribution of neuro-electrical recordings into classes or ‘phenomenological clusters’ according to the values of an experiential

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[1] In this reply we won’t differentiate ‘first-person’ reports, i.e. reports expressing the viewpoint of the subject himself, in the grammatical form ‘I’, and second-person reports, which have been gathered through another person (a ‘you’) in the context of an interview.

variable (the subject's state of readiness), can highlight distinct neuronal configurations, which would otherwise stay unnoticed. The fact that in this experiment, a behavioural variable (the response time of the subject) could play the same role does not weaken the demonstration: the use of an experiential category *as a criterion for neuro-electrical analysis* enables the detection of a characteristic neuronal configuration or 'signature', where until now only noise was perceived.

This outcome is of great interest, firstly because there are numerous cognitive processes where no standard behavioural variable could serve as a criterion of analysis, and where only verbal reports are refined enough for this purpose. Secondly and more importantly, the correlation of a neuro-electrical structure with an experiential structure enables us to make a strong hypothesis which is not allowed by the correlation with a behavioural variable (or only indirectly by reference to an experiential variable that supposedly underpins the behaviour). We can indeed hypothesize the *nature* of the experience associated with the neuro-electrical structure detected. In the experiment made by Lutz, only the correlation with the attentional state of the subject — but not the response time taken in isolation — enables us to hypothesize the nature of the subjective experience associated whenever the same 'neuronal signature' will be detected. In the study on the anticipation of epileptic seizures, only the detection of a subjective 'preictal state' allowed us to hypothesize the nature of the subjective experience associated with any case of decrease of neuronal synchronization before the seizure (Petitmengin *et al.*, 2007). As Lachaux writes (this issue), 'If I don't know which cognitive processes the subject is using, I can simply not make any sense of the brain activity I measure.'

But — as Froese and Gould ask — what are the benefits of the sophisticated first-person methods you use? Had not the prodromes to epileptic seizures already been identified for centuries? And could not the attentional states described in Lutz's experiment have been detected by naive, untrained subjects? We agree. But we have now examples of experiential categories that first-person methods enabled us to highlight, which are difficult to detect without training or expert guidance. For instance, the specific mode of perceptual experiencing which Hurlburt and Heavey subsume under the experiential category 'sensory awareness' (Hurlburt & Heavey, 2009), the threefold structure of our 'perceptual position' in a scene, which concerns visual perceptions as well as auditory and kinaesthetic perceptions (Andreas & Andreas, 2009), or the threefold generic structure of auditory

experience (Petitmengin *et al.*, 2009), had until recently remained almost unnoticed. Let's note that these generic experiential categories — like Lutz's attentional states — do not concern the *content* of perception, which may vary indefinitely, but the manner of perceiving, which has a definite *structure*.² The states of readiness of Lutz's experiment may have been identified by naive subjects. But Lutz's study is a pioneering study, which shows us the way: it is now up to us to design protocols using more refined experiential categories as criteria for neuro-electrical analysis, in order to detect their possible neuronal signature.

One can nevertheless wonder if the interest of these experiential structures for a science of consciousness lies solely in their capacity to guide the neuro-electrical analysis and make sense of it. The question of the *interest* of first-person results must be carefully distinguished from that of their *validity*: a science of consciousness must be built on valid data, and first-person data are not exempt from this requirement, so we must find ways of validation — we will come back to this issue in a moment. But once these data are validated, are they not *interesting* in themselves? Why should their interest always be measured in terms of a possible neuro-physiological correlation? If the criterion of interest of a discovery is heuristic, could not experiential structures also be evaluated according to their heuristic power *on the experiential level*? We will give below an example of the heuristic function of a discovery on this level.

2. The Validation of First-Person Reports

In the second half of their article, Froese and Gould propose an experiment intended to bracket the opposition between the 'deep' and 'shallow' conceptions of consciousness, and the related question of the existence of a pre-reflective consciousness. The central aim of this experiment is to tackle the crucial question, upon which the very possibility of a science of consciousness depends: can we access past experience? In the vast majority of cases, a report of experience is indeed achieved *a posteriori*. Even if the experience which is described just occurred, it is past: how can we verify that the memory is true to the initial experience, and is not a false reconstruction?

This question is impossible to answer directly, because it is impossible to compare a memory with the corresponding past experience. It is impossible as well to compare directly the *description* of the past

[2] That is 'a network of relationships between descriptive categories, independent of the experiential content' (Delattre, 1971).

experience based on this memory, with the past experience. The experiment proposed by the authors is therefore intended to provide an objective measure of the validity of a memory by comparing the description of the past experience with *the objective reality* at the moment of the experience. It consists in briefly presenting participants a ‘crowded display’, i.e. a display of a large number of items, and to compare the final outcome of the reported experience to the original display. This would enable us to assess the ability of the participants to access their past experience, but also to compare the performances of several participants, the expertise of the interviewers who accompany them, and ultimately the power of the interview techniques which were used.

Let’s answer first that this kind of experiment has already been done many years ago, with positive results (Sperling, 1960). Even more importantly, the design of this protocol, as it confuses stimulus and experience, seems to fall into the ‘stimulus error’ (Titchener, 1912). First-person interview methods do not aim at describing *stimuli*, but at describing the *experience* of these stimuli, which is very different. An explicitation interview (EI) might show that the subject has not paid any attention to the objects presented, that his experience was quite different. Even if he is expressly requested to pay attention to them, and actually does it, the perception of the objects is far from exhausting the experience of the situation — emotions, inner discourse and images, bodily feelings. And even if the perception of the objects is part of his experience, the EI will be less interested in the perceived objects than in the way they are perceived, in ‘what’ than in ‘how’, in the *content* of the perception than in the perceptual process. For as we noted above, it is at this level that experiential invariants or structures can be detected, making it possible to develop a science of consciousness ‘in which experience matters’ (Varela, 1998). In fact, in an EI, recalling external stimuli, i.e. elements of context, is usually only a means used to elicit a state of evocation, in order to enable the subject to access the ‘how’ of his experience, which is of a different order. Even if it were shown that a subject, when guided by an EI, is able to remember more stimuli than the unguided subject, the description of these stimuli would give only a very impoverished idea of what an EI is conceived for, of what it enables us to discover. It is therefore vain to try to compare the description of the *content* of an experience with the objective reality in order to probe the quality of subjects’ access to their own experience.

That said, the idea of designing ‘experiential protocols’ demonstrating, through objective measurements, that participants are

actually able to describe accurately their past experience, is relevant. However such measurements should not aim to compare the content of the described experience with the objective reality, but what the subject *does* with what he *says* he does. They must focus not on the experiential *content* but on the experiential *process*. The internal operations that the subject achieves are not directly observable, but some objective clues frequently enable the experimenter to verify their correspondence with the description which is given. For example, the cognitive process being studied may be complemented by questions chosen in such a way that the response time varies according to the strategy adopted for achieving this process. Pierre Vermersch (this issue) gives examples of such indirect objective measurements.

Another means of assessing the accuracy of a set of descriptions of a given type of experience is intersubjective validation. The detection of processual regularities in several descriptions of the same type of experience provides an intersubjective validation of the collected descriptions. If identical structures are detected by different research teams working independently, this brings an additional mark of validity to the initial descriptions. For example, the listening mode dubbed ‘heard sound’, consisting of listening to the sound as a sound, without particular interest for the object which produces it (Petitmengin *et al.*, 2009), seems to correspond, for auditory experience, to the ‘sensory awareness’ phenomenon that Hurlburt detected for the visual and tactile experience as well (Hurlburt & Heavey, 2009). Such a convergence seems to confirm the trustworthiness of the descriptions produced by both teams. This convergence would also have a heuristic function, by suggesting a new hypothesis and research line on the experiential level: can the threefold structure identified for auditory experience be transposed to the other senses? Could it be a generic structure of perceptive experience?

Let’s now assume that we have gathered enough objective evidence of the possibility to access past experience and describe it accurately. The question that immediately arises is: how do we go about accessing our experience? What does the subject who gives an accurate description carry out, that the one who gives an inaccurate description does not? How does the interviewer elicit this process of accurate description? Let’s also assume — as suggested by Froese, Gould and Seth — that we have refined our assessment of the accurateness of a description by identifying finer objective criteria: for instance the degree of fragmentation of the temporal unfolding of experience, the variety and degree of granularity of the experiential dimensions described. The question then arises: what does the subject do to adjust his

‘microscope’ in order to observe this level of detail, and learn to see what remains invisible to someone naive? Which internal operations does he accomplish? Which devices does the interviewer use to elicit these operations?

Let us not deceive ourselves: the trustworthiness of a first-person report lies in the accurate fulfillment of this process. For neither the experimenter or interviewer nor the subject can compare directly an experience with its description. Thus no one can claim that a description is an accurate reflection of a ‘pure’ experience to which it would correspond exactly. All we have is the experience of specific acts enabling us to apprehend our (just past or past) experience, acts which can be triggered by specific devices, and enable us to detect components of experience that vary together regardless of personal spatial and temporal situations — that is generic structures.

The situation is no different in the experimental sciences. We cannot ignore the epistemological tradition that since Kant demonstrates that we do not have access to the objects ‘in themselves’ apart from the very accessing process. A scientific model is not the exact reproduction of an independent external reality, but a set of technological acts which highlight a set of invariants, acts which have stabilized, and which have obtained an intersubjective agreement. Just as experimental data cannot be assessed on the basis of their correspondence with absolutely real properties of the world, so introspective reports cannot be assessed on the basis of their correspondence with ‘pure’ experience, but only on the basis of the coherence of the acts which construct them (Petitmengin & Bitbol, 2009; Bitbol & Petitmengin, submitted). To make a science of consciousness, we have no choice but to refine our knowledge of these acts, that until now we have not given ourselves the means to study.

In our opinion it is on this pragmatic level that the disagreement between DES and EI methods may be resolved. Unlike Froese *et al.*, we do not believe that these methods are driven by fundamentally different conceptions of consciousness, respectively a ‘shallow’ and a ‘deep’ conception of consciousness, which would determine two different ways for investigating experience. We believe that the apparent conceptual differences between these methods can be explained by differences in their empirical scope, not the reverse. For both methods agree that the perception naive subjects have of their experience is usually poor and distorted, and that the guidance of an expert interviewer may gradually help them to apprehend it and recognize it as it is. Both methods claim to train one to see dimensions of experience that are usually unrecognized — what else would they be useful for?

The essential difference between the two methods is that EI is interested in what the subject *does* to apprehend his experience in the course of an interview. While DES, by construction, focuses exclusively on what happens ‘before the beep’ — ‘pristine experience’ — and not on what the subject does *after* the beep to describe his experience. The conceptual differences between the two methods originate in the type of experience they authorize themselves to explore — their experiential scope — more than in theoretical presuppositions.

What our investigation of the process of describing led us to discover is that to describe their experience, whether past or just past, subjects begin by ‘recalling’ it. This recall or ‘evocation’ is only one of the operations or ‘gestures’ required for recognizing one’s experience. Another gesture consists of redirecting one’s attention from the ‘what’ to the ‘how’, from the experiential content to the experiential process. Each of these gestures can be realized more or less accurately in the course of an interview, and elicited more or less skillfully by the interviewer.

The main difference between EI and DES is that EI tries to improve the knowledge of these gestures and the way they are triggered, while DES does not allow this exploration. But why not use the EI method to explore what happens *after the beep*?

How can we improve the completeness and accuracy of a description without knowing the operations that provide access to the various dimensions and levels of detail of experience? How are we to develop and improve interview devices without knowing what they generate for the interviewee? Should we just blindly proceed by trial and error? These questions cannot just be dismissed out of hand. The process for accessing experience cannot remain a ‘black box’. It is essential for the emerging science of consciousness to provide to itself the means for this exploration. Nothing prevents EI and DES from collaborating actively in this direction.

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Russell T. Hurlburt

*Descriptive Experience
Sampling, the Explicitation
Interview, and Pristine
Experience*

In Response to Froese, Gould and Seth

I take the opportunity that Froese, Gould, and Seth (this issue) provide to clarify further (see also the special issue of this journal, *JCS* **18** (1), 2011) some aspects of Descriptive Experience Sampling (DES; Hurlburt, 1993; in press; Hurlburt & Akhter, 2006; Hurlburt & Heavey, 2006) by distinguishing DES from the Explicitation Interview (EI) method (e.g. Vermersch, 2009; Petitmengin, 2006; Petitmengin & Bitbol, 2009); and to comment on Froese and colleagues' suggestion of the Double Blind Interview (DBI) as a way of evaluating DES, EI, and other methods.

Pristine Inner Experience

Here is a DES description. I choose this example because it is typical and at hand — I simply selected one from my most recent DES expositional interview.¹

Sample 4.4 (7:46:03 pm). 'Nathan' was sitting at the kitchen table looking at a magazine wristwatch advertisement. A few seconds before the beep, Nathan had been innerly saying to himself, 'My dad has the same exact watch but nicer,' meaning that the advertised watch has a leather

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[1] Conducted with Aadee Mizrahi.

band whereas his father's band is stainless steel. At the moment of the beep, he was thinking, now without words (an example of unsymbolized thinking, Hurlburt & Akhter, 2008; Hurlburt, in press) that his father's watch was nicer (this wordless thought conveyed the 'nicer' portion but not the 'exact same' portion of the earlier inner speaking). Simultaneously he was seeing the wristwatch in the magazine, but the seen wristwatch had a stainless steel band (created, of course by his imagination but seen as if on the printed page). His mother was cooking, but he was not seeing or hearing her. The TV was on in the living room, but he was not seeing or hearing it.

By *pristine inner experience* DES means directly apprehended ('before the footlights of consciousness') ongoing experience of actually existing people in their natural environments (Hurlburt, in press; 2011; Hurlburt & Akhter, 2006). Inner experiences include thoughts, feelings, tickles, seeings, hearing, and so on. Pristine inner experiences are naturally ongoing, before they are disturbed by any attempt at introspection, not manipulated or influenced by the investigator.

Thus DES aims at providing a high fidelity description of Nathan's pristine inner experience at 7:46:03 as that experience existed undisturbed by the act of apprehending it. Of course it falls short of perfect non-disturbance, and the degree to which it falls short must be evaluated by science, as Froese and colleagues point out. DES is rather like parachuting blindfolded into a pristine forest; when you hit the ground, you take off the blindfold and radio back what you see. Of course the landing will disturb the forest somewhat, but much about pristine forests might be learned in that way.

DES accepts that there is a 'welter' (Hurlburt & Schwitzgebel, 2011a; Hurlburt, in press) of energy fluctuations going on in Nathan's outer and inner environments at 7:46:03 pm: sounds emanating from the mother's cooking, the TV, rustling of magazine pages, and so on; light being reflected from the magazine, table, walls, TV, and so on; pressure being applied to Nathan's back side by the chair, feet by the floor, neck by his collar, and so on; peristalsis, capillary contraction, and other olfactory, gustatory, proprioceptive, kinesthetic and so on energies far too numerous to enumerate.

DES observes that, for whatever reason, most people most of the time select/choose/thematize/coalesce/attend-to/bring-directly-before-the-footlights-of-consciousness only one or a few aspects of the welter; those aspects are the pristine experiences. Nathan's pristine experience at 7:46:03 included the seeing the magazine-watch with its imaginarily substituted stainless steel band and thinking that his father's watch is nicer. The rest of the hundreds or thousands of

processes in Nathan's welter are *not* part of Nathan's pristine experience at 7:46:03.

DES accepts that there may not be a bright-line distinction between what is and is not part of pristine experience. At 7:46:03, seeing the watch and thinking father's is nicer *was* pristine experience; peristalsis, the sensations in his left little toe, and so on *were not* pristine experience; the sounds from the TV and from his mother in the kitchen *maybe* were *a little* in pristine experience. As a practical matter, the distinction between a little experience and no experience is very difficult if not impossible to make, so DES excludes from its investigation aspects about which there is little or no experience (Hurlburt & Schwitzgebel, 2011a).²

Nathan's pristine experience is created by Nathan for Nathan in Nathan's way (Hurlburt, in press). That creating is not constrained by reality (there was no stainless steel band in his immediate vicinity); it may differ dramatically from one moment to the next; and it may differ dramatically from one person to the next (many people *never* imaginarily overlay something onto a real seeing). Furthermore, DES shows that people often do not know important characteristics of their own pristine experiences (Hurlburt, in press; Hurlburt & Heavey, 2006). If it had not been singled out by the random beep, Nathan's imaginarily-overlaid-seeing would likely have been quickly forgotten, disappearing like a dream on waking among the 20,000 other experiences that occurred to Nathan that day (that's a rough estimate assuming that a typical experience for Nathan lasts a few seconds, or 20 per minute \times 60 minutes \times 16 hours).

Pristine experiences are thus directly before the footlights of consciousness but are quickly forgotten. DES is designed to produce faithful accounts of those experiences and nothing else. DES takes random samples of Nathan's pristine experiences in his own natural environments to obtain representative pristine experiences without being overwhelmed by 20,000 experiences per day. We find Nathan reading a magazine at the kitchen table because *that's a naturally occurring part of his everyday experience*. Furthermore, DES minimizes retrospection because pristine experience is quickly forgotten.

Terminology

Some, like Froese and colleagues, apparently use the term 'reflective consciousness' where I would use 'pristine experience.' I avoid using

[2] That is a strategic manoeuvre — perhaps when the salient characteristics of pristine experience are well understood it will be appropriate to explore the little-or-no-experience aspects.

‘reflective consciousness’ because it implies things about the nature of consciousness that I neither endorse nor deny and because pristine experiences are not (or at least are not necessarily) bits of *consciousness*; they are *phenomena* that present themselves directly.

Some would prefer to drop the ‘inner’ and call these phenomena simply ‘experiences’, on the grounds that the term ‘inner’ favours phenomena such as thoughts and feelings over ‘external’ phenomena such as seeings and hearings. However, the bare term ‘experience’ is too broad, including such uses as ‘I profited greatly from my four years of experience as an engineer’.

All terms have advantages and disadvantages (Hurlburt & Schwitzgebel, 2007). Regardless of terminology, the aim of DES is to describe naturally occurring, directly apprehended, before-the-footlights-of-consciousness phenomena, either inner (thoughts, feelings, etc.) or outer (seeings, hearings, etc.). DES calls these ‘pristine inner experience’, or, when there is no ambiguity, ‘pristine experience’ or ‘experience’.

Distinguishing DES from EI

There are important distinctions between DES and EI, and because understanding those distinctions clarifies important issues in consciousness studies, I agree with Froese and colleagues that it is desirable to discuss them. Before turning to those distinctions, I make four preliminary comments.

First, characterizing the difference between DES and EI as a ‘dispute’ is quite misleading, more or less like characterizing the difference between a hammer and a screwdriver as a dispute. Each has its range of convenience, and it is important to understand what that range of convenience is.

Second, Froese and colleagues imply that the aim of DES is to provide ‘increasingly refined verbal reports about *what it is like to be conscious*’ (italics in the original). That is *not* the aim of DES, which is simply to describe in high fidelity pristine experience. The distinction between ‘reporting what it is like to be conscious’ and ‘describing pristine experience in high fidelity’ is important. *What is it like to be conscious?* asks about an *essential* quality that extends across all moments of conscious existence. Answering that requires *abstracting away* every feature of your current experience *except possibly the one* (or a few) *feature(s)* that makes this moment conscious (if there is such a feature). That is, it requires you to attend to essentiality and turn away from particularity. By contrast, *Describe your pristine experience in high fidelity* asks you to stay in contact with the features

of your directly-apprehended-at-this-one-particular-moment experience, asks you specifically to *avoid* abstracting, asks you specifically to *avoid* being influenced by distant moments, asks you specifically to *avoid* speculating about or being influenced by essentialities or generalities. That is, DES asks you to attend to particularity and turn away from essentiality. DES eventually accumulates several particular moments of pristine experience and allows their ‘salient characteristics’ to emerge — for example, to note that Nathan’s experience frequently includes inner seeing. But that is not a statement about an essentiality of consciousness; it is a characterization of directly apprehended pristine experience.

Third, Froese and colleagues hold that the distinction between DES and EI rests on differing conceptions of consciousness: DES has a shallow conception of consciousness whereas EI has a deep conception. That mischaracterizes DES. DES explores pristine experience not because it thinks pristine experience exhausts consciousness but because it thinks (at this stage in the history of consciousness and psychological science) that the exploration of pristine experience holds great promise. Farmers till only the topmost foot because that’s how to feed the world, but they accept the existence of the rest of the lithosphere as well as the asthenosphere, mantle, and core of the earth.

Fourth, Hurlburt & Akhter (2006) discussed differences between EI and DES, so I will focus here only on those aspects that are made salient by Froese and colleagues.

Now to the main differences between DES and EI, of which I think there are two: their aims and their methods.

The Aim

When Froese and colleagues write ‘The debate...centers on the following fundamental question: *Can past pre-reflectively lived experience be re-lived reflectively in the present?*’ they imply, incorrectly, that both DES and EI have the same aim: to make the pre-reflective reflective. That is indeed the aim of EI:

Practising introspection is going into myself to find information which is largely invisible until I have brought it into reflective consciousness.
(Vermersch, 2009, p. 36)

That is, EI would aim at helping Nathan discover what was *not* directly experienced (was ‘invisible’) at 7:46:03 pm — it would aim at the *source* of the visible, try to help Nathan discover the ‘felt meaning’, the ‘source dimension’, that which is ‘below the threshold of

awareness', the 'source where differentiated experience originates and takes on a meaning' (all phrases from Petitmengin, 2007).

However, that is *not* the aim of DES. DES might give the appearance of trying to make the invisible visible,³ as when Petitmengin asks:

Is not it the function of the [DES] interview to lead the subject to become aware of dimensions which are not directly accessible, and that the beep is not sufficient to bring into awareness? (Petitmengin, 2011, p. 49)

I answer No: the DES aim is to make the *visible* visible, that is, to apprehend the visible with sufficient fidelity and endurance to be useful to science.

At 7:46:03 pm, Nathan was seeing the wristwatch-with-overlaid-imaginary-band and thinking that his father's watch was nicer. Those were manifestly, unambiguously 'visible' in Vermersch's sense — there was *nothing* 'pre-reflective,' hidden, or invisible about either aspect. Without the beep they might soon be forgotten, so DES aims only at extending the ability to describe the already ongoingly directly experienced.

In sum, in Vermersch's terminology, DES aims to make the visible rememberable; EI aims to make the invisible visible.

The Method

Everyday/unusual. DES aims at pristine experience; therefore it selects everyday experiences to investigate, using a random beeper to select the experience to be examined to ensure that no special characteristic will be sought. Thus we examined Nathan's magazine thumbing/seeing a composite wristwatch/thinking his father's is nicer, not because his magazine thumbing or composite-seeing had special a priori interest for us, but because a dispassionately random beep chose it.

By contrast, EI typically aims at some particular kind of event or experience; therefore the essence of the EI method is to select special events. For example, Petitmengin-Peugeot (1999) aimed at the experience of intuition. Therefore she asked subjects to recall some particular (and presumably rare) occasion when intuition prominently occurred.

In sum, DES aims at the randomly selected everyday; EI aims at the premeditatedly selected special.

[3] Here, following Vermersch (2009), 'visible' means 'directly experienced', not merely 'visually seen'.

Undisturbed/evoked. DES aims at pristine experience; therefore it attempts to apprehend experience exactly as it was in its undisturbed ('pristine') state. That is, DES seeks to *minimize disturbing* the ongoing experience in its apprehension of it.

By contrast, EI explicitly and repeatedly aims at ('evokes') its target event with the intent of integrating the pre-reflective or unrecognized experience more and more fully on each evocation. That is, EI attempts to *alter* experience to produce a richer apprehension. For example, if Nathan's 7:46:03 pm experience were subjected to an EI interview, the interview would likely systematically evoke the smells in the kitchen, the sound of the TV, the feel of the magazine, and so on, in the expectation that those details would help Nathan gain a fuller appreciation of the felt meaning of the composite image and the my-father's-is-nicer thought.

In sum, DES tries to leave experiences as they are; EI tries to flesh them out.

Apprehend/re-enact. DES aims at apprehending pristine experience in high fidelity; therefore it (iteratively) trains subjects, *before* the experience occurs, to be skilled apprehenders of their experience, and it keeps as short as possible the interval between the pristine experience and the commitment to the description thereof.

By contrast, EI trains subjects to re-enact, in the explicitation interview, experiences that took place in the (possibly distant) past. (Froese and colleagues refer to this re-enactment as 're-living', as did Petitmengin in earlier writings, e.g., Petitmengin, 2006). For example,

You did not voluntarily memorize the first thought you had when you woke up this morning. But this information is still available. You can turn yourself toward this moment, and make this information reappear. And to do that, it is quite probable that there would be no other way for you than returning in thought to your bed at the moment when you awoke, recalling what you were seeing at that moment, the birds singing or the alarm clock going off, and the position of your body. These sensorial triggers may then allow the emergence into awareness, by itself, of your first thought of the morning. (Petitmengin, 2011, p. 52)

This view that the memory of a thought can subsequently be retrieved is an instantiation of the storage/retrieval metaphor for memory, which is, 'in both cognitive science and folk psychology, the dominant metaphor for memory' (Schwitzgebel, in Hurlburt & Schwitzgebel, 2011c, p. 207). However, I think (Hurlburt & Akhter, 2006), as does Schwitzgebel (2011c), that that metaphor is substantially misleading. Your first thought of the morning probably does *not*

exist as a memory that can be retrieved, whether by evocation or any other means. Instead, what seems to be a retrieved memory is more properly a reconstruction based on inferences, schemata, background beliefs, and presuppositions (Hurlburt & Schwitzgebel, 2011c). To ‘re-enact’ the morning’s first thought, taking into consideration the birds, alarm, body position, and so on, is, I fear, to invite the elaboration of those inferences, schemata, background beliefs, and presuppositions.

Therefore I think there is *no reliable way at all* for you to retrieve your first thought of this morning, unless you were prepared, skilled, and ready to apprehend it as it was immediately occurring.

Petitmengin (2011) correctly points out that DES subjects engage in something like evocation when they try, during the DES expositional interview, to recall what was ongoing at the moment of the beep. That is most evident on the first or second sampling day before the iterative training has had its effect. I further accept, as Petitmengin (2011) points out, that some evocation might occur even in skilled subjects even as they jot down notes immediately after the beep. However, DES tries to minimize the effects of that evocation by advising subjects against it and, granting that subjects might engage in it anyway, keeping the interval between the pristine experience and such evocation as short as possible so that the immediate experience, not reconstructions thereof, can drive the evocation.

In sum, DES tries to *minimize* evocation whereas EI tries to *maximize* evocation. The practical differences between minimization and maximization can be important. For example, aerodynamic drag occurs on all vehicles travelling through the air. The attempt to minimize drag (among other considerations) results in an F-22; the attempt to maximize drag results in a parachute.

Other. Other important methodological differences between DES and EI are discussed in Hurlburt & Akhter (2006); for a discussion of these features of DES see Hurlburt (in press) and Hurlburt & Heavey (2006):

- DES minimizes retrospection. By contrast, EI does not take a particular stand on retrospection. It accepts that short retrospections are desirable, and uses them when convenient, but finds it adequate to investigate experiences that occurred years ago.
- DES relentlessly pursues moments of experience and finds that moments of experience typically have durations of a few seconds. By contrast, the occurrences that EI investigates may have durations of minutes or longer.

- DES holds that explorations of pristine experience must be iterative (Hurlburt, 2009; 2011; in press), refreshed by ever new experience as the subject's apprehensional skill improves. EI relies mainly on repetition within sessions as an aid toward evoking a deeper reflective consciousness, but because those repetitions return again and again to the original event, they are not iterative in the DES refreshed-by-new-encounters-with-pristine-experience sense. EI also values repetition across sessions, but that is not an essential feature.
- DES relentlessly attempts to bracket presuppositions at each step of its process (Hurlburt, in press; Hurlburt & Heavey, 2006; Hurlburt & Schwitzgebel, 2007; 2011c): it uses a random beep, not the investigator's or subject's presuppositions about what is important, to choose the moment to be investigated; it uses an open-beginninged procedure (Hurlburt & Akhter, 2006; Hurlburt & Schwitzgebel, 2006); and so on. EI also values the bracketing of presuppositions (Petitmengin, 2011) but not as centrally as does DES (Hurlburt & Akhter, 2006).⁴

Discussion

This comparison of DES and EI highlights the differences between the two methods, but there are substantial similarities, particularly in the skills and sensitivities of the interviewers.

The importance of the differences in aim and methodology between DES and EI depends on the situation. For example, in some situations the DES centrality of the bracketing of presuppositions may not be important: pristine experience and presuppositions do, after all, come from the same bag of bones and neurons, and one might be able to learn something about that bag from either pristine experience or presuppositions. But in other situations, the bracketing of presuppositions is vital (as it turned out to be in Hurlburt and Jones-Forrester's [in press] study of bulimic women).

[4] Petitmengin holds that the bracketing of presuppositions is as central to EI as to DES (personal communication, November, 2010). However, I think that EI does not relentlessly bracket presuppositions in important phases of its investigations (Hurlburt & Akhter, 2006; Hurlburt & Schwitzgebel, 2011c). For example, Petitmengin-Peugeot's (1999) investigation of intuition began, I think, with the presupposition that the experience of intuition would be the similar across a variety of disparate events that are labelled 'intuition' (the unexpected emergence of an idea, the solution to a problem, a scientific breakthrough, a psychotherapeutic insight, a creative/artistic intuition, etc.). DES tries to mitigate such risks by insisting that investigations be open-beginninged. And as we saw above, I fear that EI's within-session repetitive evocations invite the elaboration of presuppositions. DES mitigates this risk by insisting on beginning each iteration with new pristine experiences apprehended on new occasions.

I think it may be difficult if not impossible to specify in advance which procedure would be more effective in which situation — it would be the function of a mature science to develop a range of procedures, apply them to a diversity of situations, and discover which is more likely to deliver the desired result. Consciousness science is a long way from that maturity.

Double Blind Interview

Froese and colleagues hold that the descriptions generated using DES, EI, or other methods⁵ need somehow to be verified. I wholeheartedly agree (Hurlburt, in press, ch. 21; Hurlburt & Schwitzgebel, 2007; 2011b). I accept that most introspective claims have not withstood the test of time and therefore need to be held to a high validation standard.

Froese and colleagues propose the Double Blind Interview (DBI) as ‘a first step toward an objective measure of [the] fidelity’ of DES, EI, or other methods, and whereas their motivation seems laudable, their suggestion of the DBI seems problematic for six overlapping reasons.

First, DES aims at pristine experience, but the 50 ms tachistoscopic display of the DBI may inhibit or prevent pristine experience. It is likely that Nathan, for example, *could not* produce a superimposition of an imaginary seeing onto a real seeing within 50 ms of the original seeing. It is therefore likely that the DBI tachistoscopic procedure

[5] Froese and colleagues refer to DES as a ‘second person’ method, but it is better thought of as a ‘first person plural’ method (Hurlburt & Akhter, 2006). The distinction carried by those terms is important because referring to DES as a second person method substantially under-appreciates the iterativity essential to DES.

In a second-person method, the investigator instructs the subject (*you* should do this...); then the subject reports to the investigator (I report to *you* what I found). In DES, subject and investigator work together (first person plural), iteratively improving their joint ability (*we* investigate...) to apprehend the subject’s experience.

I accept that the DES *first sampling day* is a second-person procedure, but DES *dis-cards* first-sampling-day reports because they (like one-shot reports or multi-day reports without truly iterative involvement) are usually distorted or obliterated by a variety of pre-suppositions, distractions, and so on. However, the iterative procedure creates a first-person-plural joint investigative procedure in the ashes of the initial second-person procedure. For example, Nathan’s reports on his first sampling day suggested that he was nearly always innerly talking to himself. However, subsequent (iteratively improved) sampling suggested that inner speech did *not* typify Nathan’s inner experience, suggested that his first-day reports were almost entirely based on the (commonly held but untrue) presupposition that everyone talks to himself all the time.

DES is a first-person-plural endeavor despite the fact that the experience presents itself only to the subject. A bomber has two crew members: only the bombardier sees the target while the pilot flies the plane. But bomb delivery is not by the bombardier only—it is jointly effected by pilot and bombardier.

would *prevent* Nathan from engaging in at least some of his customary kinds of pristine experience.

Second, DES aims at pristine — that is, naturally occurring — experience, but the DBI situation is highly unnatural. Nathan produced his superimposition of imaginary on actual seeing because he is highly skilled and practised at experiencing the natural, everyday world of magazines, wristwatches, fathers, and so on. By contrast, Nathan has no prior experience viewing a tachistoscopically presented rectangular array of letters, so there is little reason to believe that Nathan would create in this situation an inner experience of the kind he typically creates.

Third, pristine experience is created by the person him or herself out of the welter of already ongoing natural processes. At 7:46:03 Nathan creates the seeing the magazine and the superimposition of the stainless steel band out of a lush welter of potential ingredients — TV, mother in kitchen, magazine text, collar pressure, stomach contraction, and so on, including some that are not directly present (the stainless steel band, for example). By contrast, the DBI tachistoscopic display is specifically designed to *eliminate* as much as possible the welter, so that the tachistoscopically presented array of letters, and *only* that array, is available to Nathan. That prevents Nathan's natural interests or proclivities from choosing among or combining a welter of options — it's the array of letters or nothing.

Fourth, Nathan's inner experience is a skill, highly practised in his own natural situations over every minute of his waking life (Hurlburt, in press). He is interested in magazines and wristwatches at least in part because he has developed the skill of seeing real things and overlaying imaginary things. By contrast, Nathan probably has little or no inner experiential skill of dealing with tachistoscopically presented arrays of letters. It is sometimes argued that the multiple presentations of arrays allow for skill to be acquired, but a few hours of skill building is not comparable to a lifetime of skill acquisition.

Fifth, pristine experience is entirely meaningful for the person at the moment that it occurs, but the DBI display is meaningless. Nathan sees a printed watch with an imaginary band because, for whatever reason, he is interested in/connected to/concerned about/finds meaningful at that moment watches and watchbands (Hurlburt, in press). By contrast, the array of letters is expressly designed to be *meaningless*.

Sixth, DES aims at describing a few important salient details, whereas the DBI tries to consider as many trivial details as possible.

DES specifically denies the desirability of trying to capture all the details of the beeped experience (Hurlburt & Schwitzgebel, 2011a).

For those reasons, it seems to me that the DBI would not likely be useful as a tool to validate DES.

Validating and Calibrating

Even though I think the DBI is a false start, Froese and colleagues are correct to grapple with the problem of the skill required for performing DES investigations. I think it likely that most people who will say ‘I’m doing DES’ will *not* be doing it very well, and science will have to figure out what to do about that (Hurlburt, in press). It is possible that that fact will be enough to render DES scientifically useless, but that would be unfortunate: if it is possible for *some few* investigators to apprehend pristine experience in high fidelity, but their deliverances get drowned out in the noise created by the unskilled, that will imply that pristine experience does exist, that it is possible to apprehend it, but that science will ignore it anyway.

I think Froese and colleagues blur the distinctions among (a) validating a method (concluding, for example, that DES produces accurate descriptions), (b) certifying an investigator (concluding, for example, that *X* is a skilled DES investigator), and (c) validating some particular DES result.

(a) I think that it is *impossible* to validate the DES method. DES is only as good as its practitioner, so DES can no more be validated than a Stradivarius can be validated. A Stradivarius can be capable of producing beautiful tone, but that does not mean it will be played skillfully.

(b) I think it may be possible in a limited way to certify that an investigator has some basic skill level. An earlier draft of the Froese, Gould & Seth paper proposed that it might be possible to ascertain a basic level of skill by watching interviewer behaviour; I agree and I’ll recast and extend their ideas here. It is possible to watch an interviewer at work and ascertain whether she moves unerringly toward the moment of the beep (a quite difficult task), attends to pristine experience, does not attend to theory or generality, understands subjunctification and draws appropriate inferences from it (Hurlburt, in press; Hurlburt & Heavey, 2006), distinguishes among known features of pristine experience when they occur (inner speech, inner seeing, unsymbolized thinking [Hurlburt & Akhter, 2008], sensory awareness [Hurlburt *et al.*, 2009], and so on), does not impose her own concepts, skillfully levels the playing field where it needs to be leveled (as about inner speech on Nathan’s first day), and so on

(Hurlburt, in press). I think those aspects are directly observable with a fairly high reliability, and they are, I think, highly correlated with the ability to apprehend pristine experience with fidelity. You can do a very good job of judging the beauty of violinists' tone by viewing videotapes of their playing *even with the volume turned off* because the dexterity with which they handle the bow, the unerring and repeatable placement of fingers on strings, the visual beauty of the vibrato movement, and so on, are highly correlated with tone production (Hurlburt, in press). So I think it is possible to judge reliably (not perfectly) the fidelity with which a DES investigator is likely to be able to apprehend a subject's experience, even with absolutely no access to that subject's experience.

However, if that were incorporated into a formal certification process, that process is likely soon to be undermined by politics, economics, guild issues, and so on. Furthermore, even effective certification is no guarantee that some particular deliverance of DES is actually on target: *X* might be a certified very good DES investigator in most situations, but in *some* particular situation, because of presuppositions or some extraneous influence, *X* might be substandard. Therefore whether certification is desirable or profitable from the standpoint of science remains to be seen.

(c) I think that it is possible and highly desirable to validate the particular results of DES or EI. For example, Jones-Forrester and I (Hurlburt & Jones-Forrester, in press) have used DES to replicate the earlier DES work by Doucette and me (Doucette & Hurlburt, 1993) and concluded that women with bulimia nervosa frequently have fragmented inner experience. That kind of conclusion can and should be tested in a variety of non-DES ways. Science has to decide who should perform such validation studies; I think science should firewall away the phenomenological investigators from the validators (Hurlburt, in press; Hurlburt & Akhter, 2008) both because the phenomenological and validation skill sets are (or should be) substantially different and because the urge to validate makes the bracketing of presuppositions more difficult. I applaud Froese and colleagues' attempt to begin to sort such things out.⁶

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