

**THE FRINGE:
A CASE STUDY IN EXPLANATORY PHENOMENOLOGY**

*Bruce Mangan, Institute of Cognitive Studies, University of California,
Berkeley CA, USA. Email: mangan@cogsci.berkeley.edu*

William James' greatest achievement is, arguably, his analysis of the fringe — or, as he sometimes called it, transitive experience.¹⁵ In trying to understand this vague, elusive, often peripheral aspect of consciousness, James broke new ground. But in so doing he also began to lay down the first stratum of a radically new methodology, one that intersects first- and third-person findings in such a way that each is able to interrogate the other, and so further our understanding of both.

James was a trained physician, and he was impressed by the then new understanding of neural processes as both dynamic and (as we now say) massively parallel and distributed. It may even be that it was James' *prior* sense of neural dynamics, learned as a medical student, that gave him the hint for his later and most distinctive phenomenological findings (Mangan, 1991). In any case, James linked neural and phenomenological structure closely in his writings, at times explaining features of our phenomenology as consequences of our underlying neural dynamics.¹⁶ This aspect of James' enterprise I would call 'explanatory' phenomenology.

After lying dormant for most of this century, research has started to return to the method James helped pioneer. One example is Varela's neurophenomenology. It, too, aims to go beyond phenomenological description, and take the next step — to explain to some degree *why* our phenomenology is the way it is. For example, Varela's paper on present-time consciousness in this special issue (see section III, especially) brings out some intriguing ideas about the levels of temporal constraints on neural processing that may condition the time horizon in the fringe. Some of my own work (Mangan, 1991; 1993a, b) is also concerned with explaining fringe phenomenology as conditioned by neural factors, especially overall features of network integration that are conveniently captured by PDP models.

But I think it is important to see that explanatory phenomenology can be completely scientific without *necessarily* having to (1) consider the neural substrate, (2) employ reductive arguments, or (3) operate at the third-person level. If I am right, explanatory phenomenology can be a remarkably plastic member of the set of first-person methodologies for the study of consciousness.

[15] In this special issue, Bailey makes a sharp distinction between the terms 'fringe' and 'transitive' experience. On my reading of James, these terms are rough synonyms. There can be no question that for James both terms refer to the same basic phenomenological fact: feelings of relation. It is true that when James wants to emphasize the dynamic and integrative function of feelings of relation, he will often call them transitive experience; and when he wants to consider feelings of relation as context feelings around a single definite image (or 'nucleus' as he sometimes calls it) James will more often use the term fringe. But as Bailey himself notes, James sometimes writes of the fringe as having all the attributes of transitive experience (e.g. 1890, V. 1, p. 253). And Bailey forthrightly notes other difficulties with his own interpretation. I must point out that contrary to Bailey's assertion, the relation between transitive experience and the fringe has been considered in the literature — briefly in Mangan (1993a), and more extensively in Mangan (1991). Bailey cites Galin (1996); but this paper simply recapitulates some of my previous work on the fringe, though this fact is not always clear. Galin does, however, offer some original ideas on alternatives to James' terminology.

[16] See, for instance, James' discussion of the neural/phenomenological linkage using the brilliant analogy of a kaleidoscope (1890, Vol 1, pp. 247–8).

Let me expand slightly on these contentions, and at the same time illustrate them with a concrete example — an analysis of one aspect of fringe phenomenology, in particular its diaphanous, indistinct, unarticulated character. I will do this solely from the first-person stance, but I believe this nevertheless begins to explain the structure of our phenomenology *just as biologists explain many aspects of organic structure*. If we wish, we can go further and integrate the following first-person analysis with additional third-person findings. But even so, this would not entail a third-person reduction, nor otherwise make the first-person stance subservient to the third. My basic point will be that we can identify a conservation principle operating in consciousness: that as something becomes clear, something else must become vague; but throughout a huge number of clear–vague phenomenological transformations, a rough parity in articulation capacity is preserved.

First of all, it is crucial to see that (neo-positivist dogma notwithstanding) some standard methods of explanation in science are not restricted to ‘person’ — be it first, second *or* third. Science already possesses what I would call ‘person-independent’ or ‘stance-independent’ explanatory principles. One of them is to explain a phenomenon by identifying a salient constraint or limitation.

Consider for a moment how explanation via limitation is used in third-person research. Probably the most mathematically precise instance of this is the principle of conservation of energy in physics. And in biology, too, third-person explanations will often rest on identifying the right limitation, i.e., the operative limitation that helps explain the phenomenon in question.

Probably the most successful example of this is Malthus’ insight that the environment puts an upper limit on the number of organisms able to survive at any given time. In Darwin’s hands, this became the basis of the most powerful explanatory theory in the history of biology, natural selection. But explanations that identify an operative limitation can be very mundane. Why does eating yogurt reduce gastrointestinal disorders? One might think that yogurt somehow attacks harmful bacteria directly. But according to a current theory, yogurt protects us because of ‘competitive exclusion’. The area on the surface of the intestine is limited, and the bacteria in yogurt occupy this limited area so completely that little room is left for harmful bacteria. So by recognizing the relevant limitation — there is only so much room in the intestine — we explain why yogurt works to reduce digestive problems.

Now one kind of limitation is a trade-off. A trade-off occurs when an advantage can only be ‘bought’ by giving up an alternative advantage. The notion of a trade-off is stance-independent, and this is our point of departure for explaining the vague or indefinite phenomenology of fringe experience.

But first a final third-person example showing how a trade-off limitation helps explain the distribution of receptive fields in the human eye. An ideal eye would not have to trade off acuity for sensitivity. But in fact the limited surface area of the retina imposed a trade-off in the size and distribution of the eye’s receptive fields. Narrow (acute) receptive fields cluster around the fovea, wide (sensitive) receptive fields are peripheral. Wide receptive fields are inherently less able to resolve details than are narrow receptive fields, and wide receptive fields of necessity yield relatively blurry or fuzzy output. But a wide receptive field, because it covers a larger area, is more sensitive to light, and so gives us *some* visual information when a narrow receptive field is in effect blind. Our night vision would improve if we had more wide receptive

fields in the eye, but this would then of necessity reduce the area left for narrow receptive fields, and our ability to see details would suffer. Again, we explain a trade-off by identifying the operative limitation that underlies it — in this case, the limited area of the retina.

Now, in some ways fringe phenomenology is quite like the fuzzy or ill-defined quality of peripheral vision produced by wide receptive fields. But a note of caution. While this analogy is helpful, it should not be pressed too far. The fringe is found in *all* sensory and non-sensory modalities of experience, not just vision. (James' own examples of the fringe are drawn from non-sensory experience.) And even in visual experience, fringe effects can be separated completely from those of peripheral vision (Rock and Gutman, 1981).

A good illustration of the fringe in sensory experience is the cocktail party effect. Two conversations are in earshot, but we cannot clearly attend to both of them at the same time. The best we can do is shift attention back and forth; at any given moment, we can only experience one or the other conversation clearly. For once we shift attention away from the clear conversation, its phenomenology is immediately transformed. What had been a clear conversation is now a vague, hazy background of ill-defined words and voice timbres.

This is a standard example, but I believe we can now extract a new point from it: there is a trade-off strategy at work in consciousness. This is hardly an ideal situation; it would be more efficient if we could experience both conversations clearly at the same time. But for some reason the resources of consciousness are not up to this task. (By contrast, we have very good evidence that this limitation does not apply to non-conscious processing. See Baars, 1988). In general, consciousness represents the unattended or background conversation with very sketchy strokes. And if, for an unstable moment, we do succeed in attending to both conversations simultaneously (and aren't just shifting attention quickly back and forth), we experience the two conversations at an *intermediate* level of clarity. Neither conversation is experienced as clearly as it would be if it were alone in the foreground, but neither is experienced as vaguely as it would be if it were completely in the background. At an intermediate level of clarity, there are more contents in consciousness, but via the trade-off they are less phenomenologically defined than if there were fewer contents.

In general we explain a trade-off by grasping its operative limitation. And so if we can do this in the case of consciousness, we will have begun to explain *in purely first-person terms and using a stance-independent explanatory principle* why consciousness has a fringe.

What, then, is the operative limitation on the trade-offs in consciousness? At this point the answer should be evident: Articulation capacity. *At the deepest level, consciousness IS the limited but infinitely plastic capacity to articulate experience.* This overall capacity is conserved during a huge number of phenomenological transformations. Normally, when something becomes clear, something else becomes vague — the 'sum' of total articulation remains at least roughly constant.

But we can apply the idea of the conservation of consciousness to more extreme cases. At a low articulation level throughout the field of experience, our standard 'amount' of consciousness would be spread out as an extremely diffuse, vague, diaphanous field, and without a clear focus. On the other hand, we would expect that lacking clarity the field of consciousness would have immense extension. At the other

extreme, we could experience very high articulation, with a focal object more finely detailed than we usually experience, but at the cost of giving up our background sense of setting, horizon, context relations, etc., that the fringe normally gives us.

From this perspective, the actual structure of consciousness is remarkably lopsided. At any given moment, most of its resources are devoted to the high articulation of a single object in attention, consisting of only a few clear component features (its 7 ± 2 'chunks'). Again, only the smallest bit of consciousness articulation capacity is reserved for the fringe and transitive experience. Of course this raises a further question. Why does consciousness have the particular ratio of clear/vague articulation we actually find? Perhaps the answer here will take us beyond the limits of first-person analysis, and into third-person biological considerations, perhaps a process of evolutionary tuning for optimum efficiency given the antecedent limitation on the capacity of consciousness to articulate experience.

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BUILDING MATERIALS FOR THE EXPLANATORY BRIDGE

*Eduard Marbach, Institute of Philosophy, University of Bern, Laenggasstra.
49A, CH-3000 Bern 9, Switzerland.*

In recent years, David J. Chalmers (1995; 1996; 1997) has forcefully made a point that I consider to be extremely important for the study of consciousness, also from a Husserlian perspective. The point is that conscious experience is 'an explanandum in its own right' (1995, p. 209). In order to make progress in addressing the problem of the *explanatory gap* between physical processes and conscious experience, new approaches are therefore to be explored. As Chalmers has it, 'a mere account of the functions stays on one side of the gap, so the materials for the bridge must be found elsewhere' (1995, p. 203). Now, as I see it, the editors of this Special Issue pursue, precisely, the most promising avenue for adequately studying the problem of consciousness in such an exploratory spirit. For, in their excellent Introduction, they unequivocally propose to *include* first-person, subjective experience as an explicit and active component of a science of consciousness, to be elaborated with appropriate methods by a research community. Jonathan Shear already put it very clearly elsewhere: 'what is needed . . . is not so much new conceptualizations of science or new objective methodologies for exploring relationships of the phenomena of consciousness to physiology and behaviour . . . but new systematic methodologies for the exploration of the subjective phenomena of consciousness' (in Shear, 1997, p. 369). Among such methodologies, the editors now include 'the most important western