Interactivism in Perspective: Celebrating Mark Bickhard's Contributions to the Psychology of the Whole Person

June 25th, 2021

Normativity panel preparatory notes

1. Overview of panel structure

The panel will proceed as follows:

i) Recap of arguments (1h)
   a. Each panelist will present a 15 minute recap of their arguments
   b. 15 minutes (each panelist)
ii) Panel discussion (30m)
   a. See the questions below.
iii) Audience questions (20m)
iv) Break (10m)

2. Meta comments

Criteria for question selection

Over the last 9 weeks, during our reading group meetings, numerous issues were raised, and most should be pursued. But we cannot cover them all in such a short debate. Thus, we must be selective. I hope we can continue these discussions into the future and address them all.

Although the four speakers in this panel have similar, in some ways convergent ideas about life and mind, each has provided materials (publications and/or presentations) with widely differing focus. Nevertheless, each of these at least dabbled in ontological- and framework-level issues, so that is where our questions will be focused, with some questions aimed at particular panelists. The main purpose of the questions will be threefold:

i) To clarify the panelist's understanding of normativity, what it does for *any* theory of life and mind, and what it does for *their* theory in particular.
ii) To clarify the relationship between *far-from-equilibrium* (FFE) *thermodynamics* and *normativity* in each panelist's perspective, even if none at all, in addition to elements from panelists' perspectives.
iii) Ultimately, to draw out differences and between panelist's viewpoints and those of interactivism, and maybe come to an understanding of why those differences exist.

Request for feedback

If you think there are issues of greater import than those presented below, or if you think these questions make incorrect assumptions about your work, please let me know, and we can revise the questions before the conference.

Structuring the discussion

For each question, each panelist will present their *answer*, and once all four answers have been presented, I will ask for *comments* (and/or questions) from panelists. Due to time constraints, we can only allow only **one** comment and a *reply* from whomever the comment was directed to. Thus, for each question, the order of events will be the following:

$$Q_1: answers_{1,2,3,4} \rightarrow \ comment_1 \rightarrow answer_1 \rightarrow comment_2 \rightarrow answer_2 \rightarrow \cdots$$
$$Q_2: answers_{1,2,3,4} \rightarrow \ comment_1 \rightarrow answer_1 \rightarrow comment_2 \rightarrow answer_2 \rightarrow \cdots$$
$$Q_3: answers_{1,2,3,4} \rightarrow \ comment_1 \rightarrow answer_1 \rightarrow comment_2 \rightarrow answer_2 \rightarrow \cdots$$

To flag interest in commenting, write Q-*name* where *name* is the person whose answer you want to address in the chat. Generally, this will be first come first serve, so if you are the first to write Q-Bickhard, for instance, then you will get the question to Bickhard. This will be the rule unless someone wants to ask a question who has not yet spoken.

As with all things in life, there will be some degree of flexibility where warranted.

3. Questions for the panel discussion

1. What role does normativity play in your theory of life and mind (or that to which you subscribe)?
    a. How much weight does it carry and what role does it play when developing ontologies and models for other aspects of life and mind?
    b. What role *should* normativity play in *any* theory of life and mind?
    c. Is normativity *just* an ascription made by an observer?
        i. If so, why ascribe normativity at all?
        ii. What accounts for the observer's ascriptions? Why do they ascribe function and disfunction, good and bad, etc.?
2. In your theory (or that to which you ascribe) what is the relationship between normativity generally (and normative *function* in particular) and far-from-equilibrium (FFE) thermodynamics (if any)?
    a. If FFE thermodynamics are not key to explaining normativity in your theory, what is the relationship (if any) between FFE thermodynamics and whatever you take *to be* key?
    b. I am particularly interested in the relationships between normativity, FFE thermodynamics, and/or the concepts of *closure*, *autonomy*, and *constraint*. (See the quotes from panelist's papers below in the *notes* section). How do these concepts play out or not in your theory, and do any of them play too much or too little a role in the other panelists' theories?

3. What do you consider to be a major problem for any theory of normativity which is still unresolved in the following ways?
    a. By the “consensus” or “mainstream” of philosophy, cognitive science, and psychology, but you believe your theory either contributes to resolving or has resolved. And/or…
    b. By any theory, including your own.

Notes

(These are mainly for question 2.) The following are outtakes from each author’s paper with information (that looks to me to be) about their view on normativity. Each seems to feature something different, but issues of thermodynamics, constraint, and autonomy come up often along with other concepts like indeterminacy and regulation.

Moreno & Mossio 2015 Chapter 1

> “What are constraints? In contrast to physical fundamental equations, constraints are local and contingent causes, exerted by specific structures or processes, which reduce the degrees of freedom of the system on which they act (Pattee 1972). As additional causes, they simplify (or change) the description of the system, contributing to providing an adequate explanation of its behaviour, which might otherwise be under-determined or wrongly determined. In describing physical and chemical systems, two main features of the explanatory role of constraints should be emphasised. Firstly, constraints are usually introduced as external determinations (boundary conditions, parameters, restrictions on the configuration space, etc.), which means that they contribute to determining the behaviour and dynamics of a system, even though their existence does not depend on the dynamics upon which they act (Umerez 1994; Juarrero 1999; Umerez and Mossio 2013). To take a simple example, an inclined plane acts as a constraint on the dynamics of a ball resting on it, whereas the constrained dynamics do not exert a causal role in the production and existence of the plane itself. Secondly, in those cases in which some constraints are produced within the system being described, the causal relations between these constraints are usually oriented, in the sense that each constraint may possibly play a role in generating another constraint in the system, although no mutual dependence is realised.
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> …
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> As autonomous systems, biological systems do not realise some sort of “process loop” determined by a set of externally determined boundary conditions; rather, they act on the thermodynamic flow to maintain the network of constraints, which are organised as a mutually dependent network. Hence, the organisation that realises closure is the organisation of the constraints, and not that of the processes and reactions. What is lacking in Varela’s account of closure is, we hold, the (explicit) theoretical distinction between processes and constraints, and the related ascription of closure to the organisation of constraints.

It is worth noting again that, as Varela himself has repeatedly clarified, closure (and autonomy) is by no means meant to signify the “independence” of the system vis-a-vis the external environment. On the contrary, as (Bourgine and Varela 1992) themselves explain, closure goes hand in hand with interactive openness, i.e. the fact that the system is structurally coupled with the environment, with which it exchanges matter, energy, and information. In our account, we ground this crucial point through the distinction between constraints and processes: while biological systems are (by hypothesis) closed at the level of constraints, they are undoubtedly open at the level of the processes, which occur in the thermodynamic flow. Autonomous systems are then, in this view, organisationally closed and thermodynamically open.

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Moreno & Mossio 2015 Chapter 3

“ Since the activity of the system S contributes, by exerting a constraint on its surroundings, to the maintenance of some of the conditions required for its own existence, the question “Why does S exist?” can be legitimately answered by “Because it does Y”. This justifies explaining the existence (again, in the specific sense of its maintenance over time) of a system in “teleological” terms by referring to its causal effects.

On the other hand, self-maintenance grounds normativity. The activity of a self-maintaining system has an intrinsic relevance for itself, to the extent that its very existence depends on the constraints exerted through its own activity. Such intrinsic relevance generates a naturalised criterion for determining what norms the system is supposed to follow: the system must behave in a specific way, otherwise it would cease to exist. Accordingly, the activity of the system becomes its own norm or, more precisely, its conditions of existence are the intrinsic and naturalised norms of its own activity.

Note that, so far, we have been generally referring to self-maintenance, and not closure. Hence, we acknowledge that the grounding of the teleological and normative dimensions goes beyond the biological domain, and includes some kinds of physical and chemical self-maintaining systems.

…

One may object that, if self-maintenance as such provides the relevant grounding for teleology and normativity, then the OA should allow functions to be ascribed to physical dissipative systems. But of course, this implication seems unsatisfactory since, usually, no one ascribes functions to physical systems. Hence – the objection could continue – the OA clearly fails to restrict functions to the relevant kind of systems, just as dispositional approaches do. To this objection, we reply by formulating the second claim of the OA, according to which self-maintenance is a necessary but not sufficient condition for grounding functions in a naturalised way. Functions emerge when the self-maintenance is realised in the specific form of closure.

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"But even in the case of real living beings, it only makes sense to claim that their meaningful perspective is grounded in their precarious existence if we accept, as Jonas [35] proposed, that their being is their own doing. An organism actively brings about its own physical existence, and it is this internal relationship between doing and being that makes the organism a being that is concerned with what it is doing, in particular with its continued self-preservation [36]. Of course, this is just an initial sketch and more has to be said about how the enactive approach could account for norms that are not related to the organism's need to avoid dying [37,38], for instance by developing detailed accounts of additional processes of self-generation that are hierarchically decoupled from metabolism [23]. Nevertheless, a fundamental worry would remain: to what extent are we justified in claiming that the organism's being is something actively done, rather than merely passively undergone, if all of its unfolding processes are completely prespecified by a deterministic universe? Such a universe is not compatible with Jonas' characterization of life as "needful freedom" [20]. A precarious existence may be necessary for a meaningful perspective, but so is the freedom to make a genuine difference with respect to the needs of this existence.

…

Particularly fitting candidates for studying this intertwining of the subjective and the objective would be natural phenomena that are physically incomplete systems and whose activity is causally underdetermined by preceding physical events inside and outside of the system. A good starting point might actually be to reconsider the autopoietic system: metabolic self-production entails a self-reference at the core of its being such that it is never fully self-coinciding at any one moment in time, and this intrinsic circularity makes it formally equivalent to an incomplete system [61]. However, we would have to overcome the determinism assumed by current models of autopoiesis.

Note that nondeterminism is not the same as randomness, as randomness can be generated in a deterministic manner, e.g. by using a look-up table containing random numbers [62]. Moreover, non-deterministic behavior can still have some structure over time, albeit a kind of structure that is only temporarily constrained but never fully determined by preceding physical state. To make room for such nondeterministic behavior, the overarching system that contains the autopoietic system cannot be a completely deterministic system, either, which seems to rule out the possibility of using standard computational simulation. Making this room also seems to rule out the idea that nature is causally closed and that it will bottom out at some smallest physical scale, and instead suggests that nature is nonergodic [63] and groundless [64].

We therefore require a concept of nature that is incomplete in a deeper way than simply lacking evidence of mental content or a mark of the subjective. We must give up the idea of the causal closure of the universe and accept incompleteness and indeterminacy as essential properties of nature in order to make room for the subjective in the objective.

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Deacon, Srivastava, & Bacigalupi 2014

“Regulation and constraint are related concepts in that regulation involves the differential imposition and/or removal of constraints affecting some process so that it develops toward or away from some target state. But, constraints are function-neutral restrictions on dynamical and structural variations, whereas regulation is necessarily associated with the normative (i.e. functional/non-functional) organization of some process, whether determined extrinsically or intrinsically. The mere presence of constrained dynamics that contributes to development toward some more ordered state, as in self-organization, does not in itself constitute regulation. Regulation involves the modification of system constraints with respect to changing conditions that would otherwise cause that system to diverge from a specified target state. The classic cybernetic examples of regulation are thermostats and guidance systems organized to use feedback to counter and minimize deviation from a given value. Such systems are designed to constrain such deviations by generating work that is organized to counter each deviation. In other words, regulation is work performed in order to maintain spontaneous change within a constrained range. Regulation is in this sense defined with respect to an extrinsically determined target state, which in the case of designed mechanisms serves a designed function or purpose.

…

A hint is provided by dissipative systems that are in some way self-limiting. This self-limiting characteristic can be exhibited by self-organizing processes that grow in scale (e.g. in snow crystal formation) or have fixed upper limits to their composition (such as the self-assembly of viral capsules into polyhedrons with a fixed number of capsid facets). Thus, certain variant forms of self-organizing processes can clearly violate a simple version of the [maximum entropy production] principle and even attain a degree of thermodynamic stability. However, this stability is defined by reaching a basin of thermodynamic equilibrium, and is susceptible to degradation if equilibrium conditions are extrinsically disrupted. Living processes must instead intrinsically limit their dissipative processes on order to preserve their organization across changing conditions.

…

But, maintaining unity of the network of co-production is critical for organisms. So although component co-production is an important attribute of living organization, it is the maintenance of this network of dynamical interdependencies that is what most demands an explanation.

…

One obvious clue that this form of organization crosses the boundary from constraint to regulation and out of the domain of merely physico-chemical processes is that regulation can succeed or fail. Physico-chemical constraints are present or absent. Certain processes will either occur or not as a result. Constraints per se, can neither fail nor succeed. They merely exist, because, for continuously dynamic inorganic processes there is no arbitrary "set point" or preferred state other than equilibrium. The autogen, however, illustrates just such a "set point" which simultaneously embodies the capacity to persist despite perturbation. This set point is effectively its completed inert form. An autogen can persist in this inert state indefinitely, unless sufficiently perturbed, at which time its preserved reconstitutive potential will tend to return it to that initial state, thereby preserving this potential. This set point is "remembered" even when environmental conditions are not conducive to its dynamical reconstitution. So an autogen is like a cybernetic regulator in this one respect: there is a target state that defines the target state toward which it tends to develop. Like a cybernetic regulator, an autogen's set point is maintained irrespective of the system's dynamical state. But unlike a designed cybernetic system, if an autogen is dissociated in a context lacking sufficient substrates or energy to drive its catalytic processes, this self-regulatory capacity will fail to be regenerated. Or if there has been an accidental molecular substitution in one of the component processes, the self-regulatory capacity may be degraded. Thus, an autogenic process is regulatory in a more complex self-directed way than is a designed cybernetic regulator. Its regulatory function is intrinsic to its very constitution.

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Bickhard 2009

2 Emergence and normativity

A process metaphysics forces explicit consideration of stabilities of (patterns of) process—persistence through time cannot be assumed. There are at least two very broad classes of stabilities that I will consider, one of which is the foundation for the emergence of normativity in the form of normative function.

One kind of stability of process organization is that in which an instance of the organization remains stable unless some above-threshold amount of energy impinges on it. Such energy-well forms of stability constitute major portions of our world—a canonical example is an atom. Such stabilities can persist for cosmological durations. An important property of energy-well stabilities is that they can be isolated from their environments without disturbing that stability: they will happily go to thermodynamic equilibrium and remain in their "energy-well".

This property is in strong contrast to a second kind of stability of process organization: stabilities of processes that are far from thermodynamic equilibrium. Far from equilibrium processes cannot be isolated, else they go to equilibrium and cease to exist. The stability of a far from equilibrium form of process is dependent on its being maintained in its far from equilibrium condition. Such maintenance may often be accomplished from sources external to the process, such as pumps supplying a continuous flow of chemicals into a vat, perhaps for the sake of investigating the kinds of self-organization exhibited.

Some kinds of processes, however, self-organize into forms that make contributions to their own stability. In that sense, they are self-maintenant. A candle flame serves as a canonical example. A candle flame maintains above combustion threshold temperature, induces convection, which brings in fresh oxygen and gets rid of waste, vaporizes wax in the wick for combustion, and melts wax in the candle so that it can percolate up the wick. A candle flame is self-maintenant in several senses.11

A candle flame, however, can only do one thing—burn. It has no options and cannot select among options. If it runs out of wax, for example, there are no alternatives that it has the capacity to select, that might correct this threat to its continued existence. More sophisticated self-maintenant systems, however, do have options and can make selections among them in accordance with changing conditions in their environments in order to correct or compensate for those changing conditions.

Such systems maintain the property of being self-maintenant through changes of conditions that may require different activities for self-maintenance in those differing conditions. In that sense, they are recursively self-maintenant—they maintain self-maintenance. Here a canonical example is Don Campbell's bacterium that can swim so long as it is headed up a sugar gradient, but tumble if it finds itself oriented down a sugar gradient (Campbell 1974, 1990). Swimming up a sugar gradient contributes to its self-maintenance, but swimming down a sugar gradient does not. The bacterium can differentiate, detect, the two conditions and select swimming or tumbling accordingly.

Self-maintenant and recursively self-maintenant systems constitute the low end, the simple end, of a graded hierarchy of forms of autonomy. They are autonomous in the sense of being able to recruit and manipulate (themselves in) their environments so as to (contribute to) maintain(ing) their own existence (Christensen and Bickhard 2002). In complex cases, this can be a recursive self-maintenance across vast ranges of potential environment—it is an unbounded (and partially ordered) hierarchy. All living systems are autonomous.

The difference between energy-well stabilities and autonomous stabilities turns on a fundamental asymmetry in their underlying thermodynamics. Energy-well systems do well when isolated, but autonomous systems cannot be isolated for long because they require maintenance of their far from equilibrium conditions. This thermodynamic asymmetry underlies an asymmetric emergence, and, in fact, an emergence of normativity in the form of normative function. Reversal of all three of the substance-metaphysics consequences mentioned above is involved here.

2.1 Normative function

Far from equilibrium processes require maintenance in order to be stable, and such maintenance is functional relative to the stability of that system—it serves a function insofar as it contributes to that stability. This is the core notion of function.

Such contributions are functional relative to the process stability that they serve, to the maintenance of the existence that they help support. They are normative for that stability. They help create and maintain a dynamic steady state, and are useful relative to that maintenance and creation.12

2.2 Serving a function versus having a function

Another difference between etiological approaches to function and the autonomy model concerns what is taken to be the primary focus of explication. Etiological models focus on what it is to have a function, while the autonomy model focuses on what it is to serve a function. In either case, the second element of the pair requires further explication, but it makes a significant difference which is addressed first, primarily because that sets the bounds of the overarching framework within which to develop further explications. At issue is which is the conceptual genus within which the other can be explicated as a (derived) species.

In the etiological case, serving a function happens just when something that has a function succeeds in accomplishing the consequences that satisfy its function. A kidney serves the function of filtering blood when it in fact filters blood, and does so because it has the function of filtering blood. Note that, in this framework, no function can be served unless something has that function.

It requires a little more work to understand having a function in terms of serving a function—though what is required turns out to be of central importance for modeling other phenomena as well—but one advantage of taking “serve a function” as the focus of explication is immediate: functions can be served even if nothing has those functions. This opens functionality to a much broader realm of phenomena, and is, therefore, a more natural framework for modeling function.

2.2.1 Functional presuppositions: the autonomy model of having a function

The existence and maintenance of an autonomous system requires that particular functions be served, that particular self-maintenant contributions be accomplished. The specifics of such requirements will vary depending on the nature of the autonomous processes, but the far from equilibrium nature of the processes requires that that nature be maintained, and, therefore, that functions be served.

The successful serving of a function for some organism by a sub-process or part of that organism may depend on other conditions holding. Such other conditions can be of various kinds and take various forms. They may, for example, be environmental and ambient, such as that the atmosphere contain sufficient oxygen. Of particular importance here is that they might be conditions that are themselves created or maintained by other sub-processes or parts of the organism. The creation or maintenance of those conditions, therefore, is itself serving a function—the function of supporting the serving of further functions by subsequent processes and parts.

It is the converse of this relationship that I wish to focus on here: the serving of one function by some process or part may require, and, in that sense, presuppose, that other conditions hold. Insofar as those other conditions are created or maintained by some other process or part of the organism, the first process or part functionally presupposes that the second is successfully serving its function. It is a functional presupposition in that the first function cannot be served by that process or part (or at least not served as well) unless that second functional consequence is in fact created or maintained. The serving a function in the first case presupposes that the second function is being served.

Insofar as the presupposed serving of a function involves a presupposed location or part of the organism, then there is a functional presupposition that that part will serve its supporting function for the first serving of a function. In that sense, the part has a function by the presupposition(s) of other functional parts and processes. The functions of distributing food and oxygen cannot be served unless a carrier of appropriate constitution—e.g., blood—is located in a circulatory system and is in fact circulating in that system. The circulatory system, thus, has the (a) presupposed function of supporting blood circulation. The function of circulating blood, in turn, cannot be served unless something at the location of the heart serves the function of pumping—the heart, therefore, has the circulation of the blood as its presupposed function. And so on, in what is generally a very complex organization of interdependencies, presuppositions.

Having a function, therefore, is constituted in being presupposed to serve that function by the rest of the autonomous system. For now, the conclusion is that having a function can be modeled in terms of serving a function when the relationships of functional dependency and presupposition among various functions to be served are taken into account.