

Continuing Commentary

Commentary on **Daniel C. Dennett and Marcel Kinsbourne (1992)** *Time and the observer: The where and when of consciousness in the brain*. *BBS* 15:183–247

Abstract of the original article: We compare the way two models of consciousness treat subjective timing. According to the standard “Cartesian Theater” model, there is a place in the brain where “it all comes together,” and the discriminations in all modalities are somehow put into registration and “presented” for subjective judgment. The timing of the events in this theater determines subjective order. According to the alternative “Multiple Drafts” model, discriminations are distributed in both space and time in the brain. These events do have temporal properties, but those properties do not determine subjective order because there is no single, definitive “stream of consciousness,” only a parallel stream of conflicting and continuously revised contents. Four puzzling phenomena that resist explanation by the Cartesian model are analyzed: (1) a gradual apparent motion phenomenon involving abrupt color change (Kolers & von Grünau 1976), (2) an illusion of an evenly spaced series of “hops” produced by two or more widely spaced series of taps delivered to the skin (Geldard & Sherrick’s “cutaneous rabbit” [1972]), (3) backwards referral in time, and (4) subjective delay of consciousness of intention (both reported in this journal by Libet 1985a; 1987; 1989a). The unexamined assumptions that have always made the Cartesian Theater so attractive are exposed and dismantled. The Multiple Drafts model provides a better account of the puzzling phenomena, avoiding the scientific and metaphysical extravagances of the Cartesian Theater: The temporal order of subjective events is a product of the brain’s interpretational processes, not a direct reflection of events making up those processes.

“Multiple Drafts” of subjective experience viewed within a microgenetic framework for cognition and consciousness

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Abstract: The notion of “multiple drafts” is one that has attracted the attention of researchers working within the “microgenetic” framework to perception and cognition, deriving from the work of Heinz Werner (1948). Dennett and Kinsbourne’s (1992) position can be further explored with reference to this earlier literature. The present commentary attempts to ground the D&K model within this larger theoretical debate.

Although I empathize with Dennett and Kinsbourne’s (D&K) (1992) position regarding “Multiple Drafts” of subjective experience, I wish to draw their attention and that of the *BBS* readership to the fact that this notion has a long history in cognitive and developmental psychology. Let me try to ground the D&K model within an encompassing theoretical debate.

First, consider the concept of regression in cognitive development. By *regression* I mean a shift to a mode of cognition that is characteristic of an earlier stage of functioning, one that may be either long-term and general (regression) or short-term and local (reversion). Basically, the problem is whether regression or reversion can be accommodated by the developmental theory. In the following discussion, I have substituted “draft” for “structure and content” to show the “Multiple Drafts” notion in a wider perspective. Subissues of the problem of regression involve the following:

(1) Are former drafts retained after progressive development, and if so, what is their relation to the more advanced drafts that are presently dominant?

(2) If the former drafts are available, then how do they interact with the more advanced drafts? Furthermore, under what conditions do these former drafts become accessible, and what purpose do they serve if more progressive drafts are dominant?

A unilinear developmental framework, such as that of Piaget (1970) does not accommodate notions of regression and reversion.

Piaget’s stages of cognitive development are hierarchically ordered: progression through successive stages entails an evolution of cognitive structures along a continuum of logicomathematical consistency. Thus, there can only be a progression, that is, a nondescending monotonic developmental trend. Furthermore, cognitive development *à la* Piaget entails the evolution of more advanced cognitive structures which result from the transformation of the earlier ones (Pinard & Laurendeau 1969). Thus there can be no regression in any sense as there is nothing to which to regress.

In contrast, a nonlinear developmental framework, such as the organismic-developmental framework of Werner and his students (Langer 1970; Werner 1948; 1957), does provide for regressive and reversible experiences. Werner (1948) suggested that less developed systems become subordinated to and regulated by more developed systems but are not lost. The former drafts, though available, are not readily accessible – unless the system is faced with a stressful situation or a novel or difficult task. Werner’s (1948) organismic-developmental approach at the ontogenetic level has its counterpart at the microgenetic level, and the latter seems particularly related to D&K’s target article.

D&K note (p. 185) that

at any one point in time there are multiple ‘drafts’ of narrative fragments at various stages of ‘editing’ in various places in the brain. Probing this stream at different intervals produces different effects, elicits different narrative accounts from the subject. . . . If one probes ‘too early,’ one may gather data on how early a particular discrimination is achieved in the stream, but at the cost of disrupting the normal progression of the stream.

Compare this quotation to the following one from an article that appeared 35 years earlier (Smith 1957):

The process of visual perception should not be confused with what is generally called percepts, which are products of the process fitted into a frame of reference of outside reality. It would be even more correct to say that percepts normally are the products of late phases in a process of organization, the preparatory phases of which are therefore valid objects of study. . . . First of all, we have to assume that these stages do not generally produce percepts; only rarely do we become aware of our own perceptual processes. . . . It is more natural to assume that

preparatory stages often differ from end stages because they have not been able to produce percepts. Such premature products of early stages would probably be suppressed, at any rate, in favor of something more suitable for the frame of reference of outside reality. . . . When the perceptual process is inhibited . . . early stages of the perceptual process can be forced to produce a percept.

This is the general line adopted by researchers working within the "microgenetic" framework to perception (Flavell & Draguns 1957), microgenesis being Werner's (1956) term for the microdevelopmental unfolding of a cognitive process (for a recent review, see Siegler & Crowley 1991). Microgenetic theory originated with the Leipzig school of Gestalt Psychology, which had an organismic-developmental orientation. Werner's emphasis was thus on the developmental sequence of stages through which any cognitive process unfolds. Though it is similar to contemporary notions of information processing, the major difference is that the microgenesis of cognition is in certain respects quite similar to the ontogenetic stage-by-stage progression of cognition. That is, the stages of information processing are analogous to the stages of developing cognition. The microgenetic sequence of perception comprised a number of major phases:

the initial perception is that of a diffuse, undifferentiated whole. In the next stage figure and ground achieve some measure of differentiation. . . . Then comes a phase in which contour and inner content achieve some distinctiveness and a tentative, labile configuration results. Finally, the process of Gestalt formation becomes complete with the addition of elaborations and modifications of the skeletal Gestalt (*Gestaltgerüst*) achieved in the previous stage. (Flavell & Draguns 1957, p. 198)

Terming this "skeletal Gestalt" a previous draft ties in the microgenetic approach with D&K's "Multiple Drafts" model.

Whether or not one can have access to a previous draft has important theoretical consequences. For example, are there previous drafts of experience that can be tapped using hypnosis (for a critical review of this issue, see Nash 1987). Clearly, irrespective of whether empirical evidence supports the notion of hypnotic age regression, this can, on theoretical counts, only be a developmentally stage-consistent local reversion, which presupposes both the acceptance of the organismic-developmental approach of Werner (1948) and a "statist" or "interactionist" viewpoint concerning hypnosis (see Clicksohn 1987; Spanos 1986). Similarly, can one disrupt the normal unfolding of the drafts via the use of contemplative mediation (Brown 1977; Deikman 1977) to slow down the temporal sequence of experience and thereby externalize these drafts (see Goodblatt & Clicksohn 1989-90, for some poetic examples)? Again, one must assume not only that there are multiple drafts but that earlier versions can also be accessed.

I suggest that D&K try to explore the extent to which the "Multiple Drafts" model may be the microgenetic one discussed in this commentary.

Consciousness and timing

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Abstract: This commentary addresses three distinctions: the relationship of conscious to unconscious processes, whether these processes are single or multiple, and the distinction between vehicle and content. Also considered are questions of the relationship between multiple drafts to consciousness, the oneness of phenomenal perception as an illusion, the role of consciousness in the redrafting process, and finally the update frequency for attentional revision.

Asking the right questions. Dennett and Kinsbourne (1992; D&K) make explicit the incongruities of a serially unfolding consciousness. The incongruity is as if the unitization of time has so seriously misled us about the nature of our consciousness that,

in error, we measure the consciousness of observed events by the objective time at which the light rays passed through, say, the retinal lens. To replace such a misconception, D&K propose a much more convincing analogy of multiple drafts (MD) to describe the distributed processing in the brain. In presenting their lively thesis, D&K focus on what seem to be the right kinds of questions to accentuate the false incongruities arising from Cartesian materialism and, in so doing, they provide much better explanations for the evidence from earlier investigations and experimental paradigms that were designed to provide answers to previous questions that now seem to be wrongly formulated (see the section below on vehicle/content).

Some preliminary distinctions will be briefly discussed to provide a context before addressing two main considerations. The first distinction is the relationship of conscious to unconscious processes, and the second concerns whether those processes may be considered to be single or multiple. The third distinction is between vehicle and content.

Conscious/unconscious. This distinction raises an important question as to whether consciousness is an all-or-none phenomenon or whether, what appears to be more likely, there is a continuum of intermediate states between the two extremes. This continuum may be characterized as complex, with many local transformations (i.e., modular structures) that can be influenced by variable thresholds (i.e., learning and experience). The actual quality of consciousness will therefore depend on the nature of the cognitive task and the specific brain activities involved. In visual studies manipulating metacontrast effects with presentation before masking (See Breitmeyer 1984, for review), the differentiation of a lower objective threshold from a higher subjective one reveals a region of perceptual uncertainty, with longer intervals before target presentation, within which subjects are able to report with increasing confidence in the correctness of their response but without having awareness of the target presented (Cheesman & Merikle 1985). This ability of knowing without awareness (see Schachter et al. 1988) appears to be a more general property of cognitive functioning that includes all aspects of perception and action that are prior to consciousness (see Holender 1986, however, for a more conservative conclusion).

Previous explanations of perception using information measures have equated the capacity for discriminative perception exclusively with consciousness and have thus ignored all the unconscious information processing outside the immediate focus of attention: tantamount to excluding unconscious processes from behavior altogether. In contradiction to this view, I wish to argue that unconscious operations are preeminently important because they influence discriminative responding directly, with functions for which consciousness, or rather selective attention, can be no substitute. Intentional actions are not informed and instructed by conscious processing alone, as D&K acknowledge.

Serial/parallel. The assumption of precise linear measurement for timing conscious events with commensurability at some privileged point of access (what might be termed a *Turing Tape model of consciousness*) is mistaken precisely because it presumes brain activities similar to those of serial von Neumann programs instead of multiple streams of information within a modular architecture. Given that parallel operations in neural networks are probably the norm, such a parallel architecture need not exclude separate, semiserial information pathways (defined as requiring few if any nonlinear network transformations), being "tunneled" through the system. These perceptual-action pathways will develop most conspicuously when the consequent action requires only a predetermined, ballistic-type response, though even then strict seriality is unlikely. There is the further consideration that (at least apparent) semiserial or tunneled pathway activity is possible at various functional levels: from very basic behavioral reflexes to higher levels of semantic representation. But the evidence cited by D&K indicates that the perceptual congruence of events as we subsequently perceive/remember them will always persuade us consciously to infer a closer temporal relationship than was necessarily

the case at their inception: "We perceive – and remember – perceptual events, not successively analyzed trickle of perceptual events or attributes locked into succession as if pinned into place on a continuous film" (D&K 1992, p. 200). Only the advent of precise millisecond measurements in more recent experimental paradigms has made it explicitly apparent that such timing effects sometimes also present paradoxes.

Yet the scientific claim to have carried out serial, or absolute, timing of the perceptual events based on such results is immediately undermined if nonlinear transformational relationships across metalevel cognitive functioning have not been taken into account; such a serial psychological model, like the conceptual assumptions of a Newtonian time clock, works satisfactorily after a fashion, but only within the slippage that characterises normal perception and a relatively large-scale operational context. Confusion between vehicle and content constantly arises, perhaps for similar reasons.

Vehicle/content. the confusion which arises from the inability to distinguish between vehicle and content is central to the argument that D&K present. It is evident that attempting to pin down the exact timing of content by relying exclusively on the vehicle of the representation will always present potential problems for scientific explanation. A specific case in point was the use of the dynamic perceptual flow of the oscilloscope clock spot as a time-date stamp in the Libet (1985) paradigm because the method, although ingenious, failed to convince because it was unable to monitor the different functional levels of processing and the consequences of those transformational changes (Salter 1989).

Yet to separate operationally the vehicle from content too rigidly presents another conceptual difficulty because the perceptual transformation from vehicle to content provides the power for the semantic engine. The two therefore need to be functionally related because, as D&K point out, the brain appears to represent events in ways that make "most ecological sense" (D&K 1992, p. 197), the product of the brain's interpretative processes. Such interpretative perceptions will not necessarily be veridical although the probabilities of objective functional success need to be consistently stable for reasons of survival.

A notable exception to veridical correctness in perception is the "cutaneous rabbit," which provides a vivid example of the brain's interpretative capacity to produce coherent and retrospective judgements of spacetime events based on multiple distributed operations across different functional levels. To explain this coherence in terms of a "filling in" exercise for a linear story line cannot be a satisfactory explanation, as D&K rightly aver, because such infill would lead to all kinds of counterrevolutionary consequences.

A separate but related issue involves consciousness itself. It seems to be a major error to equate the transition from vehicle to content exclusively with the emergence of conscious awareness of meaning, and thereby to infer that semantic processing cannot operate outside consciousness. Rather, content can be subsumed by unconscious processing interacting with any current attentional activity; to conclude otherwise is to ignore the overwhelming evidence from observations about our behavior.

If we focus our attention on the content of an information stream at a particular functional level (as, for example, when we selectively attend to a list of words presented to one ear in a dichotic situation), the timing of vehicle with content is positive and highly correlated. This correlation immediately becomes less secure, however, as soon as the local constraints at that level of analysis are withdrawn to allow more extensive grouping and interpretation (such as syntactic parsing and semantic interpretation of the same list of words). If sequential timing is relevant to interpretation, then a sequence of perceptual events (such as (A): t1, t2, t3, etc.) after processing might make much better ecological sense to the perceiver if, by acknowledging the results of this wider interpretative context, their sequence of arrival were transformed into the reverse order (B). Even so, no recruitment of consciousness need be required for this transformation to take place. For an outside observer then to suggest that one series, (B), is paradoxical

in relation to the other, (A), neglects the nature of these intermediate semantic transitions. Moreover, this relative timing reversal of events need not imply any metaphysical rearrangement of an objective time sequence (see Penrose 1989, p. 445). Although different versions of time events (vehicles) might be processed in parallel, eventually only one (content) version will be remembered. In the general case, this means that the temporal properties of a vehicle's arrival will occasionally make a meaningful and lasting contribution to the stored content.

The observations above are quite compatible with D&K's argument for multiple drafts with continual updating, which captures the idea of parallel processing distributed over a given spacetime region in the brain. If an additional assertion is accepted, that most semantic processing operates outside conscious awareness, then this modification removes any theoretical power that might be derived from the distinction between Stalinesque and Orwellian procedures. Such a conclusion concurs with my reading of the D&K's Multiple Drafts model, but leaves other specific queries unresolved.

Multiple Drafts (MD) model: Some queries. It is useful at the outset to consider how well Cartesian materialism, compared to the MD model, explains a specific metacontrast recovery phenomenon. I refer to the effect of a second mask (M2) which disinhibits the effects of a first mask (M1) on a target's (T) visibility. The striking aspect of this particular combination of masks is that target recognition becomes optimal when the second mask actually precedes the sequence (thus, M2-T-M1) without necessarily affecting M1's visibility (reported in Breitmeyer 1984, chapter 9). The effect of the second mask that precedes the sequence cannot be satisfactorily explained by a model of Cartesian materialism specifying immediate activation of consciousness awareness; the MD model, with concurrent activation and relative timing flexibility, provides a much better explanation for this sequence of double masking.

But given that concurrent activity in different parts of the brain is a viable and more accurate description of psychological processing, what an analogy of multiple drafts leaves unresolved is the nature of the relationship between different drafts. Other masking studies provide evidence that implicit processing may involve multiple semantic versions prior to the selected conscious one, as work with polysemous words (Marcel 1980) shows, for example. This raises questions of the relationship of any one draft to all other current versions, to follow the drafting analogy more exactly, to the state of consciousness. Yet another query concerns the extent to which the latest draft is separable from any earlier versions, given the implication that the last drafting is the one that matters for conscious awareness. This in turn raises questions about the status of any earlier version which may, or may not, influence later versions depending on subsequent events. A plausible working hypothesis in answer to such queries is to suggest that dynamic, nonlinear transformations continuously update the current version and, as a byproduct, cause consciousness. This proposal leaves unanswered questions about the status of all previous, superseded versions, if they exist at all, in relation to consciousness, but it also has the effect of relegating their status to a relatively background category of residual brain activity.

A further query concerns how the inferred oneness of phenomenal perception is achieved. The short answer is that the oneness is an illusion; consciousness is a series of snatches, or "more carefully handled" catches of available information, which coalesce because the "environment" (external or internal) provides a relatively stable, contextual entity (see Harnad on *Approximation and context-driven convergence*, 1987, p. 538).

But this suggestion does not address the deeper question of whether consciousness itself plays any active role in the redrafting process (see Sellen & Norman 1992). Although immediately acknowledging the appropriate cautionary provisos for the regressive error that such a notion invites, there remains the question of the source of "editorial" control in the multiple drafts analogy. To rephrase the question, in the MD model, how is the intentional

initiative recruited to provide the control that is manifest in, say, the skilled performance of the concert pianist who can simultaneously juxtapose two quite different rhythmical patterns with their appropriate timing and accentuation to create a unique qualitative interpretation (Shaffer 1985)?

To attempt to explain how such creative unity emerges from disparate diversity, two concepts are briefly considered. The first is that of feedback loops across levels and between perceptual-action operations. The second requires a connectionist network that allows interaction between conceptually driven and data-driven operations across all levels; this system would accommodate such a top-down function as editorial control. D&K speak of "the processes of editorial revision . . . to the continued demand of cognitive control" (p. 200) and the multiple drafts model lays stress on the processes of editorial revision by means of the continual updating of data-driven processes, thus avoiding the dangers of a *central* editor. But this description is only partially satisfactory because it seems to leave the source of the conceptually driven initiatives obscure in the analogy of multiple drafts (the complete answer perhaps lies outside the scope of their original target article in preference for the fuller explication set out in Dennett 1991).

Finally, it is necessary, in order to relate to the timing of events in consciousness, to consider the update frequency for attentional (i.e., conscious) revision. The assumption of different levels requires that this frequency vary across levels, with lower-level data-driven operations automatically updating more frequently than upper levels. Perception with editorial revision will thus merge imperceptibly into the processes of memory so that if the perceptual update is still further extended to include memory as an extension of perceptual revision, then its update frequency could become open-ended.

Although an MD model accounts for variability and the redrafting of space and time sequences, the frequency specification of the semantic update at an optimal operational level does require specification. How does one otherwise explain the surprise, even consternation, of Grey Walter's (1963) subjects at the carousel's apparent anticipation of their intention? So, within the constraints of normal operational processing, what might this interval be? Evidence from various sources such as fixation times in reading (see Rayner 1983) or the effects of delayed auditory feedback and attention (Salter 1970) points to an average "editorial" period approximating to 200–250 milliseconds in the first instance, depending on the operator and the cognitive task involved. But the amount of information that can be successfully reviewed within this time period also depends directly on the amount of learning experience with the relevant materials (Salter 1973), which in itself encompasses the idea of interpretative levels of processing. A 200 msec time estimate for an optimal level of brain processing neither excludes slower decisions or revisions nor the possibility that operations of attentional processing can be speeded by giving the initiating information priority in channeling, even though this can only be done at the cost of relinquishing more holistic perception and the deeper understanding that provides the richness to conscious existence.

D&K's useful application of multiple drafts to questions of timing, displacing a Cartesian theatre of the mind, is itself timely and appropriate. Their contention is valid that a "central stage" analogy of consciousness is still widespread, and their target article helps to dispell its pernicious effects on our thinking about consciousness.

Authors' Response

Multiple drafts: An eternal golden braid?

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Abstract: Glicksohn and Salter both raise good questions that force us to clarify our position. We agree with much of their commentary, with a few caveats. Glicksohn wrongly assumes that later drafts must be "more advanced" and Salter speaks of "recruitment into consciousness," which invites (but does not require) a Cartesian interpretation. Their suggestions about the time course of "editorial" revision of the multiple drafts and the possibility of restoration of the information in abandoned drafts are possible extensions of the Multiple Drafts Model.

We have learned that the issues we raised are very difficult to think about clearly, and what "works" for one thinker falls flat for another and leads yet another astray. So it is particularly useful to get these reexpressions of points we have tried to make. Both commentaries help by proposing further details for the Multiple Drafts Model, and by asking good questions. They either directly clarify, or force us to clarify, our own account. They also both demonstrate how hard it is for even sympathetic commentators always to avoid the very habits of thought the Multiple Drafts Model was designed to combat. While acknowledging and expanding on their positive contributions, we must sound a few relatively minor alarms.

Glicksohn assumes that later drafts are "more advanced," but this flirts with the pervasive mythology of the trip to the summit of consciousness, "advancing" all the way. At any time, we may suppose, there are just as many drafts that are, as it were, over-the-hill and degenerating. Better yet: There is no nonarbitrary way to identify a summit – a place where the "most advanced" drafts pass by for inspection.

The main thrust of Multiple Drafts is well captured by **Salter** in his penultimate paragraph. Enough information may often be available to fuel more than one version of reality. Then drafts compete in Pandemonium-like rivalry (Dennett 1991), and the rivalry is resolved in favor of one over the rest (the one that "makes most ecological sense") – but not for good. The competition is never-ending. There is no definitive or archival draft. As Salter remarks, update frequency, great in the early stages, declines as perception recedes into memory. Reinterpretation in memory may continue indefinitely—is this perhaps Hofstadter's (1979) "eternal golden braid?" – depending on the contextual (cuing) conditions that from time to time arise.

As **Glicksohn** observes, percepts do not instantaneously arise in the mind in their full richness. Not only microgenesis, but any perceptual theory would acknowledge this, and would posit intermediary ("incomplete") stages or representations that precede in rapid succession the (definitive?) conscious percept. Microgenetic theory differs from current information processing stage theories in that it characterizes this progression as gradual differentiation (of initially global percepts) rather than stepwise integration (of fragmentary sense data). **Glicksohn** and **Salter** both wonder what might be the fate of preliminary stages

(drafts). Once superseded, could they be recovered? As Salter contends, we “relegate their status to a relatively background category of residual brain activity.” That makes them poor candidates for episodic remembering, but leaves them the potential to exert “unconscious” priming effects. But before being superseded, Glicksohn asks, could a draft that is customarily preconscious under extreme circumstances be experienced? After all, as Salter points out, a draft can be meaningful although preconscious. Glicksohn raises the interesting possibilities that “contemplation” could simulate such a lesion effect and that hypnotic regression might reinstate in awareness a draft that long ago faded into oblivion. A radically altered context might so powerfully bias the competition between drafts that a new winner takes all.

The Multiple Drafts Model should not be taken to rule out these possibilities. We suggest, for instance, that if a transformation from draft to draft is slowed down by pathology, then before it is revised the earlier draft might persist long enough to enter into the patterned activity that underlies current experience (Kinsbourne 1988).

In spite of these useful clarifications, both commentators exhibit lapses into Cartesian thinking, or at least ominously Cartesian ways of expressing themselves. There does not exist, to use **Salter's** words, a process such as “recruitment of consciousness” (into what?), nor any place where the “vehicle's arrival” is recognized (by whom?). As both commentators acknowledge in other contexts, no central experiencer confers a durable stamp of approval on any particular draft.

Salter asks, “what is the source of editorial control”? We consider the “editing” to be accomplished by top-down feedback from circuitry that embodies constraints garnered from experience, expectancy, and context. The editing is not an exogenous act of supervision, but part of the self-organizing functioning of the network, at the same level as the circuitry that conveys information bottom-up.

Salter suggests an average “editorial” period of about 200 msec. Perhaps this is about as long as a representation can be modified before it has been around long enough to be incorporated into consciousness's dominant focus? (Kinsbourne 1994). An event that is anticipated might more summarily pass through the editing process than an ambiguous one. Like Salter, we avoid the trap of treating editing time as a constant (the perceptual moment) and thereby conserve the flexibility of the Multiple Drafts Model.

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- (1) All Commentaries and Responses will, like Target Articles, have abstracts (~60 words). This is to ensure full coverage by abstracting services.
- (2) In addition to the hard copies of all submissions, we will also require an electronic version, either by email or on disk. This is to prepare the way for electronic processing of all submissions. Disks should be in Word™ or WordPerfect™ for Macintosh or IBM-compatible format.

Target articles should be sent to the new BBS address in Southampton listed above.

Commentaries and Responses should be sent to:

Behavioral and Brain Sciences
Cambridge University Press
Journals Department
40 West 20th Street
New York, NY 10011-4211
email: bbs@cup.org

BBS Email Address

bbs@ecs.soton.ac.uk

BBS Associates: Those of you who have not done so are asked to send us your email address so you may receive electronic Calls for Commentators.