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***Reflective, primary, core, extended, recursive, and minimal consciousness—
What do all these new concepts mean?***

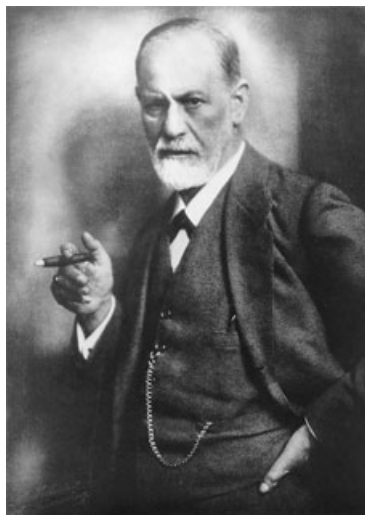
As Bernard Baars notes in his [2002 SCR news story](#), scientific interest in consciousness is expanding at a very rapid rate. A quick glance at the SCR archive and the articles it contains reveals that a great variety of topics are being addressed in relation to consciousness. I identify just a few here: conscious states and their neuroanatomical substrates, dreams and the unconscious, automaticity, self-awareness, visual perception, psychedelic experiences, daydreaming, emotions, attentional processes, volition, memory, meditation, and language.

One such issue increasingly gaining attention is the notion of “levels of consciousness”. Actually, it has been around for quite some time now—just think of Sigmund Freud and the unconscious, preconscious and conscious, or William James and the physical, mental and spiritual selves.

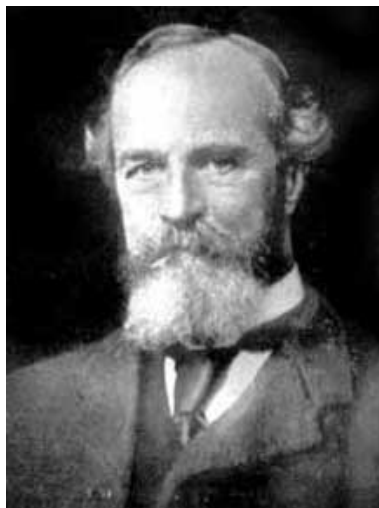
One reason there is so much chaos is that some theorists formulate their models without making reference to existing views.

But recently there has been a major revival of this problem in the scientific literature. New terminology and models describing levels of consciousness are being swiftly introduced, causing confusion more than anything else. The term “consciousness” itself is already difficult to define (see SCR [LINK](#))—then add to this notions such as “meta-”, “reflective”, “core”, “extended”, “minimal”, or “recursive” consciousness, and the situation becomes

rather desperate. (Perhaps I'm over-reacting and things are not getting that complicated? If you think so, please try [a little quiz](#). I think this demonstration will convince you that my distress is justified!)



Freud



William James

One reason there is so much chaos is that some theorists formulate their models without making reference to existing views. This redundantly adds artificial complexity to an already complicated problem. Someone needs to sit down and carefully examine some of these new views. Well, this is precisely what I have done in a paper recently submitted for publication ([LINK](#)). In this article I present and compare some current models of levels of consciousness to extract points of convergence and divergence. Let me share what I found with you.

Theoretical framework

We first have to come up with a basic theoretical background that will be used as a common point of reference to compare and contrast the various views I intend to analyze. In other words, without a guideline it would prove extremely difficult—if not impossible—to identify what the recent proposals about levels of consciousness have in common and what is unique to them. I suggest we use a framework that is very popular in experimental social psychology and personality. This model has been guiding empirical research in these areas for more than three decades. I call it the “social/personality” model; it rests on a classic distinction established first by the sociologist Herbert Mead in the



Herbert Mead

thirties, and then by two researchers in the seventies at the University of Texas in Austin, Shelley Duval and Robert Wicklund. The division is between focusing attention outward toward the environment (“consciousness”), and inward, toward the self (“self-awareness”). Figure 1 below schematically illustrates this model.

Before we look at consciousness and self-awareness, let’s talk about “unconsciousness”. Obviously you first need to be awake to direct attention outward or inward. If you are not wakeful, you are “unconscious”. So “unconsciousness” is the term used to designate the state in which there is no processing of information, either from the environment or the self. You are unconscious when you sleep or when, because of brain injury, you are in a coma. But when you are alert, you process information in the environment and you adaptively respond to stimuli. This is “consciousness”: you directly experience perceptions, sensations, thoughts, etc., but—and this is important—you are *not* yet aware that these mental events are taking place. You are totally immersed in experience—an unreflective actor in the environment. In this perspective, all animals possess “consciousness”. We humans also spend a large amount of time in a state of consciousness, interacting with objects and persons, talking, walking, or coherently thinking, without monitoring these behaviors. Note here that even though the social/personality view of consciousness emphasizes an awareness of external stimuli, and not the self, a minimal consciousness of self is needed for the organism to relate to the environment. In other words, you must have at least a diffuse, implicit awareness of your body to navigate in the environment. Kai Vogeley and Gereon Fink, at the Institute of Medicine in Juelich (Germany), have recently termed this “first-person perspective” or “subjective perspectivalness”.

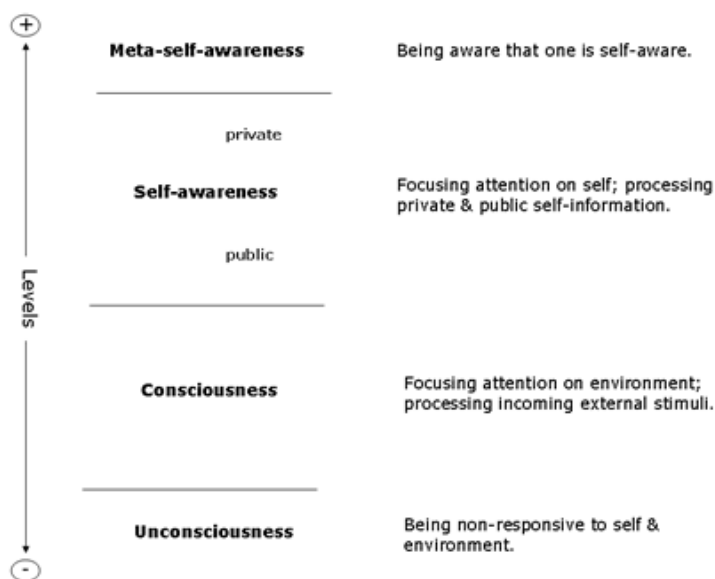


Figure 1 -- The social/personality model of levels of consciousness

“Self-awareness” represents the capacity to become the object of your own attention. This happens when you focus attention *not* on the external environment (consciousness), but on your internal milieu. You become a reflective observer processing *self*-information. That’s when you become aware that you are awake and experiencing specific mental events, emitting behaviors, and possessing unique characteristics. In a state of self-awareness you could say things such as “I feel happy,” “I’ve been watching TV all afternoon,” or “I am a likable person”. Here I need to introduce another classic distinction that has been proposed in 1975 by Allan Fenigstein and his team at the University of Texas in Austin. When you are self-aware you can focus on private or public self-aspects. Private self-aspects consist of events and characteristics that others cannot directly observe—your emotions, physiological sensations, perceptions, values, goals, motives, etc. Public self-aspects are visible attributes such as your behavior and physical appearance. Table 1 presents an exhaustive list of private and public self-dimensions. Actively examining private self-aspects is called “private self-awareness”, and observing public self-aspects is termed “public self-awareness”.

Private self-aspects	Public self-aspects	Others
<ul style="list-style-type: none"> • Thoughts • Beliefs • Goals / aspirations • Self-memories • Emotions • Interests • Physiological feelings • Standards • Values / opinions • Attitudes • Perceptions • Intentions/motives • Sensations • Personality traits 	<ul style="list-style-type: none"> • Sexuality • Positive & negative characteristics • Behaviors / actions • Abilities / skills • Body • Appearance • Others’ opinion • Social life & intimate relationships 	<ul style="list-style-type: none"> • Studies • Future • Family & children • Health • Professional work • Financial situation • Intellect • Happiness

Table 1—Various self-aspects that can become the object of attention when self-aware

Self-awareness constitutes a broad process that includes a host of self-related activities. Some are *integral parts* of being self-aware; for example, remembering your own past (retrieval of autobiographical material), identifying self-characteristics (who you are—self-description), assessing your qualities and shortcomings (self-evaluation), and talking to yourself when doing all this (inner speech—see SCR [LINK](#) [pdf]). Some other abilities are *consequences*, or by-products, of self-reflection; for instance, recognizing yourself in a mirror (self-recognition), feeling sorry for someone else (because you know how it feels to suffer—Theory-of-Mind), being happy—or not!—with who you are (self-esteem), and controlling your own destiny (self-regulation).

One last level of consciousness is “meta-self-awareness”: being aware that you are self-aware. Clearly this represents a logical extension of the previous stage. Here you would not simply say “I feel happy” (self-awareness); instead, you could utter “I’m aware of the fact that I’m happy”, or “I’m currently analyzing my emotional state of feeling happy”. A simple analogy might help differentiate self-awareness from meta-self-awareness. Let’s suppose that you are looking at yourself in a mirror. You position yourself very close to the mirror and you examine a small pimple on your face. That would be self-awareness: you are focusing attention on the self, processing (public) self-information, and being aware of that specific self-dimension (“I have a pimple on my nose!”). Now let’s imagine that you move backward and look at the total reflection in the mirror. You can see yourself looking at yourself in the mirror—you become aware that you are engaged in self-observation (“I see myself looking at that pimple on my nose”). That would be meta-self-awareness. I submit that once you reach this ultimate level of consciousness you understand that you stay the same person across time (self-history), that you are the author of your thoughts and actions (self-agency), and that you are distinct from the environment (self-coherence). In addition, since by definition (meta-) self-awareness means “awareness of self”, you now know that *you exist*. As a result you also become keenly aware of the fact that some day you will die (death awareness).

Schooler and Farthing

Now that the social/personality model of levels of consciousness has been carefully outlined, we can contrast it to recent proposals. I start with two views that are highly consistent with the model. Please refer to Figure 2 below. Jonathan Schooler, at the University of Pittsburgh in Pennsylvania, presents a very simple and straightforward view. He defines “non-consciousness” as the absence of consciousness, “consciousness” as experiencing sensations, perceptions, emotions, thoughts, etc., and “meta-consciousness” as explicitly re-representing consciousness. This last term basically means being aware of one’s own conscious experiences. Schooler gives a few examples to illustrate his model. For instance, if you catch yourself thinking about something else while reading (mind-wandering experience) you become “meta-conscious”; but before you became aware of this, you were thinking about something without knowing that you were doing so—you were “conscious”. I believe that Schooler’s first two labels are synonymous with unconsciousness and consciousness respectively, as defined in the



Jonathan Schooler

...If you catch yourself thinking about something else while reading (mind-wandering experience) you become “meta-conscious”

previous section. "Meta-consciousness", because it is limited to a reflection on one's internal and invisible experiences, means private self-awareness.

Bill Farthing, at the University of Maine, proposes a more complex model. In Farthing's terminology, the lowest level of consciousness is the "nonconscious mind". It is made up of mental processes that are not currently in consciousness. One example would be things you perceive without consciously noticing them (e.g., various road signs when driving). Another illustration could be non-conscious motives. Perhaps you have romantic feelings toward Brigitte (or Jim—your pick) and you would like to have sex with her/him, but this thought is unacceptable because you are already involved in a relationship. So you try not to think too much about it. The motive is there, but you are unaware of it. The concept of "nonconscious mind" does *not* really signify unconsciousness because in that state you are awake. Recall that to be unconscious means to be asleep or in a coma. However, your nonconscious mind is not *directly experiencing* mental events. That is,

it seems that "meta-consciousness" and "reflective consciousness" are very closely related.

something is definitely taking place in your head, but it is diffuse, out of focus, not noticed. I thus understand this level as meaning consciousness, but it seems to be a *very low* level of consciousness.

Genuine consciousness represents another level in Farthing's system, called "primary consciousness". It basically means "consciousness" in Schooler's model. There your attention is focused outward and you directly experience percepts, feelings, thoughts, and memories. You see, smell,

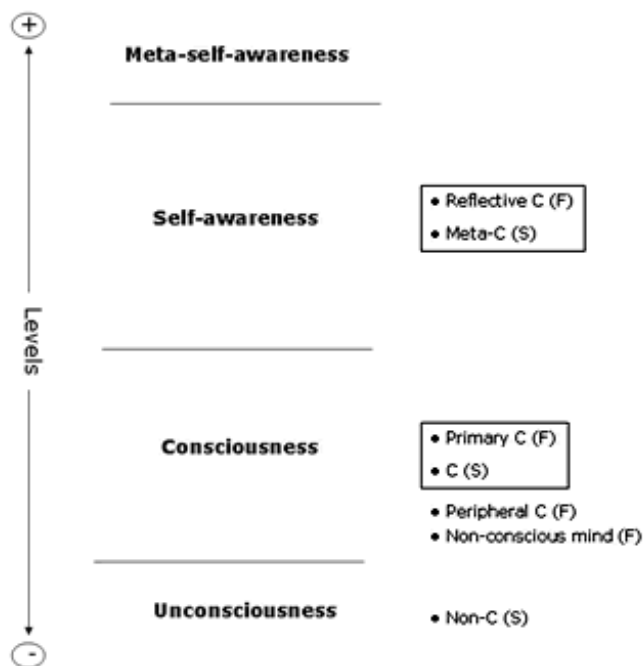


Figure 2 -- Schooler and Farthing's views in relation to the social/personality model
 (Note: C = consciousness; S = Schooler; F = Farthing)

walk, talk—but this is not self-awareness, because you are not yet fully conscious that these events are happening. In other words, you still are an agent immersed in sensations and perceptions non-reflectively felt. Farthing also introduces an intermediate level between

“nonconscious mind” (lower consciousness) and “primary consciousness” (consciousness). It is called “peripheral consciousness”, where mental contents are on the edge of entering primary consciousness. The highest level, where you generate thoughts about your own conscious experiences, is labelled “reflective consciousness”. For example, you could say (to yourself) “I see this road sign”, or “I know that I have romantic feeling toward Brigitte/Jim”. This level represents the equivalent of private self-awareness, because the focus of attention is your subjective experience, as opposed to public self-characteristics. So far it seems that “meta-consciousness” (Schooler) and “reflective consciousness” (Farthing) are very closely related.

Neisser; Newen & Vogeley

One way to look at the question of levels of consciousness is to take into account what *type* of self-information organisms have access to—the *nature* and *complexity* of the data. Various forms of self-representations exist, and some are more sophisticated than others. The assumption here is that processing fairly rudimentary types of self-information is done at a lower level of consciousness, and that accessing refined forms of self-information occurs at a higher level. One popular distinction in the literature opposes perceptual to conceptual self-representations. Perceptual (or sensory) information refers to aspects of yourself that you directly experience (your body, for example) or that you can readily perceive via environmental stimuli (again, your body, but seen in a mirror, for instance). If we go back the division offered between private and public self-aspects, I suggest that perceptual self-information mainly consists of public self-aspects. Conceptual (or symbolic) self-information designates dimensions of yourself that are *not* available to immediate perceptual experience and that somehow have to be mentally represented for you to access them. Examples of conceptual self-information are thoughts, attitudes, values, and opinions. I propose that conceptual self-information largely refers to private self-aspects.

Now, the fact that conceptual self-information needs to be abstractly represented—that is, processed, transformed—suggests cognitive work performed at a higher level of consciousness. Thus, if you regularly examine more private self-information (left row in Table 1) than public self-information (middle row in Table 1), we could say that you possess a higher level of self-awareness. If instead you tend to focus more on public self-dimensions (middle row) than private self-aspects (left row), the reverse would be true—you would be at a lower level of self-awareness.

Ulrich Neisser, at the University of Pittsburgh in Pennsylvania, introduces a five-level model of consciousness that is consistent with the view that conceptual self-representations involve a higher degree of consciousness. It mainly focuses on levels of self-awareness and does not address lower levels—unconsciousness and consciousness. Neisser’s system is

located within the social/personality model in Figure 3 below. At the lowest level we have the “ecological self”, a primitive sense of self that develops out of interactions with our surrounding physical environment. When you move in the world, you instinctively know that there is a stable background out there (objects, walls), and yet what you perceive is a flow of changing visual images. This happens because you are in motion, and the contrast between the stability of the environment and the perception of movement informs you that *you* are moving. You sense yourself as an entity with a body that has boundaries—you are distinct from the environment. Also, when you touch, squeeze, rub, suck, throw, or kick objects, you learn more about the body engaged in these various actions. The ecological self most probably gives rise to the subjective perspectivalness mentioned earlier by Kai Vogeley and Gereon Fink. This self is “self-aware” since it can sense its body; however, its level of self-awareness is low because it is based on a direct knowledge of oneself, and thus perceptual self-information.

A second level of consciousness is labeled “interpersonal self”. This next self emerges out of the interactions it engages in with other people in the environment. At the previous level the organism learned about its body by relating to the physical world. At this second stage the organism discovers more about itself and others by interacting with the social world. The plain fact that your actions mesh with those of others indicates that you possess an interpersonal self. For example, most of the time you probably wait for another person to finish a sentence before you start talking. This means that you have an awareness of your engagement in that social interaction. The interpersonal self still relies on perceptual self-information to gain self-knowledge; since the information it acquires at this stage is social in nature, I suggest that the interpersonal self is roughly equivalent to public self-awareness.

the extended self can reflect on itself over time—it can generate thoughts about itself in the past and in the future.

Neisser then posits the “extended self” (third level). This one is more difficult to fit into the social/personality model. As I understand it, the extended self can reflect on itself over time—it can generate thoughts about itself in the past and in the future. For example, you could think about the last time you went to the theatre, or you could plan what to do next weekend. So we have genuine self-awareness here, but Neisser does not specify if the person assesses mental states and personal characteristics (private self-awareness), or visible features (public self-awareness)—or both. The emphasis is really on time perspective. Self-information at the next two levels is conceptual in nature. The “private self” (fourth level) can process private self-information such as thoughts, feelings, and intentions; this fourth level obviously refers to private self-awareness. And the “self-concept” (fifth level) is made up of abstract and symbolic representations of yourself. At that last level you think about your roles, identity, traits, personal characteristics, and

personal history (autobiography). This ultimate level of consciousness represents a full-blown private & public self-awareness, where you most probably can also engage in meta-self-awareness.

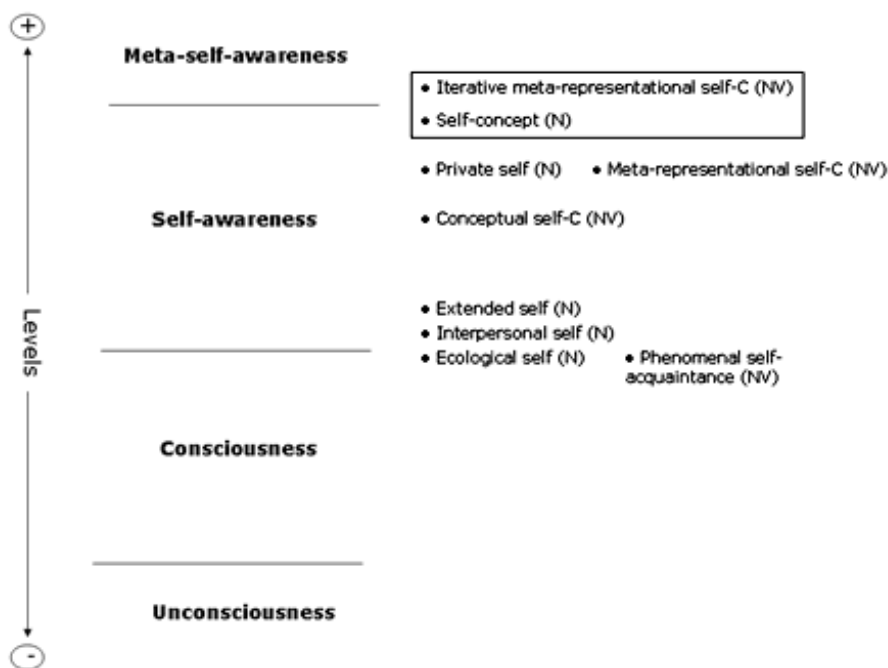


Figure 3 -- Neisser, and Newen & Vogeley's views in relation to the social/personality model

(Note: C = consciousness; N = Neisser; NV = Newen & Vogeley)

Albert Newen and Kai Vogeley, at the University of Tübingen in Germany, also present a model in terms of complexity of self-representations. Like Neisser's view, their proposal mainly pertains to self-awareness and has little to say about unconsciousness and consciousness. Newen and Vogeley's system is presented in Figure 3 above. Note that their model introduces five stages of self-awareness, but I only examine four here.



Albert Newen

The lowest level is labelled "phenomenal self-acquaintance", where you non-conceptually represent your body. This first degree is similar to Neisser's "ecological self". A second level is called

"conceptual self-consciousness", where you conceptually represent yourself, including your mental states. I suggest that "conceptual self-consciousness" can be compared to self-awareness of the private type. Another higher level is termed "meta-representational



Kai Vogeley

self-consciousness". There you construct a mental model of yourself, using, among other material, your self-memories. This level is more sophisticated than the previous one for two reasons. First, you *integrate* self-information acquired through private (and possibly public) self-awareness into a *coherent framework* (a mental model). This obviously requires more cognitive effort at a higher level of consciousness. Second, Newen and Vogeley specify that meta-representational self-consciousness *also* involves creating a mental model of *other people*. Building a mental representation of what is going on in others' mind is called "Theory Of Mind", or TOM. Now that you have access to your own mental states, you can infer the existence of similar experiences in others and develop a mental model of other people's inner lives. The highest level in Newen and Vogeley's proposal is "iterative meta-representational self-consciousness". At that last level you construct mental models of others' models about yourself. I know—this is not evident, so let me rephrase that. You now try to imagine what other persons think of you, you attempt to construct a model of the models other people have developed about yourself. Said differently, you create a TOM about others' TOM of yourself. Needless to say, this definitely represents a sophisticated kind of self-awareness that entails complex conceptual self-representations. Both notions of "meta-representational self-consciousness" and "iterative meta-representational self-consciousness" are difficult to fit into the social/personality framework. I venture to suggest that because of its very large scope, the last level most probably encompasses meta-self-awareness.

Zelazo, Stuss et al., & Damasio

With his notion of "extended self", Neisser introduces the idea that possessing a *temporal perspective* of the self could be important. Indeed, the next three views that I discuss in this section all stress the crucial ability to reflect on ourselves over time. Figure 4 below presents various levels of self-awareness proposed by Philip Zelazo, David Stuss and his colleagues, and Antonio Damasio.

Philip Zelazo, at the University of Toronto in Canada, adopts a developmental perspective and examines how five degrees of consciousness gradually emerge in infants and children. His proposal is appropriately called the "levels of consciousness" model (LOC). It is based on the assumption that a mechanism of recursion takes place at each level. What you experience in consciousness at one level is fed back into consciousness and then becomes available to consciousness at a higher level.

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The lowest level is “minimal consciousness”; it emerges during the first year of life. Minimal consciousness essentially represents consciousness, where the infant unreflectively



Philip Zelazo

Zelazo emphasizes the importance of language: without the ability to label our mental experiences, recursion could not take place.

perceives stimuli in the present. At that level, past events cannot be recalled, and future anticipated states cannot be mentally represented. It’s literally living in the “here and now”.

The second stage, which develops between 9 and 12 months, is “recursive consciousness”. Minimal consciousness refers to itself by combining its contents at one moment with the contents at another time. Here Zelazo emphasizes the importance of language: without the ability to *label* our mental experiences, recursion could not take place. Here’s an example. Let’s suppose that your 12-month-old niece Justine looks at a lion and says “Lion”. Zelazo suggests that by verbally identifying the lion, Justine associates her perceptual experience with a description of it from memory. When there is simultaneous access to the perception (the actual lion) and the label (“Lion”), the

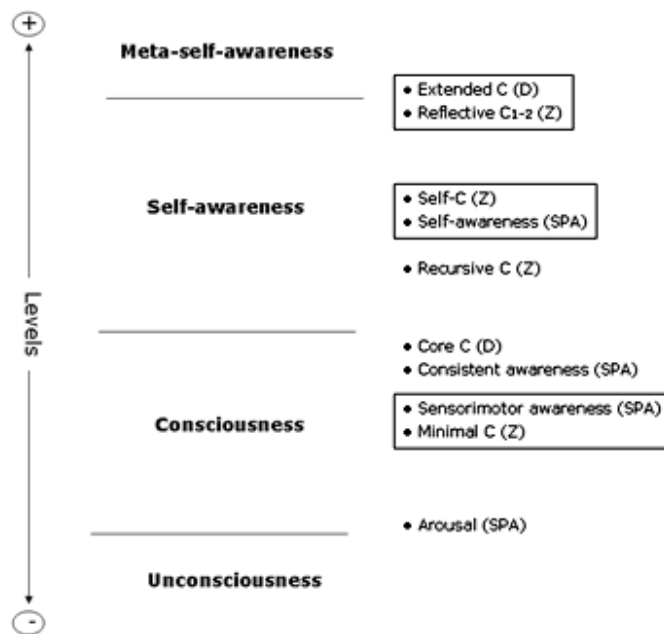
perception becomes an object of conscious experience. At this stage Justine not only undergoes mental events such as seeing an animal (minimal consciousness)—she also becomes aware of them. With respect to time, in recursive consciousness past experiences and future-oriented states now can be represented, but these are not connected to what Justine is experiencing in the present. She is still incapable of perceiving herself now, here.

This perception of oneself in the present occurs at the third level, called “self-consciousness”. Between 18 months to 2 years of age, the child engages in additional reflection on the contents of recursive consciousness. At this level Justine can relate a description of an experience (e.g., “That is a giraffe”) not only to the experience described (seeing the animal) but to another description (e.g., “Yesterday I went to the zoo”). Justine can think about descriptions of past or future events in relation to her present situation. For example, she could say “Today I’m home with Mommy but yesterday I was at the zoo”. So Justine is fully conscious of now (“Today I’m home with Mommy”) and can link this experience to another one in the past (“yesterday I went to the zoo”) or to a future episode (“Tomorrow I will play with my friends”). This third level of consciousness does not fit well into the social/personality model. It nonetheless represents a higher level of self-awareness because the child gains the subjective experience of self-continuity in time.

Zelazo presents two additional degrees of consciousness that can also be considered as higher types of self-awareness. These are “reflective consciousness¹” (3 years of age) and

“reflective consciousness²” (4 to 5 years of age). Essentially, Justine takes an increasingly temporally decentered perspective. She can put herself in spatial and temporal perspective and psychologically distance herself from herself. With this comes the realization that not only does she experiences things in the past, present, and future—she also possesses a personal history

that differs from the history of the world. In other words, Justine might say “This is what happened to me last summer, but not to my friend John”. This in turn leads Justine to understand herself as displaying both continuity and change in time. As for “self-consciousness”, it is difficult to establish clear links between the concepts of “reflective consciousness¹⁻²” and the social/personality model of levels of consciousness. This suggests that Zelazo’s view introduces



Zelazo, Stuss et al., and Damasio’s views in relation to the social/personality model

(Note: C = consciousness; Z = Zelazo; SPA = Stuss et al.; D = Damasio)

nuances that are original and non-reducible to any other model. I would propose however that these last two forms of self-awareness are associated with highest forms of private and public self-awareness, and with meta-self-awareness.

Whereas Zelazo’s LOC model is developmental in essence, the next two views originate from neurobiology. Donald Stuss and his colleagues (also at the University of Toronto) suggest that our brain constantly constructs a model of ourselves and the world. The brain would create such a model to interact more efficiently with the environment. Consciousness results *not* from a perception of what is out there but from experiencing the models of what is occurring in the environment. At the lowest level of consciousness, “arousal”, there is no internal modeling of information. You make simple behavioral responses to incoming stimuli. This is basic consciousness. A second stage is labelled “sensorimotor awareness”. This still is part of consciousness, but you now analyze and create a model of incoming sensory information (including your body). As a result, you can emit more sophisticated responses in the environment. The “sensorimotor awareness” stage of consciousness echoes Neisser’s ecological self, and Newen and Vogeley’s phenomenal

self-acquaintance. At the “consistent awareness” level you build a larger world-model consistent with reality. Your brain integrates information provided by the sensory systems and organizes voluntary goal-directed behavior. I speculate here that “consistent



David Stuss

Consciousness results not from a perception of what is out there but from experiencing the models of what is occurring in the environment.

awareness” still represents consciousness as defined by the social/personality model. Although this level is more refined than the previous one, there is no mention to any form of self-directed analysis, meaning that you basically keep focusing attention on the environment and process incoming external stimuli.

The last level is named “self-awareness”. At that ultimate stage you now create not only a world-model—you build a *self*-model as well. This requires planning, judging, and self-monitoring. Stuss and colleagues also specify that you now place information in a temporal perspective and actively remember your past and anticipate the future. Since the “self-awareness” level is based on an access to autobiographical information and the construction of a self-concept (self-model), most probably made up of private and public self-information, I suggest that it refers to “self-awareness” in the social/personality structure. This level closely resembles the concept of “meta-representational self-consciousness” posited by Newen and Vogeley. The emphasis on personal history at that level indicates that a perception of self in time constitutes an important factor in self-awareness.

This last remark is consistent with Antonio Damasio’s proposal as well. Damasio is a neurologist at the University of Iowa. He proposes the existence of two levels of consciousness: “core” and “extended” consciousness. “Core consciousness” presupposes wakefulness and consists in an implicit sense of self here and now. I suggest that “core consciousness” be located right in between consciousness and self-awareness as defined throughout this review. On one hand core consciousness means that you are aware of your environment and experience mental events (consciousness). On the other hand, it also implies that you possess diffuse information about yourself (self-awareness). “Core consciousness” is



Antonio Damasio

somewhat similar to “phenomenal self-acquaintance” (Newen & Vogeley) and the “ecological self” (Neisser). “Extended consciousness” represents a more elaborate sense of self and identity. It includes information about your past and anticipated future, as well as your personality traits and other similar private and public self-dimensions. Damasio’s “extended consciousness” can be linked to Neisser’s “self-concept”. It represents a refined form of self-awareness that includes an awareness that one is self-aware—meta-self-awareness.

Conclusion

In this review I compared seven recent models of levels of consciousness. This just represents a sample of what’s out there in the scientific literature. We have seen that perception of self in time and complexity of self-representations constitute two important dimensions of consciousness. There are other important aspects to consciousness—in my submitted paper I discuss frequency of self-observation, quantity of self-information, and accuracy of self-knowledge.

What we should ask instead is: at what level (or levels) of consciousness is language required?

My goal has been to reduce the growing confusion associated with the proliferation of new models and terms describing various levels of consciousness and self-awareness. My analysis, summarized in Table 2 below, strongly suggests that many new concepts are closely related. For example, primary and minimal consciousness, as well as sensorimotor awareness, all mean consciousness as defined as being awake and focusing attention on the environment. This situation creates unwanted redundancy. However, some other notions introduce fine nuances between levels of consciousness that should not be overlooked. For instance, both iterative meta-representational self-consciousness and extended consciousness are located right in between self-awareness and meta-self-awareness on the social/personality model, but each notion possesses a distinct flavour. Iterative meta-representational self-consciousness emphasizes TOM, whereas extended consciousness stresses perception of self in time.

Levels	Definition	Related concepts
Meta-self-awareness	Being aware that one is self-aware.	<ul style="list-style-type: none"> • Extended self • Iterative meta-representational self-consciousness
Self-awareness	Focusing attention on self; processing private & public self-information.	<ul style="list-style-type: none"> • Meta-representational self-consciousness • Extended & private self • Conceptual self-consciousness • Self-concept • Reflective, reflective 1-2, recursive, self & meta-consciousness
Consciousness	Focusing attention on the environment; processing incoming external stimuli.	<ul style="list-style-type: none"> • Non-conscious mind • Ecological & interpersonal self • Phenomenal self-acquaintance • Sensorimotor awareness • Core, peripheral, primary & minimal consciousness
Unconsciousness	Being non-responsive to self & environment.	<ul style="list-style-type: none"> • Non-consciousness • Arousal

Table 2—Summary of the analysis presented in the present review

Conceptualizing consciousness in terms of degrees can be very useful. It can help us clarify theoretical issues that have been intensely debated in the scientific literature. For example, some believe that language is essential to consciousness while others rather think that we can be conscious without speech. Of course these two extreme views are unrealistic. We must not ask if language is necessary for consciousness. What we should ask instead is: at what *level* (or levels) of consciousness is language required? The researchers whose models have been reviewed here would likely agree that primary consciousness (Farthing), sensorimotor awareness (Stuss et al.), and minimal consciousness (Zelazo) for instance, do not entail language. However, extended consciousness (Damasio), recursive consciousness (Zelazo), reflective consciousness (Farthing), and meta-consciousness (Schooler) most probably need language to emerge.

© Alain Morin, Ph.D
 Behavioral Sciences, Mount Royal College,
 4825 Richard Road S.W., Calgary (AB), Canada T3E 6K6
 Email: amorin@mtroyal.ab.ca
 Webpage: <http://www2.mtroyal.ab.ca/~amorin/>

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