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The consciousness continuum: From “qualia” to “free will”

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The consciousness continuum: From “qualia” to “free will”

Abstract

The consciousness continuum is seen as extending from simple sensory experiences to complex subjective constructions resulting in the apparent exercise of conscious will. The phenomena between these two extremes include spontaneously occurring mental contents, unintended perceptual experiences, memory retrievals, and problem solving including feedback of conscious contents. Two factors describe this continuum: the presence or absence of intention (psychologically defined) and the complexity of the cognitive construction involved. Among other benefits such an analysis is intended to provide an alternative to metaphysical and vague concepts as qualia, free will, and intentionality.

Having wrestled with problems of conscious representation for some 30 years, I want to update that work, correct some omissions, and provide a framework for dealing with different kinds of consciousness. My views on consciousness, starting in 1975, are available in a compilation (Mandler, 1975; Mandler, 2002). I maintain the notion of three general classes of representations: *Unconscious* – the vast reservoir of representations, past experiences, schemas (both constructed and pre-programmed), scenarios, and transformations that constitute our mental armamentarium and that are available for the conscious life of the individual; *Pre-conscious* – unconscious representations that have been activated and are available for conscious constructions; *Conscious* – the end result of the process that makes available subjective experiences for further manipulation and also for possible execution in thought or action.

I assume that unconscious and conscious are discrete states, whereas the preconscious is a transitional representation and probably reflects both full and partial states of activation. Such locutions as “more or less conscious (or unconscious)” usually refer to vague or incomplete *constructions*, not to variations in consciousness. The apparent variations in consciousness are likely to be due to incomplete underlying representations, partial activations, and other lapses of the underlying apparatus. Such partial and vague processes can produce a lack of clarity or distinctiveness in the ensuing conscious representations.

I discuss the generation of conscious from unconscious and preconscious states – leaving aside for the purposes of this presentation the vast area of unconscious representations, which themselves may be simple and complex, partial and incomplete, as well as adequate or inadequate (with respect to specific tasks).¹ In addressing the topic of the present collection I assume that the generation of conscious states involves a constructive process limited by its size and by its serial character, as contrasted with the essentially unlimited unconscious processes operating in parallel. It is constructive in that conscious contents respond in part to the requirements of the moment, and that more than one unconscious content or chunk can be combined or integrated into a single conscious experience. Together with most other searchers after consciousness I have been mainly concerned with

¹ This is not the place, nor does space permit, to discuss the relationship between these constructions and the variety of other distinctions available in the literature.

more complex conscious phenomena, i.e., those contents of consciousness that are constructed in response to retrieval and problem solving requirements of the moment. These aspects of consciousness need to be placed in the context of other uses of consciousness, such as simple conscious experiences (related to the experiences that philosophers call qualia), recent discoveries of spontaneous conscious experiences, and the revival of the discussion of conscious will.

I shall attempt to order conscious experiences on a continuum defined in the first instance by increasing complexity. By complexity I understand the increasing participation of various (primarily unconscious) cognitive processes in the construction of the entity that is experienced as conscious. Such complexity ranges from simple sensory experiences such as sights or sounds to the recovery of individual cognitive (informational) events, to semantically rich events, and to the production of complex problem solving, ruminative thought, and recursive access to informational content.

The second dimension that informs the continuum of experiences is their intentional character – the presence or absence of an intention to think, understand, see, hear, etc. something. The term “intention” is used to refer to the presence of a prior mental state (itself generated by some internal or external event) that requires, instructs, and demands some subsequent mental state. Intention may be self- or other-instructed as when we try to remember an event, we “intend” to remember it, or when somebody else so instructs or requires us.² The intentional/nonintentional continuum is related to Dulany’s (1991) distinction between “deliberative” and “evocative” modes of conscious processing. The former presumably produces propositional representations whereas evocative processing provides something like “mere” awareness. The continuum thus ranges from unintended thoughts to the intentional exploration of possibilities and choices.

In the psychological laboratory most investigations are of intentional cognition involving representations that can be activated, primed, or otherwise energized by operations of which the individual may or not be aware. For example, the demonstrations of either sub- or supra-threshold priming usually involve an intentional (conscious) memorial effort - with the probable exception of so-called implicit performances. Individuals are required to decide whether they have seen a

² I will not deal with the possibility that intentions may sometimes be coextensive with the intended act.

word, can remember an item, can decide whether a string is a word, can identify a degraded stimulus, can complete an incomplete letter string, or some other similar task. In most of these cases, subjects are required to make intentional judgments about the target stimulus. The requirement of an intentional judgment is the phenomenon that provides the dividing line between intentional and nonintentional conscious products. In contrast to the majority of laboratory studies, everyday experience involves a large number of nonintentional conscious experiences.

In general it appears that intention is an all-or-none phenomenon, but it may be possible to consider weak and strong intentions. Whereas there may be some vagueness to the notion of intention, the concept is much preferable to the philosophers' use of intentionality which is indeterminate enough to be the subject of continuing debate as to its meaning by the philosophers themselves (Dennett & Haugeland, 1987).

Finally, I distinguish between attention and consciousness on the one hand and between attention and intention on the other. Attention is a mechanism that determines the organism's uptake of currently interesting or relevant events (Mandler, 2002, Chapter 5).³ The latter are exactly the events that lead to their selection as "important" by the consciousness apparatus. Thus, attentional mechanisms (e.g. spatio-temporal orientation)⁴, will do some of the preliminary selection of events that will eventually appear in conscious states. Attention and consciousness are related because attention may lead to some conscious processes but attention need not lead to conscious constructions nor does a conscious construction (consider, for example, dreams or the mind-pops discussed below) need a prior attentional sequence. Thus, on the one hand consciousness can occur without prior attention, and on the other hand such events as motor behavior (walking etc.) or reading without consciously registering the content frequently involve attention without involving consciousness. Similarly, attention may be intended or not; pre-emptive events such as loud noises, pains etc. may capture attention, or we may intend to attend to some event or object.

The discussion and demonstration of the proposed continuum is a first attempt. Some of the examples may – on further examination - need to be shifted or eliminated. For the purposes of this presentation they should be considered as illustrative rather than defining. I should also note that I shall spend more space and

³ See also Kahneman and Treisman (1984).

time on phenomena not usually considered in the literature on consciousness and take for granted the acceptance of complex constructed conscious experiences that have been extensively covered.

The continuum

I divide the continuum into two parts, the nonintentional and the intentional, and within those list potentially defining examples in order of increasing complexity.

Nonintentional conscious experiences

Sensory experiences. I shall use the notion of conscious sensory experiences rather than the philosophical invocation of *qualia* (Siewert, 2002; Tye, 2003). The latter come close to the former but do not have adequate boundary lines. Qualia are features of objects or representations that are not intentional nor intentionally determined, and sensory experiences have some of the same characteristics. But qualia are sometimes assumed to be specific features of objects themselves, which may or may not be the case from a psychological point of view. More important the term *quale* is sometimes assigned to emotional states such as anger and other social interactions, and the equation of these more complex, often constructed, states with sensory experiences should be avoided.

Sensory experiences include all the immediate experiences of any of the senses, such as when colors and sounds are noticed as soon as the appropriate physical stimulus is presented to the respective sense organs. These are usually unintended, though they require some degree of attention; their mere presence is not always adequate. On the one hand if one is attending to a different aspect of the sensory input no sensory experience may be produced, and on the other hand habituation – after prolonged exposures to a sound for example – may remove the subjective experience. In addition, complexity and the effect of prior experiences may affect even simple sensory experiences. A chord played on the piano produces a different subjective experience for the trained musician than it does for the untrained ear; specialised training affects sensory experience – *qualia* are not constant. Even more complicated are pain experiences. The perception and subjective reaction to pain stimulation is affected by a variety of situational and experiential factors (see Chapman, 1996; Mandler, 2002, Chapter 6).

⁴ See also Pashler (1998)

Thus, even within the class of sensory experiences we have moved along the continuum from simple experiences to more complex and malleable ones. Following these examples I now move to more complex perceptual and conceptual experiences.

Nonintentional perceptual and conceptual consciousness.⁵ I start with a phenomenon, sometimes called the anthill effect, reported by Nelson (1974). Awareness of what Nelson thought were bits of gravel on an anthill was suddenly replaced by awareness of moving single ants, in various orientations and patterns of the moving elements. The two kinds of conscious experiences alternated and the perception of motion was aided by stationary gaze and boredom. However, any intentional tracking of the moving ants terminated the motion percept. A similar conclusion about the importance of a passive state for marginal “perceptions” emerged from the “subliminal perception” studies during the 1950s and 1960s. Several studies produced reports of the importance of subjects being in a “relaxed” state in order to demonstrate “subliminal” perception, (e.g., Fisher & Paul, 1959; Fiss, Goldberg & Klein, 1963; see also Dixon, 1971).

Mind-popping. I move on to the nonintentional access to more complex mental representations, essentially material that is not just sensory/perceptual, but that involves some conceptual processing either prior to the target experience or at the time of conscious access. We examine instances in which prior experiences have an effect on subsequent judgments or responses that are not intentional in the usual sense of the term; there is no deliberate attempt to recover the material. We have called the phenomenon *Mind-popping*, which is also shown in cases in which solutions to persisting problems, often very creative solutions, come to mind unintentionally and quite unexpectedly – a phenomenon that Wallas (1926) called illumination. Mind-popping also occurs when there is a discrepancy between intentional attempts to make a particular choice and the actual nonintentional outcome, or when the individual is neither aware of nor instructed what the target of the performance is.

The main occurrence of mind-popping has only recently been empirically investigated, in research on involuntary semantic memories. These examples of *Mind-pops* are “memories whose apparent irrelevance to the requirements of the

⁵ For more extensive descriptions of these studies, see Mandler (1994).

moment surprises us“(Mandler, 1986, p. 291). They belong to a class of involuntary memories that are not preceded by any deliberate attempts to recall or forget, sometime referred to as passive memories (see also Roberts, McGinnis & Bladt, 1994; Spence, 1988; Winograd, 1993). For example, one suddenly remembers some specific episode(s) from one’s past. Many people report involuntary memories which are seemingly unrelated to their current activities and thoughts nor do they refer to autobiographical episodes, and for which it is difficult at best to find any identifiable triggers.⁶ In our study, using Lia Kvavilashvili’s diary record as well as questionnaire methods (Kvavilashvili & Mandler, 2004), participants were instructed to give only general semantic memories (and not autobiographical episodes). These experiences consisted primarily of single words and images, without any reference to past experiences at certain times and locations, and mostly represent knowledge about the world around us. In addition, most of the time it was not possible to identify detectable triggers. These memories tend to occur when one is alone and engaged in relatively automatic and habitual everyday activities that require no monitoring and controlling activity. Attention is diffuse rather than concentrated.

Another case of nonintentional consciousness is shown in *Déjà Vu* experiences. These spontaneous occurrences of familiarity are also related to the more usual occasions when a person or scene is familiar, when, for example, one recognizes some person without being able to access information as to their identity. These events involve consciousness of the activation of the underlying representation in the absence of accessing the relevant meaning organization.⁷

Involuntary autobiographical memories are at the boundary of nonintentional experiences. Diary studies conducted by Berntsen (1996, 1998) and Roberts et al. (1994) have produced converging findings. They differ from the involuntary semantic memories primarily in that they are much more frequent, consist of the recall of episodes rather than single words, and are easily identified as to their provenance. Finally, these memories are almost invariably triggered by easily identifiable and mostly external visual or auditory cues which refer to some central feature(s) of the memory. I put these experiences in the borderline between intentional and nonintentional experiences because, in contrast to involuntary semantic memories, in the autobiographical studies individuals are specifically

⁶ For a review of relevant studies see Kvavilashvili & Mandler (2004).

⁷ See Mandler (1980) for a discussion of the processes involved.

instructed to give only autobiographical memories that have come to mind. In contrast to these involuntary, but selected, autobiographical memories are the autobiographical memories produced in laboratory studies that are specifically intentional retrievals (Conway & Pleydell-Pearce, 2000).

Suspension of conscious intention. As we move to more complex representations there are a number of cases where the absence or suspension of conscious intention produces relevant conscious experiences. Most of these cases involve the adoption of an apparently nonintentional passive attitude which encourages the recovery of fairly complex material.

There is relatively little evidence in the area of memory retrieval, though psychoanalysts have noted that to the extent that a client “ignores his customary conscious interests, unconscious stimuli take over and control his thoughts” (Brenner, 1976). Pine (1964) noted that the reduction of adaptive demands and of additional stimulus inputs makes it more likely that preconscious and unconscious material will emerge into awareness (see also Koriat & Feuerstein, 1976).

Investigations of priming and identification produce a number of relevant demonstrations. Marcel illustrated nonintentional processes in a study where individuals made judgments of graphic and semantic similarity for words that presumably could not be detected (Marcel, 1983, Experiment 1). The major finding was that at low exposure rates semantic judgments were superior to graphic judgments, which in turn were more probable than correct “presence or absence” judgments. This effect was related to subjects who “adopted a ‘passive’ attitude” and chose the words that “felt” right. Similarly, Nakamura (1989) found access to categorical information only under conditions in which subjects did not intentionally attempt to make categorical or perceptual decisions. Graf and Mandler (1984, Experiment 3) reported a case in which intentional search produced large interference effects which were absent with a “passive” task requirement. In that study initial processing was only of surface structure of words. However, Overson and Mandler (1987) showed that the effect was also robustly present when subjects had processed the input items semantically; i.e., in contrast to the Graf & Mandler study their ability to recall the items had not been impaired.⁸

⁸ Amnesic patients show unimpaired performance on implicit memory of previous primed words etc. (e.g., Warrington & Weiskrantz, 1971; Graf, Squire & Mandler, 1984). These patients are presumably accessing the material “unintentionally.”

A number of clinical studies have demonstrated the advantage of passive nonintentional conditions. Coslett and Saffran (1989, see also Coslett, Saffran, Greenbaum & Schwartz, 1993) have presented data on patients with "pure alexia" who are unable to identify briefly presented words, but performed above chance on lexical decision and forced-choice categorization tasks. "Implicit" access improved when subjects were encouraged to develop a "feel" or intuition for the words, and to inhibit the letter-by-letter approach. Weiskrantz (1986, p.151 and passim) reported on blindsight subjects who refused to "play the guessing game," and when "the subject is pressed ... to be a 'conscientious' subject, he may fail" Marcel reports an observation of a blindsighted patient who was tested for spatial frequency resolution. Frequency sensitivity in the blindfield was better when the patient was distracted by conversation than when not so distracted. (A. J. Marcel, personal communication).

Problem solving. There are several suggestions from studies of incubation of nondeliberate processes in problem solving. What has sometimes been observed is the nondeliberate, usually sudden occurrence of an idea or solution to a problem, following a previous unsuccessful search for the solution and an intervening delay. Acceptable incubation experiments have shown that a delay may improve problem solving, but no more than anecdotal evidence has been obtained of solutions coming suddenly to mind when one is not trying to solve the problem (Mandler, 1994). However irrelevant activity in the delay period does improve incubation. Conversely, Schooler, Ohlsson and Brooks (1993) have shown that when individuals are encouraged to think about their current intentions and thought processes recovery is impaired. These investigators interrupted work on insight problems and required subjects to report their current strategies, or asked for concurrent "thinking aloud" protocols during problem solving, and such "verbalization" interfered with the eventual solution.⁹

⁹ Related to these more complex phenomena are the extensive demonstrations by Bargh and others how unconscious (automated, uncontrolled) processes guide and control overt and conscious action, e.g., Bargh (2001) and Uleman & Bargh(1989).

Intentional conscious experiences

Conscious construction - from simple to complex. I start with some simple conscious events, related to those discussed in the previous section. For example, the phenomenon of incubation may in fact be described as an intentional attempt-in-abeyance to recover some material. More relevant is a sudden recovery from the tip-of-the-tongue (TOT) state, or the realization that one had intended to do something at a particular moment (i.e., prospective remembering) – all refer to involuntary retrieval of certain memories and contents. Although the act of retrieval *per se* is nondeliberate and usually sudden, in all those cases it is preceded by repeated attempts to solve a problem (incubation), by a memory block (TOT state), or by a conscious decision to do something in the future (prospective remembering). So called flashbacks (i.e., the painful images of traumatic events) that characterize the Post Traumatic Stress Disorder, on the other hand, are preceded by attempts not to remember a certain stressful episode (Bekerian, 1992). Similarly, unwanted or intrusive memories and thoughts may keep coming to mind despite attempts to suppress them (Brewin, 1998). In these cases the retrieval processes proceed unintentionally but the end result is usually intentionally produced.

We now turn to the aspects of consciousness that have primarily occupied both psychologists and philosophers. These conscious constructions can vary from the simple retrieval of an isolated memory to complex problem solving achievements. All of these are usually intended deliberate constructions in which the phenomenal experience is a novel construction. Constructed conscious experience depends on the activated schemas of one or more of the constituent processes and features. Consciousness is often constructed out of several activated schemas, taking advantage of alternate ways of viewing the world and also integrating some optimal amount of the available information. Phenomenal experience is "an attempt to make sense of as much data as possible at the highest or most functionally useful level possible" (Marcel, 1983). The complexity of these intentional constructions is well described in the assertion that consciousness of a rule is not represented by thinking *of* the rule but it is the thinking a rule or functioning in keeping with the rule (Bühler, 1907). Conversely, functioning in keeping with a rule is not evidence of any conscious knowledge of the rule.

This approach to consciousness suggests highly selective constructions that

may vary in complexity and thus may be either abstract/general or concrete/specific, depending on what is appropriate to current needs and demands. Among the functions that arise out of this subjectivity are the ability to compare contents of different “conscious” strands, of establishing desirable relations among thoughts and actions and of discovering some of these relations, the testing of short and long term plans, storage and retrieval of memories, social cooperation, and troubleshooting the occurrence of absent minded errors.

Constructing new structures. I now move on in the complexity scale to situations in which the very functions of consciousness produce new and important mental structures. In particular I am interested in feedback processes that are especially apparent in problem-solving tasks. We are usually conscious of those current mental products that are closest to the task at hand, i.e., the subjectively likely solution to the problem, though not necessarily the correct solution. This is one of the more complex constructions on our scale of consciousness. The ongoing products of a problem solving process are partially available, and conscious contents are instructed by both the current state of the solution and the information produced by a feedback process (Mandler, 1996).

The feedback assumption contrasts with the view that consciousness cannot have any causal effects. The assumption states that once alternatives, choices, or competing hypotheses have been represented in consciousness they will receive additional activation and thus will be enhanced, i.e., more distinctly and strongly activated for some time. Note that these activations are in addition to the usual flow and spread of activation that takes place during unconscious processing. Early evidence that just bringing an event into consciousness (imaging) produced priming (i.e., activation of the representation) comes from Wippich et al, and other experiments have shown the effect for both visual and auditory representations (Pilotti, Gallo & Roediger, 2000; Stuart & Jones, 1996; Wippich, Mecklenbräuer & Halfter, 1989). Michelon & Zacks have suggested that priming by perception and by imaging accesses both common and different processes (Michelon & Zacks, 2003).¹⁰ There have also been demonstrations of imagination constructing extensive memories (e.g. Thomas & Loftus, 2002).

¹⁰ The fact that conscious experience can affect subsequent action and experience should provide serious pause for defenders of an epiphenomenal position that speaks of an ineffective consciousness.

Given the capacity limitation of consciousness combined with the intentional selection of conscious states, very few preconscious candidates for actions and thoughts will achieve the additional, consciousness-mediated activation. What structures are most likely to be available for such additional activation? It will be those preconscious structures that have been selected as most responsive to current demands and intentions. Whatever structures are used for a current conscious construction will receive additional activation, and they will have been those selected as most relevant to current concerns. During problem solving the search for problem solutions and the search for memorial targets in recall typically have a conscious counterpart, frequently expressed in introspective protocols. What appears in consciousness in these tasks are exactly those points in the course of the search when steps toward the solution have been taken and a choice point has been reached at which the immediate next steps are not obvious. A conscious state is constructed that reflects those aspects of the current search that do (partially and often inadequately) respond to the goal of the search. Consciousness at these points depicts way stations toward solutions and serves to restrict and focus subsequent pathways by selectively activating those that are currently within the conscious construction. Preconscious structures that construct consciousness at the time of impasse, delay, or interruption receive additional activation, as do those still unconscious structures linked with them.

From conscious willing to free will. The next level of complexity is represented by the phenomenal occurrence of conscious and free will. The phenomenal experience of willing some action is obviously a complex construction; it is an intensely intentional experience. Not only are we initiating some required or desirable action, but we also have the conscious experience of willing, of apparently causing that action. In terms of complexity the notion of agency involves complex intentional actions with a goal in mind.

I am primarily concerned with the complexity of the conscious constructions involved, not with an explanation of the experience. An attempt at an explanatory system for conscious will has been developed by Wegner (2003, and Wegner & Wheatley, 1999). Briefly, the argument is that actions are caused by unconscious events which in turn generate their conscious counterpart. It is the occurrence of the conscious “copies” prior, consistently, and exclusively before the action that produces the subjective experience of willing. Experimental work showed that the generation of such concatenations produces erroneous experiences of mental

causation.¹¹ Wegner suggests that his approach may - at least in part – argue for the lack of efficacy of conscious states, but we have seen above, e.g., in the case of feedback, that conscious imagery may have behavioral consequences.¹² The scenario described by Wegner is likely to be one of several conditions under which a belief in conscious will is constructed (cf. Mandler, in press).

The more general case of a belief in free will adds more complexity to consciousness. Beyond willing some particular act we also tend to believe that we are often unconstrained to make choices, decide a particular way of life, or particular ways of thinking and believing. In 1974 Kessen and I discussed the origins and uses of a belief in free will. We suggested that a subjective belief in a free will is built up in part out of entertaining a variety of possible choices (Mandler & Kessen, 1974). In particular, the belief that one could make any choice whatever is in part motivated by the intention to maximize the beneficial effects of the choice. One consequence is the important function of delay which permits different choices to come to the fore and become conscious – and includes the effect of the feedback function. . The function of delay in the apparent exercise of free will is acquired early in life, and the exercise of delay is often been seen as a sign of maturity (cf. for example Freud and Kierkegaard, *passim*). The combination of delays and a menu of choices makes possible a more varied existence and in a special sense a freer life.¹³ Consideration of the complexity of the conscious constructions involved in these and other aspects of “free will” illuminate not just the problem of conscious “will” but also the highly structured problems of constructing conscious plans and alternative choices and outcomes. In the case of the exercise of “will” it is generally agreed that such a state

¹¹ However, we have known for some time that spurious mental ascriptions such as false recall and recognition memories may be easily produced experimentally. By themselves they do not provide definitive proof of the mechanism(s) underlying the original phenomenon

¹² Granted that we do not know how conscious thought might cause some action, we are no wiser as to the processes whereby unconscious mechanisms do so.

¹³ The reader is directed to the original chapter for more elaborations of this and other aspects of apparent exercises of “free will.” I note that when we advocated a belief in free will as making more choices and alternatives possible, we were accused by some of our audience of being hypocritical by advocating something we didn’t believe in.

involves complex, multi-layered representations and interactions in choices and actions. For specific illustrations see, for example, Wegner's "empirical will" (2002) and Westcott (1977).

Reflective conscious constructions. This final category is partially related to the problem of free will and was delineated in that context by Frankfurt (1982) who argued that a defining aspect of human consciousness is our capacity to think about our wishes and beliefs and in turn to form wishes and beliefs concerning these original desires. Another reflective instance is one which involves recursion, where one is able to think about something and also know that one is thinking about that content. Such recursion has the additional potential advantage of allocating the amount of time we are willing to spend before acting, thus avoiding indefinite cogitations and providing the adaptive consequence of acting in time and appropriately, particular in situations of need or danger.¹⁴ In general the ability to think about or reflect what we are thinking about generates the most complex of our conscious constructions, though these processes are probably limited to at most two recursive steps.

Another related phenomenon that argues for the re-presentation and re-activation of conscious contents is our ability to "think about" previous conscious contents; we can be aware of our awareness. There is anecdotal as well as experimental evidence that we are sometimes confused between events that "actually" happened and those that we merely imagined, i.e., events that were present in consciousness but not in the surrounds.¹⁵ Clearly the latter must have been stored in a manner similar to the way "actual" events are stored.

The positive feedback that consciousness provides for activated and constructed mental contents is not limited to problem-solving situations. It is, for example, evident in the course of self-instructions. In the course of prospective memory we often keep reminding ourselves (consciously) of tasks to be performed, actions to be undertaken. "Thinking about" these future obligations makes it more likely that we will remember to undertake them when the appropriate time arrives. Self-reminding not only keeps the relevant information highly activated but also repeatedly elaborated in different contexts, thus ready to be brought into consciousness when the appropriate situation for execution appears.

¹⁴ I thank Michael Mandler for suggesting this argument.

¹⁵ Anderson (1984), Johnson & Raye (1981).

All of these instances of presentation and re-presentation of conscious thought argue for a highly complex and structured use of consciousness far beyond the simple conscious sensations represented in *qualia*.

My presentation is in the first instance intended as a coherent description of the array of conscious states. My concern has been with the synthesis of conscious experience, not the complexity of analyzing it (e.g., Werner, 1956). It follows also that I am not addressing phenomenological analyses. As Husserl and others have stated, phenomenology is concerned with "lived experience." It assumes (without evidence) that subjective experiences are similar or even identical across human experiences, and that explanation involves drawing parallels between one's own and other persons' intentions and goals. Phenomenology is concerned with understanding how consciousness "feels," and to draw meaning therefrom. I too am concerned with meaning but as an organizational result of conscious constructions. Philosophical phenomenology is a different enterprise from a scientific examination of consciousness.

Beyond description the present approach also presents some theoretical implications. The pre-emption of processing capacity by complex constructions suggests that simpler conscious construction would make it more likely for other, parallel mental operations to take place. That would be more difficult when complex constructions occupy current thought. Conversely the complex constructions provide an opportunity for the discovery and creation of novel combinations and insights, events unlikely to occur with simple "qualia-like" experiences.

I conclude by emphasizing the tentative nature of my proposal. In particular I cannot reasonably defend all the ordering implied in the above and expect that others will argue for different and probably sometimes more reasonable arrangements. I do however believe that an examination of consciousness in terms of intentions and complexity is a useful enterprise.

References

- Anderson, R. E. (1984). Did I do it or did I imagine doing it? *Journal of Experimental Psychology: General*, 113, 594-613.
- Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, 81, 1014-1027.
- Bekerian, D. A. (1992). Autobiographical remembering: An integrative approach. In M. A. Conway, D. C. Rubin, H. Spinler, & W. A. Wagenaar (Eds.), *Theoretical perspectives on autobiographical memory*. Dordrecht: Kluwer Academic Publishers.
- Berntsen, D. (1996). Involuntary autobiographical memories. *Applied Cognitive Psychology*, 10, 455-460.
- Berntsen, D. (1998). Voluntary and involuntary access to autobiographical memory. *Memory*, 6(113-141).
- Brenner, C. (1976). *Psychoanalytic technique and psychic conflict*. New York: International Universities Press.
- Brewin, C. R. (1998). Intrusive autobiographical memories in depression and post-traumatic stress disorder. *Applied Cognitive Psychology*, 12, 359-370.
- Bühler, K. (1907). Tatsachen und Probleme zu einer Psychologie der Denkvorgänge. *Archiv für die Gesamte Psychologie*, 9, 297-365.
- Chapman, C. R. (1996). Limbic processes and the affective dimension of pain. In G. Carli & M. Zimmermann (Eds.), *Towards the neurobiology of chronic pain* (pp. 63-81). Amsterdam: Elsevier.
- Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107.
- Coslett, H. B., & Saffran, E. M. (1989). Evidence for preserved reading in 'pure alexia'. *Brain*, 112, 327-359.
- Coslett, H. B., Saffran, E. M., Greenbaum, S., & Schwartz, H. (1993). Reading in pure alexia: The effect of strategy. *Brain*, 116, 21-37.
- Dennett, D. C., & Haugeland, J. (1987). Intentionality. In R. L. Gregory (Ed.), *The Oxford Companion to the Mind*. Oxford: Oxford University Press.
- Dixon, N. F. (1971). *Subliminal perception: The nature of a controversy*. London: McGraw-Hill.
- Dulany, D. E. (1991). Conscious representation and thought systems. In R. S.

Wyer & T. K. Srull (Eds.), *Advances in social cognition*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Fisher, C., & Paul, I. H. (1959). The effect of subliminal visual stimulation on imagery and dreams: A validation study. *Journal of the American Psychoanalytic Association*, *7*, 35-83.

Fiss, H., Goldberg, F., & Klein, G. S. (1963). Effects of subliminal stimulation on imagery and discrimination. *Perceptual and Motor Skills*, *17*, 31-44.

Frankfurt, H. (1982). Freedom of the will and the concept of a person. In G. Watson (Ed.), *Free Will* (pp. 81-95). New York: Oxford University Press.

Graf, P., & Mandler, G. (1984). Activation makes words more accessible, but not necessarily more retrievable. *Journal of Verbal Learning and Verbal Behavior*, *23*, 553-568.

Graf, P., Squire, L. R., & Mandler, G. (1984). The information that amnesic patients do not forget. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *10*, 164-178.

Johnson, M. K., & Raye, C. L. (1981). Reality monitoring. *Psychological Review*, *88*, 67-85.

Kahneman, D., & Treisman, A. (1984). Changing views of attention and automaticity. In R. Parasuraman & D. R. Davies (Eds.), *Varieties of attention* (pp. 29-61). New York: Academic Press.

Koriat, A., & Feuerstein, N. (1976). The recovery of incidentally acquired information. *Acta Psychologica*, *40*, 463-474.

Kvavilashvili, L., & Mandler, G. (2004). Out of your mind: A study of involuntary semantic memories. *Cognitive Psychology*, *48*, 47-94.

Mandler, G. (1975). Consciousness: Respectable, useful, and probably necessary. In R. Solso (Ed.), *Information processing and cognition: The Loyola symposium* (pp. 229-254). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Mandler, G. (1980). Recognizing: The judgment of previous occurrence. *Psychological Review*, *87*, 252-271.

Mandler, G. (1986). Reminding, recalling, recognizing: Different memories? In F. Klix & H. Hagendorf (Eds.), *Human memory and cognitive capabilities*. Amsterdam: Elsevier Science Publishers.

Mandler, G. (1994). Hypermnnesia, incubation, and mind-popping: On remembering without really trying. In C. Umiltà & M. Moscovitch (Eds.), *Attention and*

Performance XV: Conscious and nonconscious information processing (pp. 3-33).

Cambridge, Mass.: MIT Press.

Mandler, G. (1996). Consciousness redux. In J. C. Cohen & J. W. Schooler (Eds.), *Scientific approaches to consciousness: The Twentyfifth Carnegie Symposium on Cognition* (pp. 479-498). Hillsdale, NJ: Lawrence Erlbaum Associates.

Mandler, G. (2002). *Consciousness recovered: Psychological functions and origins of conscious thought*. Amsterdam/Philadelphia: John Benjamins.

Mandler, G. (in press). Free will for everyone - with flaws. *Behavioral and Brain Sciences*.

Mandler, G., & Kessen, W. (1974). The appearance of free will. In S. C. Brown (Ed.), *Philosophy of psychology* (pp. 305-324). London: Macmillan.

Marcel, A. J. (1983). Conscious and unconscious perception: Experiments on visual masking and word recognition. *Cognitive Psychology*, 15, 197-237.

Michelon, P., & Zacks, J. M. (2003). What is primed in priming from imagery? *Psychological Research*, 67, 71-79.

Nakamura, Y. (1989). *Explorations in implicit perceptual processing: Studies of preconscious information processing*. Unpublished Ph.D. Thesis, University of California, San Diego, La Jolla, CA.

Nelson, J. I. (1974). Motion sensitivity in peripheral vision. *Perception*, 3, 151-152.

Overson, C., & Mandler, G. (1987). Indirect word priming in connected semantic and phonological contexts. *Bulletin of the Psychonomic Society*, 25, 229-232.

Pashler, H. E. (1998). *The psychology of attention*. Cambridge, MA: MIT Press.

Pilotti, M., Gallo, D. A., & Roediger, H. L. I. (2000). Effects of hearing words, imagining hearing words, and reading on auditory implicit and explicit memory tests. *Memory & Cognition*, 28, 1406-1418.

Pine, F. (1964). The bearing of psychoanalytic theory on selected issues in research on marginal stimuli. *Journal of Nervous and Mental Diseases*, 138, 68-75.

Roberts, P., McGinnis, D., & Bladt, L. (1994). *The unexpected excursion: Passive memories in everyday life*. Paper presented at a Conference on Practical Aspects of Memory, University of Maryland, College Park.

Schooler, J. W., Ohlsson, S., & Brooks, K. (1993). Thoughts beyond words: When language overshadows insight. *Journal of Experimental Psychology: General*,

122, 166-183.

Siewert, C. (2002). Consciousness and intentionality. In E. Zalta (Ed.), *Stanford Encyclopedia of Philosophy*. Palo Alto CA: Stanford University Press.

Spence, D. P. (1988). Passive remembering. In U. Neisser & E. Winograd (Eds.), *Remembering reconsidered*. Cambridge: Cambridge University Press.

Stuart, G. P., & Jones, D. M. (1996). From auditory image to auditory percept: Facilitation through common processes? *Memory & Cognition*, *24*, 296-304.

Thomas, A. K., & Loftus, E. F. (2002). Creating bizarre false memories through imagination. *Memory & Cognition*, *30*(3), 423-431.

Tye, M. (2003). Qualia. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy (Summer 2003 Edition)*: URL = <http://plato.stanford.edu/archives/sum2003/entries/qualia/>.

Uleman, J. S., & Bargh, J. A. (1989). *Unintended thought*. New York: Guilford Press.

Wallas, G. (1926). *The art of thought*. New York: Harcourt, Brace.

Warrington, E. K., & Weiskrantz, L. (1970). Amnesia: Consolidation or retrieval? *Nature*, *228*, 628-630.

Wegner, D. M. (2002). *The illusion of conscious will*. Cambridge, MA: MIT Press.

Wegner, D. M. (2003). The mind's best trick: how we experience conscious will. *Trends in Cognitive Sciences*, *7*(2), 65-69.

Wegner, D. M., & Wheatley, T. (1999). Apparent mental causation: Sources of the experience of will. *American Psychologist*, *54*(7), 480-492.

Weiskrantz, L. (1986). *Blindsight: A case study and implications*. Oxford: Clarendon Press.

Werner, H. (1956). Microgenesis and aphasia. *Journal of Abnormal and Social Psychology*, *52*, 347-353.

Westcott, M. R. (1977). Free will: An exercise in metaphysical truth or psychological consequences. *Canadian Psychological Review*, *18*(8), 249-263.

Winograd, E. (1993). Memory in the laboratory and everyday memory: The case for both. In J. M. Puckett & H. W. Reese (Eds.), *Mechanisms of everyday cognition*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Wippich, W., Mecklenbräuker, S., & Halfter, M. (1989). Implicit memory in spelling from word images. *Psychological Research*, *51*, 208-216.

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