involves something I *do* rather than some information that I *receive*. It is active rather than reactive.

« 16 » Third, there is the *"felt sense."* As Gendlin observes, before I put thoughts into words, I have a felt sense of what I intend to say. Gendlin (1981) gives the example of the nagging feeling that I have forgotten something. As I try to remember, I entertain different possibilities, but none of them seems to match the "felt sense," until finally I hit on the one that does match – I forgot to tell Susan I cannot go to her party. The felt sense includes both proprioceptive and sensorimotor imagery, but makes use of them in a particular way to form a total sense of what I intend to do or say. The "intending," from the enactive perspective, requires forming some combination of both sensorimotor and proprioceptive imagery.

« 17 » In the case of abstract ideas such as "president," we know what is meant by "president" because we sense what we would have to do to determine whether something is a president; votes would be counted, voters would pull levers, etc. Of course, we do not explicitly imagine all these operations every time we think the concept "president." What we have is a feeling that, if someone genuinely wanted to, they could perform a series of operations that would define what we mean by the term (see Ellis 1995, 2005; Ellis & Newton 2010). But rather than do that, we simply wave our hand and say "you know" or "etc."

« 18 » There are intermediate stages between explicitly entertaining action imagery and only implicitly entertaining it with a vague wave of the hand. The difference is gradual, not sharp. We first learn to read music by laboriously counting lines and spaces on the staff, and struggling to coordinate finger movements with them. Gradually, we no longer consciously think about all these things; we just play. Or we remember music by imagining playing – forming the felt sense of the appropriate sensorimotor imagery. There is no sharp distinction between what a beginner does and what a professional musician does; the transition is gradual.

« 19 » I am suggesting that thought may depend more on action imagery than sensory imagery. The tradition of such enactive theory runs from Merleau-Ponty (1962, 1963) through to the Gibsons and Ulrich Neisser (1976), down to Francisco Varela, Evan Thompson and Eleanor Rosch (1991), Shaun Gallagher (Gallagher & Jeannerod 2002), Alva Noë (1999), and Newton (1996). We understand the world by implicitly imagining how we could act relative to it.

« 20 » Gendlin (1986) suggests that the interpretation of dreams should begin with the "felt sense" that we had during the dream, and that we can re-enact during waking by remembering the dream imagery. On the enactive account, the imagery correlates with the action affordances of the imaged situation, and those action affordances are related to the motivations for action that we have in our ongoing lives (Ellis 2005). The felt sense of trying to run fast in a race can be similar to the felt sense of trying to keep up with the demands of my work – or perhaps some other life situation. This is where we need to be careful to "focus" effectively on the felt sense, so that we do not hastily assume what it is "about." The felt sense of urgent work demands may be similar to the felt sense of needing to run to live my life quickly because death may be coming sooner than I think. Which narrative is relevant should be read by sensing the finer nuances of the felt sense and seeing which one the felt sense in the dream is most similar to. Often the similarity will immediately "jump out at us" as soon as we pose the most fitting one to ourselves.

« 21 » In Gendlin's account, we understand which life situation the "running" is actually similar to, not by comparing the objective similarities of those situations to the dream but by comparing the similarity of the felt sense. In many cases, the advantage of considering the meaning of a dream for conscious waking life is that we had never actually allowed the felt sense of the situation to rise to the level of consciousness during our waking life. The situation may have been too threatening or embarrassing, or we thought we already understood it well enough by means of stock assumptions about our feelings and motivations. During dreaming, the felt sense emerges into consciousness because it is no longer blocked by our ways of framing our motivations and emotions in terms of assumptions that have little to do with what they are actually "about." Ultimately, the felt sense is grounded in a sense of what I am trying to do in my life, and how I am trying to do things in my life. It is not grounded merely in receiving information or a stimulus–response reaction to information. It is enactive rather than responsive, and it creates a system of affordances for motivated action in the dream.

« 22 » This method of dream analysis may make empirically minded psychologists and other scientists nervous because it relies on subjective introspection and vague feelings – Gendlin himself describes the felt sense as "murky." But this ultimately involves the epistemological controversy between various kinds of phenomenology (including hermeneutic phenomenology) and empiricist approaches to epistemology. As Solomonova and Sha apparently agree, the two approaches can complement rather than contradict each other.

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Neurophenomenology's Epistemological Locus and the Need to Consider Its Primitive Sources: Internal Processing and Development

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> Upshot • Neurophenomenology requires a first-person report at the subpersonal level. Thus, the neurophenomenology of dreaming and sleep can be figuratively located in a model of perspec-

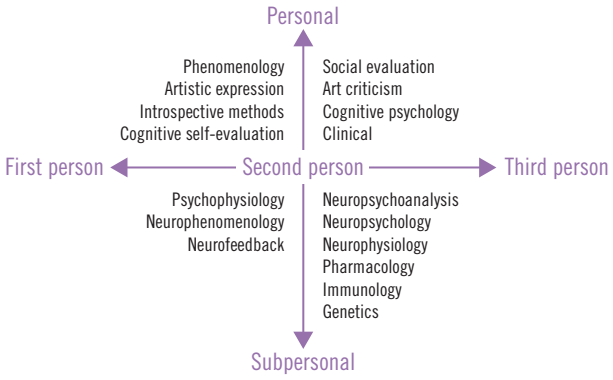

Figure 1 • Approaches of dream and sleep analyses modeled according to first-, second- and third-person perspectives and personal and sub-personal levels of knowledge. Neurophenomenology stands in the lower left quadrant in the first-person perspective and sub-personal quadrant (from Rosales-Lagarde, González & Díaz, in press).

Perspective	First person	Second person	Third person
Raw data	Oral report or dreaming event	Clinical anamnesis or driven questionnaire	Qualitative primary evaluation
Data analysis	Self-consciousness	Clinical interpretation	Measurement of variables according to the protocol
Communication among perspectives of analyses			

Figure 2 • The analysis of dreams at the personal level from first-, second- and third-person perspectives. Raw data, procedures for data analysis and relationships among participants performing dream analysis are presented (from Rosales-Lagarde, González & Díaz, in press).

tives and levels of analysis. Even when Solomonova and Sha do admit creativity to explain bizarreness and emphasize dreams' enaction and, especially, dreams' perception-dependence, an innate and developmental framework of neurophenomenology becomes a requirement to understand fully its sub-personal counterpart, i.e., sleep, especially the evidence derived from innate processing observed during the sleep of neonates – even without the dreaming counterpart. Finally, precisions about the depth of dreaming in Hobson's work are presented.

« 1 » Neurophenomenology's epistemological position with respect to other disciplines or approaches can be represented in Figure 1. The horizontal axis of the model corresponds to first-, second- and third-person perspectives and the vertical one to the particular level of knowledge of the analysis, whether personal or sub-personal. Finding out the action mechanism of dreams and their body location can be denominated sub-personal, in contrast to a personal level of knowledge, whose purpose is the study of dreaming by means of its accounts. Differences depend on considering the subject as a whole or in terms of its constitutive systems. In other words, the analysis is executed from a report or from an anatomic and physiologic indicator of a certain process that can be correlated with a mental phenomenon.

« 2 » The neurophenomenological approach, psychophysiology, and neurofeedback are located in the lower left quadrant. To mention some of the other approaches, artistic expression inspired by dreams arises from the first-person perspective but art criticism arises from the third-person perspective (both are related to the personal level). Cognitive psychology and introspective methods differ by the person that performs the analysis – they distinguish themselves by the analyzer but both are personal; the sub-personal aspects such as genetics and the pharmacology of sleep, among other disciplines, are analyzed from the third-person perspective at the sub-personal level. The second-person perspective arises especially in the clinical approach, in Figure 1. Also, methodological underpinnings of sources of raw data and how they are processed by the first person – and also by the second and third ones – and its interactions are presented in Figure 2.

« 3 » It is clear that dream reports and subsequent data analyses with the self-consciousness that neurophenomenology demands can be achieved only when a certain level of nervous system maturation is attained. In neuroscience, debates between empiricism and innateism appear to have faded away. Since 1966, research on sleep in neonates has been garnering hard evidence in favor of innate internal processing in the absence of external stimulation. Thus, a greater quantity of active sleep that is similar to rapid eye movement sleep for about 8 hrs in neonates seems to serve as endogenous stimulation (Roffwarg, Muzio & Dement 1966). In contrast, after a month of sensorial deprivation in neonate rats, Corsi et al. (1982) found significant REM sleep reduction. Even though REM sleep function remains controversial (for a concise overview see Corsi 1983), its significant reduction in adults alters emotional decision-making (Rosales-Lagarde et al. 2012) and causes a rebound of prefrontal gamma activity (Corsi-Cabrera et al. 2015). On the other hand, alpha rhythm is an excellent indicator of a closed-eye rest state, which differs markedly from the aroused state with open eyes and a faster beta rhythm, initially recognized by Hans Berger (Niedermeyer & Lopes da Silva 2005). Quantitative electroencephalographic norms obtained by Milos Matousek

and Ingemar Petersen (1973) suggested a consistent maturation of the nervous system in subjects without serious illness. Deviations from these norms due to learning disabilities, low socio-economic status, and/or illiteracy are detectable (Ahn et al. 1980; Harmony et al. 1990). In §32 of their target article, Elizaveta Solomonova and Sha Xin Wei consider theta as the fast desynchronized activity. However, this is in contradiction to the classical nomenclature of EEG rhythms, in which beta and gamma are traditionally the desynchronized rhythms (Niedermeyer & Lopes da Silva 2005).

« 4 » Innate EEG rhythms, their quantifiable activities and nervous system maturation mirrored in EEG, to mention only a few examples, could not be explained solely by an enactive approach since "individual sense-making and processes of production of meaning of the lived experience" (§5) could barely be said to be present in the neonate. In their abstract, Solomonova and Sha contend that "[t]his implies that dream experiences are neither passively lived nor functionally disconnected from dreamers' world and body." Clearly, in the above-mentioned cases, this cannot be sustained. While dreams and corresponding mental phenomena remain unknowable until verbal expression becomes possible, it can be asserted that some kind of organized internal neuronal stimulation is going on. The dependence of dreams on perception is also questioned in the case of neonates. Reports in the new neurophenomenology of dreaming would begin with verbal competence and perception, presupposing that a previously internal neuronal processing, at maturational and constrained intervals – such as critical periods – have reached a certain stage of development. Even if the enactive approach seems to accept a measure of innateism or pre-programmed development, a wider landscape will not weaken its position, but rather strengthen its neuroscientific side without diminishing its philosophical import. An innate structural apparatus is a necessity to begin with. To achieve "electric maturation," the brain needs environmental stimulation, nutritional input, and affective interaction and in this sense enaction would start in the uterus.

« 5 » The target article seems to suggest that neurophenomenology is a tentative discipline lacking a developmental framework. The need to integrate innate and developmental brain functioning has been outlined by Jean Piaget and should be crucial to the innate-maturational-environmental perspective of enaction and neurophenomenology. In the words of Solomonova and Sha:

> "When the brain activity is addressed and analyzed in context of the larger nervous system, including both autonomic and peripheral processes and afferent and efferent sensory systems, as well as direct contact with the world, *it can be seen not as a representation of an information-processing within the head*, but rather as a marker of dynamic processes involving the whole embodied subjectivity, embedded in the world, and affectively interacting with others." (§43; my emphasis)

« 6 » As I see it, some types of brain activity must be construed as an information-processing representation within the head. The above remarks of the target article are also correct. In this sense, the terms "embodiment" and "embrainment" are irrelevant, as neuroscience accounts for both even when the brain serves as the executioner of many psychological functions, and frontal development can explain a consecutive control of the body. Concerning "embrainment" and "embodiment," it should be underlined that "representation of an information-processing within the head" is not the only thing that neuroscientists have to demonstrate because the body, including the brain, can be shaped depending on the type of environment and its mutual interaction. A global multilevel understanding has characterized neuroscience for decades, as can be epitomized by Mark Rosenzweig's classic studies of enriched environments (Rosenzweig 1966).

« 7 » Solomonova and Sha's endorsement (§19) of the quantifiable methodology of Allan Hobson's group (§§17, 14) must be reconsidered. In these studies, "nightcaps" were used to obtain EEG, EMG and EOG signals at the homes of multiple subjects (Pace-Schott et al. 1994). Phenomenological questionnaires about quality of sleep and qualitative dream experiences such as bizarreness, flying, colored dreams, and other innumerable qualities were applied in healthy, deaf-mute, paraplegic, or schizophrenic subjects and in many other examples, always searching for further quantitative measurements (Scarone et al. 2008; Voss et al. 2011; for a review see Rosales-Lagarde et al. in press).

« 8 » The "depth" methodology may expand the "breadth" methodology (§3). Questions about how an experience happens are, as Solomonova and Sha point out, a form of metacognition that could be not be the dream itself, but rather an interpretation (see Díaz 2015). Nevertheless, exploring dream quality by means of interviews to search for temporality, perceptions, and emotions must be welcomed into dreaming research.

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We Need to Go Deeper! Conceptual and Methodological Considerations on the Depth of Dream Experience

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> Upshot • This commentary aims to sharpen the conceptual distinction between the breadth and the depth of dream experience. I discuss several possible readings and argue that the best one construes breadth and depth as distinct but complimentary research strategies distinguished not just by the kinds of evidence they rely on, but also by the degree to which different types of data are integrated and focused on the same experiential episode. I identify promising candidates for depth approaches and challenges for future research.

http://constructivist.info/11/2/407.solomonova