The Dynamics of Acting

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ABSTRACT

A model of decision and action processes is outlined, and several consequences of this model are developed. The simple plausibility of this model demonstrates that common discussions of decision making and action are constrained within metaphysical frameworks that are at best questionable. The model, in turn, enables a model of free will that is consistent with contemporary physics and likely, from an evolutionary perspective, to have emerged. The model is an alternative to decision making as computation and action as the initiation of a causal chain, and entails that decision and action processes are self-organizing, global, and intrinsically intertwined with each other. In turn, the model broadens attention with regard to ethical considerations to persons and their character, and to the development and developing processes of those persons and characters. This is much closer to an Aristotelian virtue ethics than to a primarily action focused ethics, such as Kant's. Finally, the overall model of persons that emerges in the discussion is one of ongoingly active and ongoingly developing processes, not one of some kind of classical substance or entity.

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1. GLOBAL RELATIONALISM

Action and acting are commonly investigated within a framework assumption that action is a special kind of, or a special initiation of, causal chains. Causal chains, in turn, are chains of particular event-points through which some kind of causal influence proceeds. In concert, decision making is commonly investigated as a special kind, or a special result, of computational reasoning. A decision, thus, would typically be a computation that terminates with the initiation of a causal chain.

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I contend that both assumptions are in error, and that they yield serious aporia concerning the nature of decision making and acting, with resultant distortions in related investigations, such as of free will and responsibility. I outline an alternative model that avoids these errors and distortions.

Arguments against causal chain models of action and computationalist models of decision making have been elaborated elsewhere (e.g., Bickhard 1996, 2009a, in press-a, in preparation), so I will just outline some of the central points here. Regarding causal chain models: there is an underlying metaphysical assumption in causal chain models that causality can somehow travel from particular point-event to particular point-event, which, in turn, presupposes that our world consists of such point-events. But there are reasons to reject this (Bickhard, in press-a, in press-b; Butterfield 2006). One is that a continuum, such as that of space-time, cannot be constructed out of particular points. A related reason is that process models, such as those of quantum field theory, force a relationalism, and are not consistent with particularisms. But, if particular point-events cannot constitute the underlying furniture of our world, then real processes cannot be constituted out of (causal chains of) such point-events. Real processes in the world are extended in both space and time, and can have global properties that cannot be captured with causal chains. This is of particular importance for later discussion in this article with regard to self-organizing processes.

Regarding computational models: such models assume that representation is constituted as some form of encoding of what is represented, but such encodingism assumptions are, at root, incoherent (Bickhard 1996, 2009a, 2009b, in preparation; Bickhard and Terveen 1995). But, if computationalist style representations cannot be the fundamental form of representation, then computation on such "symbolic" representations cannot be the fundamental form of thought or decision making. Connectionist models might at first seem to be immune to such "encodingist" critiques, but presumed connectionist representations are still "just" trained encoding correspondences, and do not avoid the basic problems involved.

If so, then alternatives must be found. I turn now to the general form of such an alternative, one that integrates issues of decision making and issues of acting.

2. Decisioning and Acting

The general model framework that I will be making use of here is that of self-organizing processes. In general, decision processes are constraint-satisfying self-organizing processes, and acting is *temporally extended* constraint satisfying self-organizing processes. In this paper, I will not be arguing directly for these models, though I will give some indications of their plausibility (see Bickhard, in press-a, in preparation; Juarrero 1999). The central point here is that such models *are* plausible, and that they are inconsistent with the presuppositions of standard models, and that they therefore yield (plausible) alternatives to common forms of argument and conclusions concerning such issues as free will. Arguments that such models are correct, as well as plausible, require much more extensive development (Bickhard, in preparation).

A first shift in perspective that is required to understand these kinds of models is to recognize that the central nervous system, from single neurons to the entire system (and, in fact, including the entire organism) is *always* active. It is always doing something; to do nothing is to be dead. Thus, neurons are not passive threshold switches and the CNS is not a passive information processor. Functional relationships with the world, thus, as well as relationships within the CNS, are not those of transduction, triggering, or equivalent activities on a passive system, but, instead, are those of the modulations of intrinsically already ongoing activity, of the organism, of the CNS, of domains of CNS activity, of single neurons, of astrocytes, etc. (Bickhard 2008a).

Such ongoing activity in the nervous system is not totally free: it is functional. Such activity functions to modulate (control is a strong version of modulation) other activity, including that of acting in the world. The crucial point here is that this is a normative functionality: such activities and the modulations that they induce can be inappropriate to the environment (for example). They can be dysfunctional.

But that entails that the ongoing activity at a given time constitutes a preparation, a set-up, for the functional activity, e.g., action and interaction, that will ensue. Just as that activity can be inappropriate or wrong, so can the preparations for that activity: there is an anticipatory character to how the system is prepared and preparing to function, and such anticipation can be false.

This is the core of an action and interaction based model of representation. Truth value is the central problem of representation, and anticipation yields emergent truth value.[1] More familiar kinds of representation, such as of objects, can be constructed out of such "representations as anticipations" in a roughly Piagetian manner (Bickhard 2009a, in preparation; Piaget 1954).

2.1. Constraint satisfying self-organizing processes

Consider now the possibility that some CNS activities can serve as (soft) constraints on other CNS activities. The constraining activities could effect such constraints via a form of modulation of other self-organizing processes, such that the self-organizing processes would be modulated to honor those constraints. If the constraining processes were to constitute representational conditions, then this would constitute a model of internal constraint satisfaction problem solving, with the constraining processes constituting the problem "definitions".

In turn, this would constitute a model of an internalization of a variation and selection process – an evolutionary epistemology (Campbell 1974). The constraints serve as selection principles and the self-organizing processes generate potential satisfiers of those selection principles.[2]

Crucially, such self-organizational processes constituting evolutionary epistemological processes would be intrinsically global in nature, and not capturable with point to point causal event chains.

2.2. Decision processes

A self-organizing evolutionary epistemological model can also serve as a model of decision processes. A decision involves determining what to do, given some constraints on what is desirable and permitted. In general, these constraints will involve both environmental conditions, and internal criteria such as preferences, goals, and values. Taking those external and internal conditions as constraints on a problem solving variation and selection process yields a candidate for satisfying those constraints– yields a (candidate) decision "outcome". Note that this is not at all a computational model of decision making.

[1] For a model of ontological emergence, see Bickhard 2009a.

[2] See Bickhard 2002, 2009a for a model of rational thought based on these notions.

2.3. (INTER)ACTION PROCESSES

CNS processes may or may not modulate activity that controls muscles. If so, we call the overall process a process of (inter)action. There is no constraint in the model of constraint satisfying self-organization outlined above on whether or not the activities do, in fact, generate action; they may or they may not, but the general self-organizing nature of the processes will be the same in either case. That is, the general model can serve also as a model of interaction, with the emergent constraint satisfying processes modulating downstream muscle activity.

2.4. GLOBAL AND INTERTWINED

Such a model of acting is not consistent with action as initiated at some event-point, which then pursues a causal-chain trajectory through further such event-points. Such a self-organizing model of acting is both global, in the sense that the processes are determined (if at all) by global characteristics, not reducible to local causal chains, and extended, in the sense that acting is an ongoing process of modulation and control, extended in both space and time, with feedback, monitoring, and adjustments. Acting does of course have (modulatory) consequences beyond the range of such feedback, etc., – e.g., the thrown rock hits something, makes a sound, etc. – but 1) those too will not in general be reducible to causal chains, and 2) such further consequences can be descriptively part of an "action", perhaps even in the sense that they are represented in the goals, etc. that constrain the internal processes, but the fact that some consequences of acting are beyond the range of feedback and other internal forms of self-organization and its modulation does not entail that acting in general is of that form.

In fact, it is clear that acting in general cannot be in that form. Acting is in accordance with preferences, goals, and values in terms of (heuristic) strategies, sub-strategies, alternative strategies, subsidiary further problem solving, etc. that constitute a potential "fit" to those constraints. Plans are never detailed down to the most minute sub-action; they are always at more general levels, which have to be "filled-in" progressively in ongoing interacting. Acting is globally organized (and organizing); it is extended and organized(ing) in space and time.

Notice that some of these aspects of acting are themselves constitutive of decision processes – e.g., a decision about a sub-goal or strategy. Thus, both

decision processes and acting processes are global and extended, *and* they are inherently intertwined. The "picture" of computational decision processes that end with the initiation of an action in the form of a causal chain is incorrect even at a general descriptive level: the processes involved are not point-events, and the two kinds of processes are not dynamically distinct. Decision-acting processes are global and extended and are distinguishable *aspects* of a single underlying kind of process. They are not pointillistic.

3. Free Will

Free will has to do with the unpredictability and indeterminancy of decision and action processes. I will argue here that free will in those senses is possible, and perhaps even likely, but, in the next section, that it doesn't make much difference for issues of moral responsibility and evaluation.

3.1. Unpredictability

There are circumstances in which it can be adaptive to be unpredictable in one's actions. This is particularly clear in conditions of conflict: if an opponent can predict what you will do, then the opponent may have an advantage. There are reasons to think that social phenomena such as this were strongly involved in the evolution of the human brain (Humphrey 1976; Byrne and Whiten 1988), and, thus, that the adaptiveness of unpredictability was similarly a strong selection constraint. The general point, however, is much broader than that: it holds, for example, in most predator-prey relationships.

Selection for the possibility of unpredictability can be "easily" satisfied: chaotic processes are intrinsically unpredictable. Chaotic processes are highly sensitive to initial conditions, so much so that those initial conditions cannot be determined with sufficient accuracy to permit prediction. Chaotic processes are, nevertheless, deterministic processes. So, chaos generates a differentiation between predictability and determinancy (Bickhard, in press-b). If the processes that generate candidate satisfiers of internal problem defining constraints are themselves chaotic, then we have a model of unpredictable, even though determinate, decision-acting processes.

3.2. Indeterminism

Selection for unpredictability may, then, constitute selection for chaotic processes, which are chaotic in virtue of high sensitivity to initial conditions. If such sensitivity to initial conditions were of sufficiently fine scale, then it could include sensitivity to conditions at a quantum level. Quantum level conditions involve an inherent indeterminancy, and, thus, such a process would be not only unpredictable, but also indeterministic. There may be a major metaphysical distinction between a process being unpredictable but deterministic and a process being intrinsically indeterminate, but that distinction is likely not "visible" to selection constraints for chaotic processes. So evolutionary selection for unpredictability may well have generated indeterministic sensitivity to quantum level conditions.

Such recruitment of inherently indeterministic quantum level phenomena into global decision and action processes, therefore, will constitute a model of decision and acting processes that are both unpredictable and indeterministic. This would be an "amplification" of quantum level indeterminancy to the level of decision and action (Bishop 2002).

Inherent unpredictability and indeterminancy of decision and action processes constitutes a good candidate model for free will. It at least captures the primary characteristics commonly taken to constitute free will. So, given the possibility of high quantum level sensitivity of "chaotic" processes, free will is at least possible. The evolutionary considerations suggest that it might even be likely.

4. Ethical Considerations

Free will is of relevance most centrally to issues of ethics and morality. So a clear next question is what relevance this model of free will has for ethical and moral issues.

4.1. Responsibility

A model of pure random action is not a model of free will (Dennett 1984). One aspect of this point is that, in such a model, there is no person who is engaged

in and modulatory of such action.[3] Free will, if it exists at all, must be a property of a person's activities: "simple" randomness does not suffice.

In the model outlined, the randomness, thus unpredictability and indeterminism, is within the constraints of preferences, goals, values, environmental considerations, and so on. The ongoing decision-action processes will, in general, honor these constraints, and, thus, indirectly manifest them. These normative constraints constitute core aspects of persons; they constitute core aspects and parts of character. Activity, then, will tend to honor and be manifestations of the (character of the) person engaged in that activity.

At this point, the globality of self-organization has an important consequence: self-organizing processes cannot be reduced to causal chains, and, especially if they are at least chaotic, cannot be canceled out in favor of prior causal chains leading into self-organization. External constraints and conditions can certainly influence decision and action process, and can certainly influence the construction of preferences, goals, values, and other normative aspects of character, but they cannot determine them. Similarly, the quantum randomness of constructions that occur *within* such constraints can influence later aspects of character, but they cannot determine them.

The general point here is that it is not possible to cancel out the character of a person in favor of prior "luck" in the form of prior causal chains. A person and their character is ineliminable in accounting for decision and action processes. Whatever the influences may be of incoming "causality", it cannot be exhaustive. Consequently, a person and their character is ineliminable in considerations of responsibility for decision and action. Ethical evaluations, then, will necessarily involve evaluations of persons.

Note that this point does not depend on in-principle indeterminate free will. The *character* of persons constitutes the primary locus of ethical ontology, no matter the determinancy or indeterminancy of the self-organizing processes of decisions and actions. So, free will may be possible and even likely, but, I contend, it doesn't make much difference with regard to ethical issues.

4.2. Ethics

I have outlined a model of ethical ontology that focuses on persons and their character. This is much closer to an Aristotelian framework than to a Kantian

[3] For a model of persons consistent with the above discussion, see Bickhard 2008 , in press-c.

framework, and it is worth pointing out some of the differences that follow from this primary distinction.

One of the most important is that such a model of acting as honoring character shifts the focus of ethical ontology form that of action to that of character – toward a virtue ethics. But the difference is even stronger than this. Action honors character, but character is itself developed, and, furthermore, character is in ongoing development throughout a person's life time (Bickhard 2006, 2008b, in press-c).

There are, thus, at least three levels of person-level ethical ontological consideration: "selecting actions, selecting kinds of person to become, selecting kinds of becoming to engage in" (Bickhard, in press-a). A strong, or exclusive, focus on action as the locus of ethics obscures considerations of learning and development, and of the ethical issues involved in processes of learning and development. An action focus obscures the possibilities of ethical error in a person's being, and in a person's becoming.

5. Conclusions

I have limned a model of decision and action processes that constitutes an alternative to models that are embedded in assumptions of point-event causal chains. By taking into account the anticipatory inherent activity of the organism and nervous system, non-computational models of mental process can be developed, and non-causal chain models of decision and action processes. I have not argued in detail for these models: their very existence, so long as they are at all plausible, suffices to show that much of the current literature proceeds within questionable presupposed frameworks.

Some further consequences of such models are: 1) a model of free will that is consistent with contemporary physics, and at least likely from an evolutionary perspective, and 2) an ontology for ethics that emphasizes persons and their character, not just actions, and, furthermore, illuminates the ethical relevance of the *development* of persons, not just the actions that they engage in. Persons are not things or entities or substances: persons are open, ongoingly self-organizing, at multiple temporal scales, processes.

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