

Behavior and Social Issues, 19, 79-85 (2010). © Sigrid S. Glenn. Readers of this article may copy it without the copyright owner's permission, if the author and publisher are acknowledged in the copy and the copy is used for educational, not-for-profit purposes.

METACONTINGENCIES, SELECTION AND OBM: COMMENTS ON “EMERGENCE AND METACONTINGENCY”

Sigrid S. Glenn
University of North Texas

In Emergence and Metacontingency (hereafter E&M), Houmanfar, Rodrigues and Ward offer some reinterpretation of concepts and an application of their interpretation to organizational behavior management. Although the authors generously cite several papers of my own in providing a context for their interesting and thought-provoking article, I was startled to learn that I “held the metacontingency to be the primary process responsible for the dynamic properties of cultural practices” and that my “refined [2004] perspective held that cultural practices are *only* comprised of cumulative, non-interlocking entities...” (italics in original). Although those attributions are establishing operations for using this space to clear up confusion I have sewn, rule-governance wins out and I return to E&M to address a few of its topics that I find of particular interest.

Houmanfar et al. seek to clarify the concept of metacontingencies and to “look inside them,” ultimately for the purpose of practicing organizational behavior management. Their suggestions about mechanisms mediating between IBCs and their selecting environments seem to me a welcome contribution but their clarifying attempts do more to add to the muddle many of us have made than to clear things up. My comments below first address the muddling and then the possible usefulness of E&M analyses of mediating mechanisms.

Metacontingencies and Related Terms

The distinction E&M authors suggest between “psychological” and “sociological” level phenomena seems non-controversial, although I still prefer distinguishing between “behavioral” and “cultural” level phenomena. Word choices aside, there seems to be agreement that operants are behavioral (psychological) phenomena and that IBCs are cultural (sociological) level phenomena. But Houmanfar et al. want to make the IBCs in metacontingencies *both* behavioral and cultural level phenomena. This appears to be a category mistake to me. Operant contingencies are the *parts* of IBCs but parts are not the same as wholes. The parts are behavioral phenomena, the wholes are emergent and exist at a supra-behavioral level. IBCs are ubiquitous in the everyday lives of

humans, but most of them exist very briefly and do not recur. Only a few recur, forming lineages, and these recurrences are due to an emergent process: cultural selection. This iterated emergence of substance and process is what Maynard Smith and Szathmary (1995) laid out for biological evolution and Glenn (2003) expanded to include the emergence of behavioral and cultural phenomena.

This leads to another distinction that is critical to the concept of metacontingencies: the distinction between an *occurrence* of interlocking behavioral contingencies (a “social episode”) and *recurrences* of IBCs that owe their continuing organization to something over and above the operant contingencies supporting the participating operants. An occasion of interlocking behavioral contingencies may be fully explained by the histories of reinforcement of participating individuals and the current environments for the behavior of each. But when environments *external* to the IBCs and their products differentially select for IBCs having particular products, an historically novel form of organization “emerges” because the IBCs resulting in those products cannot be fully accounted for by natural selection (operating across generations of organisms), and/or operant selection (operating across generations of responses of individual organisms).

Houmanfar et al. (2010) discuss the behavior of “groups” throughout their paper, citing Skinner (1981) on the evolution of cultural practices, but Harris (1984) properly pointed out that Skinner’s “groups” were “unoperationalized entities.” In a similar vein, Hull (1981/84) suggested that the term “group” causes mischief in what is sometimes called “group selection.” Although it is hard not to talk of “groups” when discussing cultural processes, the word is inherently confusing because it tacts different kinds of phenomena, which necessarily play different roles in cultural theory. When the *behavior* of “groups” is at issue, the problems multiply. For example, people who exercise daily are a group only in the statistical sense: the group is constructed by speakers who classify individuals on the basis of a particular behavior. The group itself does not have spatio-temporal location, only its members do. On the other hand, the cheering of fans at a particular ball game has spatiotemporal location and can be measured as a cumulative product (volume of cheering, ratio of crowd cheering to crowd booing, etc.); in this case the crowd is functioning as a quasi-individual of like components. The behaviors of the team members in carrying out plays is different yet again. These behaviors are not only spatiotemporally localized, as are the fans’ cheering, but they also function as elements in highly organized interlocking behavioral contingencies (cohesive wholes) that recur repeatedly at various times throughout the game (and across games during a season or beyond). How a “group” of people or of behaviors is to be treated in science depends on such

distinctions. Although the last two of the foregoing examples may involve interlocking behavioral contingencies of one sort or another, it is probably the case that only the last involves *metacontingencies*. In other words, all metacontingencies involve recurring IBCs but not all IBCs play roles in metacontingencies.

Perhaps because my interests tend more toward understanding the nature of cultural phenomena than in dealing with the complex cultural phenomena we are confronted with in everyday life, I have always conceptualized metacontingencies as 2-term contingencies. As such, they are comparable to the response/consequence relations of behavioral contingencies in Skinner's earliest experimental work (e.g., 1938, Chapters 3 and 4). However, Figure 1 in Houmanfar et al. (2010) suggests the "original metacontingency" of Glenn & Malott (2004) is somehow comparable to the antecedents, behavior, and consequences of 3-term operant contingencies. What Malott and I were trying to distinguish was a contingency relation comparable to the *2-term relations* between responses and consequences in operant selection processes. In the operant case, independently occurring events (food deliveries) are contingent (may but do not *necessarily* follow) if and only if movements of the animal result in a particular effect (switch closure). The press that closes the switch is the "operation on nature" that defines the operant on which food (for example) is contingent (Skinner, 1938). Figure 1 depicts this type of relation. Note that the dependent variable is movements of an organism that effect (or produce) switch closure. Although switch closures are what the experimenter actually measures, what is altered by operant contingencies is the movements of the organism that produce switch closures. Thus, the locus of change is in the lineage of movements of a particular organism.

Analogously, the 2-term metacontingency involves similar relations between IBCs having particular aggregate products and actions of environments external to the recurrences of interest (IBCs and their aggregate products). These relations are depicted in Figure 2. Perhaps this way of diagramming the relations of the "original metacontingency" will make clear the comparison between metacontingencies and operant contingencies of the simplest kinds.

I am not suggesting that environmental events or conditions that can be construed as "antecedents" are irrelevant to recurrences of IBCs, only that the "original metacontingency" does not include representatives of such antecedents. Experimental analysis of metacontingencies has only begun to examine the nature of these 2-term relations (see, for example, Vichi, Andery & Glenn, 2009).

GLENN

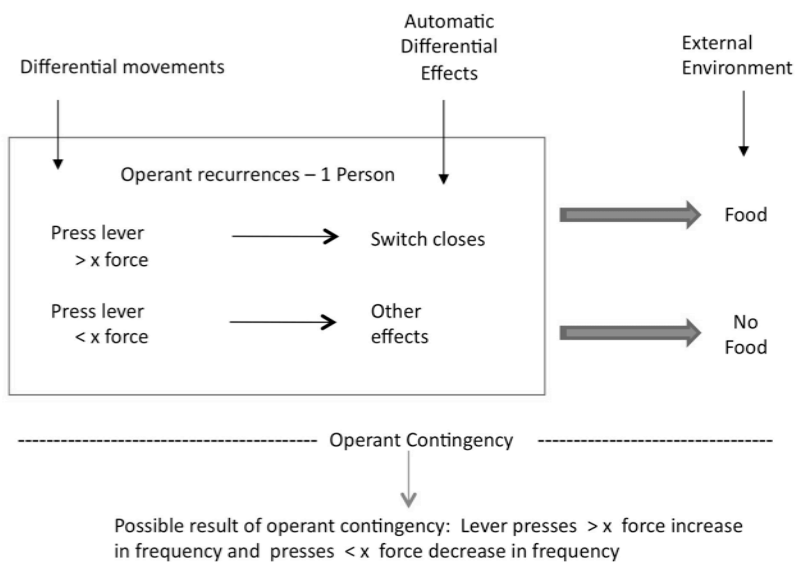


Figure 1. Schematic of elements in operant selection contingencies. Properties of operant recurrences can be differentially selected by contingent action of environment external to operant system.

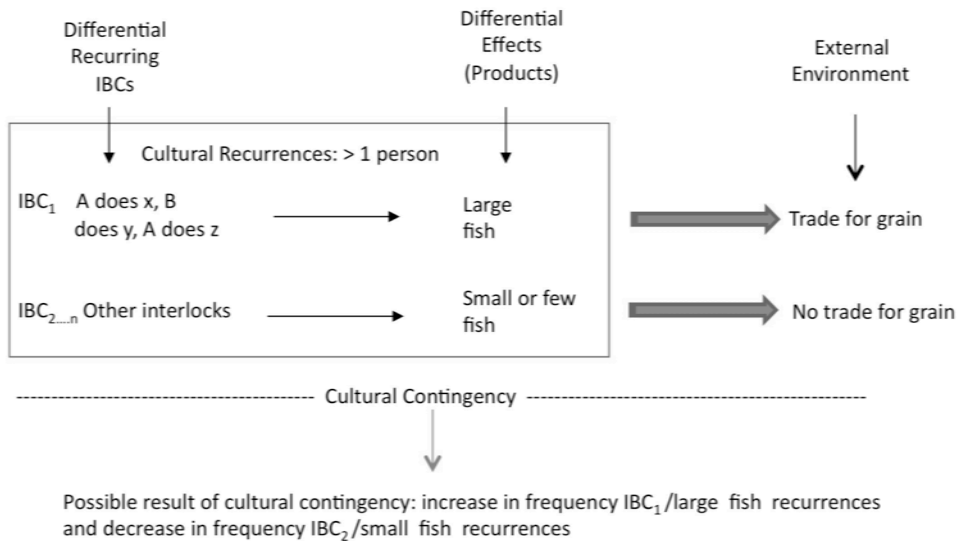


Figure 2. Schematic of elements in cultural selection contingencies. Properties of IBCs having some products can be differentially selected by contingent action of the environment external to a cultural system.

Because IBCs in metacontingencies by definition involve recurring behavior maintained by recurring contingencies of reinforcement in which others participate, I could not agree more with E&M authors' proposition that "the term 'interlocked' recognizes the role that the behavior or behavioral products of other organization members play *as constituents in the local contingencies controlling the behavior of members within the organization*" (italics added). However, to say that the *behavior* is interlocked (rather than the contingencies in which the behavior is embedded) is to negate the latter (italicized) part of the quoted sentence. Yes, the behavior of each person participating in IBCs is under control of local contingencies, but it is the local *contingencies* that change over time when metacontingencies differentially select for the variant products resulting from variations in IBC recurrences. E&M authors want to rename social behavior as "interlocking behavior" and IBCs as "socio-IBs", but it is difficult to see what this renaming accomplishes. Everything they want to say can be said without the renaming. It seems a new term for IBCs is needed only if IBCs must be both behavioral and a cultural phenomena. As mentioned earlier, that necessity is not clear, at least to this writer.

Selection

Although there seems to be some general agreement that selection is a process that occurs across levels, the devil is in the details. Selection by its nature involves variations of recurrences (of some kind or other) that are related to one another via descent (i.e., giving rise to one another in space and time). These lineages of recurrences change over time as a function of changes in contingencies between them and the features of their external environment.

Houmanfar et al. suggest that "rates of variation (or mutation) and selection are dramatically different" in biological, behavioral and cultural evolution. It is important to recognize that mutation accounts only for a small amount of the variation seen in human populations and it is not clear what grounds the authors have for saying that "the increase in behavioral variation in humans over the last 200 years is tremendous compared to the genetic variation over that time period". Perhaps I am having trouble with understanding what lineages are at issue in "the increase in behavioral variation in humans." Is the behavioral variation at issue occurring across generations? During the lifetimes of individual humans? During the lifetimes of cultural level entities?

Perhaps the authors are comparing the speed of evolution in the three domains rather than the rate of variation. Because selection is constrained by the "lifetime" of recurrences, human operants can evolve faster than can the species

H. sapiens. However, it seems possible that *some* cultural evolution can occur faster even than *some* operant evolution. When I compare the speed with which social networking changed the nature of much human social behavior to the speed with which my own social behavior has adapted to the social networking environment, operant selection looks downright sluggish.

The statement that “a contingency merely describes the selective process itself” (Houmanfar et al., 2010) does not seem quite right. A selection process *includes* a contingency (a causal variable) but it also includes the result or effects of the causal variable. One of the reasons selection is such a difficult concept is that a whole host of events and relations are entailed in the word (as is the case for “reinforcement”). Perhaps we could agree that a *selection contingency* is 1) differential relations between variant recurrences of a lineage of events and their external environment(s), which 2) have the causal effect of altering the frequency of variant properties of subsequent recurrences. (No less than its taking a village to raise a child, it takes an entire discipline about the same length of time to sort out terminology.)

Practical Issues in OBM

I am less at home in the practices of organizational behavior management than in philosophy of science issues and theoretical concerns pertaining to selection contingencies and metacontingencies. For reasons touched on in the preceding paragraphs, I do not think the contingency diagrams in Houmanfar et al. (2010) map onto metacontingency concepts very well. However, I believe that what they are getting at is important and that many of the points they make about the internal workings of IBCs are quite apt. For example, in the IBCs of most, if not all, organizations, verbal behavior plays a critical role. And their comparing of verbally mediated metacontingencies to indirect-acting operant contingencies seems an apt comparison and worthy of further investigation.

One can only sympathize with behavior analysts faced with the complexities of adult human repertoires and highly developed, hierarchical organizations. It is not clear that behavior analysts have done the hard work needed to develop a theoretical framework for the evolution of complex human repertoires from the initial “repertoire of uncommitted behavior” (Skinner, 1984, p. 219). Nevertheless, by making good use of basic behavioral principles, remarkable progress is being made in building such repertoires for young children with autism. Similarly, we have much hard work to do to develop a theoretical framework for the evolution of complex cultures, and the work of Houmanfar et al. contributes to that process. Meanwhile, as in the case of autism treatment,

OBM practitioners are making what use they can of concepts designed to elucidate cultural level processes.

References

- Glenn, S. S. (2004). Individual behavior, culture, and social change. *The Behavior Analyst*, 27, 133-151.
- Glenn, S. S. & Malott, M. E. (2004). Complexity and selection: Implications for organizational change. *Behavior and Social Issues*, 13, 89-106. <http://dx.doi.org/10.5210/bsi.v13i2.378>
- Harris, M. (1984). Group and individual effects in selection. *Behavioral and Brain Sciences*, 7, 490-491. <http://dx.doi.org/10.1017/S0140525X00026844>
- Houmanfar, R. Rodrigues, N. J., & Ward, T. A. (2010). Emergence & metacontingency: Points of contact and departure. *Behavior and Social Issues*, 78-103.
- Hull, D. L. (1984). Units of evolution: A metaphysical essay. In *Genes, organisms, populations: Controversies over the units of selection*. Cambridge, MA: MIT Press. Originally published in Jensen, U.L. & Harre, R. (Eds). *The philosophy of evolution*. Brighton: Harvester Press (1981).
- Maynard Smith, J., & Szathmary, E. (1995). *The Major Transitions in Evolution*. Oxford University Press.
- Skinner B. F. (1938). *The behavior of organisms*. New York: Appleton-Century-Crofts.
- Skinner, B. F. (1981). Selection by consequences. *Science*, 501-504. <http://dx.doi.org/10.1126/science.7244649>
- Skinner, B. F. (1984). The evolution of behavior. *Journal of the Experimental Analysis of Behavior*, 41, 217-221. <http://dx.doi.org/10.1901/jeab.1984.41-217>
- Vichi, C., Andery, M.A.P., & Glenn, S. S. (2009). A metacontingency experiment: The effect of contingent consequence on patterns of interlocking contingencies of reinforcement. *Behavior and Social Issues*, 18, 41-57. <http://dx.doi.org/10.5210/bsi.v18i1.2292>