Analytics Isomorphism and Speech Perception

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response from Churchland and Ramachandran (1993). They disagree with Dennett because they think that the brain is not merely “finding out” in the perceptual completion of the blind spot and artificial scotomata. They also disagree with Dennett’s claim that there are no neural responses devoted to the blind spot, citing Fiorani et al. (1992) as showing the contrary. As far as we can see, however, Churchland and Ramachandran do not think that the brain fills in in the sense of providing a roughly continuous spatial representation. In fact, on the basis of Ramachandran’s other writings (1992a; 1992b; 1993a; Ramachandran & Gregory 1991), it seems to us that they might be prepared to accept some variant of the second story we attribute to Dennett – the one in which the brain attaches a label. In any case, we think the debate would be better conducted in relation to issues about isomorphism and linking propositions. We go on to discuss this in section 5.2.

11. Note that these frequencies are much lower than the frequencies usually revealed in flicker studies, which have cut-off frequencies of more than 30 Hz and peak around 4 to 6 Hz.

12. Given that the experimental animals (cats) were anesthetized, the same caveats discussed in section 4.5 apply here when interpreting the relationship between neural and perceptual events.

13. These results are consistent with the work of Cornsweet and Teller (1965), which showed that increment thresholds are unaffected by changes in the appearance of backgrounds when the physical characteristics of those backgrounds are held constant.

14. We cannot review here all the details of the experiments performed by Eskew (1989), but we would like to note that several of his findings suggested that a complete account in terms of adaptation and eye movements is not likely: “Although eye movements and adaptation might play a role in the chromatic diffusion phenomenon, an additional mechanism which is sensitive to the effect of the contour would be required to account for the gap effect” (Eskew 1989, p. 726).

15. Nevertheless, Todorovic’ goes on to say that, “given the lack of relevant data, the single-cell type of bridge locus is a heuristically useful assumption.” We disagree, for the reasons stated in section 4.5.

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Analytic isomorphism and speech perception

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Abstract: The suggestion that analytic isomorphism should be rejected applies especially to the domain of speech perception because (1) the guiding assumption that solving the lack of invariance problem is the key to explaining speech perception is a form of analytic isomorphism, and (2) after nearly half a century of research there is virtually no empirical evidence of isomorphism between perceptual experience and lower-level processing units.

A problem with some work in cognitive science is that the empirical data are too highly leveraged theoretically. Pessoa, Thompson and Noé’s target article provides terrific relief from such work, for its significance lies precisely in its deflationary theoretical inter-
more difficult to eradicate. A personal-level, activity-based ap-
proach, however, such as the one favored by Pessoa et al. for vi-
sion, may well be the place for speech perception research to start.

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NOTES
1. In Appelbaum (1995) I treat this claim much more extensively, al-
though I do not use the term “analytic isomorphism.”
2. These include Browman and Goldstein (1996), McClelland and El-
man (1986), and Nusbaum and Henley (in press).
3. Gestures are here taken to be forms of neural representations.