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CONSTRUCTS AND TRINITIES: KELLY AND VARELA ON COMPLEMENTARITY AND KNOWLEDGE

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The paper is aimed at showing similarities and differences between the views of complementarity in relation to the creation and structure of cognitive systems held by George A. Kelly and Francisco J. Varela, both of them sharing a constructivist metatheory. Though operating in different times and in different fields (psychology and biology), their notions of construct and trinity, respectively, represent a similar departure from classical logic and dialectics, and lead to similar implications as to the problem of knowledge and the hierarchical structure of cognitive systems. Even if, because of their different views on the dependence/independence of reality from the observer's act of construing, Kelly's constructivism can be considered as trivial and Varela's constructivism as radical, the triviality of the former is questioned.

This paper is aimed at showing similarities between two views of complementarity in relation to the creation and structure of cognitive and natural systems: one held by a psychologist of the fifties, George A. Kelly, and the other one held by a bio-cybernetician of the eighties, Francisco J. Varela, known for working together with Humberto R. Maturana on the biology of cognition (Maturana & Varela, 1973/1980, 1985/1987). Though operating in different times and in different fields, Kelly and Varela share a constructivist metatheory, and this allows one to compare some of their views. Furthermore, a main difference between the two, concerning their positions as to the dependence or independence of reality from the observer's act of construing, will be described and discussed.

Complementarity and the Problem of Knowledge

Kelly's departure from classical logic: the construct

Being a psychologist, Kelly paid primary attention to the individual rather than to the environment; and, being a revolutionary psychologist, he considered as the marks of individuality the personal ways of construing the world, rather than external stimuli, internal impulses, or personal biographies. In defining a *construct* as the only basis of any personal construction, Kelly (1955) departs from the notion of *concept* and from conventional logic by assuming that «the differences expressed by a construct are just as relevant as the likenesses. Unlike classical logic, we do not lump together the contrasting and the irrelevant. We consider the contrasting end of a construct to be *both relevant and necessary* [italics added] to the meaning of the construct.» (p. 63).

And afterwards:

We see relevant similarity and contrast as essential and *complementary* [italics added] features of the same construct and both of them as existing within the range of convenience of the construct. That

which is outside the range of convenience of the construct is not considered part of the contrasting field but simply an area of irrelevancy. (p. 69)

Kelly is clearly and strongly interested in rejecting the epistemological assumption leading to an understanding of speech as a way of denoting entities:

We may say, "A is B". This statement is a way of asserting a conclusion, the antithesis of which would have been to say, "A is not B". This is a familiar logical form and its intrinsic validity is generally taken for granted. . . .

[But] a person never makes his choice merely between an entity and a nonentity. When he says that "A is B" it seems that he is also asserting that "A is not C". The choice he makes is not, therefore, between "B" and "not-B", but between "B" and "C" — between two entities. (Kelly, 1961/1969, p. 98)

Kelly calls his choice *the double entity choice*, to tell it from *the single entity choice* envisioned by classical logic.

In order to save this premise, Kelly describes a construct as dichotomous or bipolar in nature, but «it must be understood that the personal construct *abstracts* similarity and difference *simultaneously* [italics added]. One cannot be abstracted without implying the other» (Kelly, 1961/1969, p. 103). What is prominent for the issue of concern here is the observation that even if the elements of a construct lie on the same level and may be thought of as in opposition each others, the construct is an *abstraction*, and as such *emerges* from its elements.

Varela's departure from classical dialectics: the trinity

In approaching natural systems from a constructivist point of view according to which we invent or construct our own reality, Varela (1969) discusses the role distinction plays in the creation of systems: «A *distinction* splits the world into two parts, 'that' and 'this', or 'environment' and 'system', or 'us' and 'them', etc. One of the most fundamental of all human activities is the making of distinctions» (p. 84). It must be stressed that the operation of distinction specifies unities in a figure/foreground modality, that is in accordance with a double entity choice in Kelly's terms. Varela goes on:

Distinctions coexist with purposes. A particularly basic case is autonomy a system defining its own boundaries and attempting to maintain them; this seems to correspond to what we think of as individuality. It can be seen in individuals (ego or identity maintenance) and in social units (clubs, subcultures, nations). In such cases, there is not only a distinction, but an *indication*, that is, a marking of one of the two distinguished states as being primary ("this", "I", "us", etc.)....

The establishment of system boundaries is inescapably associated with what I shall call a *cognitive point of view*, that is, a particular set of presuppositions and attitudes, a perspective, or a frame. (pp. 84-85)

Now, according to Varela, some pairs of seemingly different and opposite points of view may be considered as complementary instead, and this allows him to go one step further to duality and dialectics. In other words, Varela is referring to the possibility of subsuming contrasting elements or sets of elements under a construct, by considering them in a relation of complementarity. While for Kelly this represents (is assumed to be) the way people actually think, for Varela is a possibility offered by a transition from dualities to trinities.

By *trinity*, in fact, Varela (1976) means «the contemplation of the ways in which pairs (poles, extremes, modes, sides) are *related* and yet remain distinct» (p. 62): the way they are not one, not two. Varela's key idea is then that of replacing the metaphorical idea of trinity with a built-in injunction that can tell us *how* to go from duality to trinity. He calls it the *star* statement:

* = *the it / the process leading to it*

where the slash “/” in the Star* statement is to be read as “consider both sides of /”, that is “consider both the it and the process leading to it”.

Consider, for instance, the star:

$$* = \textit{whole} / \textit{parts constituting the whole}$$

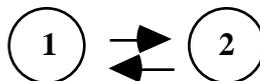
where a *whole* is a set of simultaneous interactions of parts (components, nodes, subsystems) which exhibit stability as a totality, and the *parts* are the carriers of particular interactions which we can chop out from the whole and consider their participation in various sequential processes that constitute the whole. It follows that also the classical duality *holism/reductionism* can be seen in this complementarity framework, as well as the dualities *being/becoming*, *space/time*, *structure/content*, or *environment/system*. In general, Varela (1979) says,

take any situation (domain, process, entity, notion) that is autonomous (total, complete, stable, self-contained), and put it on the left side of the /. Put on the other side the corresponding process (constituents, dynamics)...

In each of these cases the dual elements can be seen as complementary: they *mutually specify each other*. There is, in this sense, no more duality, since they are related. (p. 100)

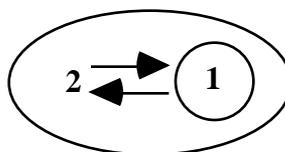
Varela goes on:

More generally, we may see that this view of complementarity signifies a departure from the classical way of understanding dialectics. In the classical (Hegelian) paradigm, duality is tied to the idea of polarity, a clash of opposites. Graphically,



The basic form of these kinds of duality is symmetry: Both poles belong to the same level. The nerve of the logic behind this dialectics is negation: pairs are of the form A/not-A.

In this presentation [the cybernetic or post-hegelian paradigm], dualities are adequately represented by *imbrication* of levels, where one term of the pair *emerges* from the other. Graphically,



The basic form of these dualities is asymmetry: Both terms extend across levels. The nerve of the logic behind this dialectics is self-reference, that is, pairs of the form: it / process leading to it.

Pairs of opposites are, of necessity, on the same level and stay on the same level as long as they are taken in opposition and contradiction. Pairs of the star form make a bridge across one level of our description, and they specify each other. (pp. 100-101)

Varela generalizes this transition setting out an *interpretive rule* for dualities:

For every (Hegelian) pair of the form A/not-A there exists a star where the apparent opposites are components of the right-hand side.

It is quite easy to apply this procedure to the star $* = \textit{construct system}/\textit{constructs constituting the system}$. Of course, because of the hierarchical organization of a personal construct system, the same applies to the star $* = \textit{construct}/\textit{elements constituting the construct}$, where elements otherwise in opposition are seen in a relation of complementarity at a higher level, that is at the level of their subsuming construct (in accordance with Varela's interpretive rule).

Complementarity and the Hierarchical Structure of Systems

Another considerable similarity between Kelly and Varela concerns their view of the complementary relationships between levels of a system. The topic is relevant to the problem of other- or self-determinism.

Varela on control and autonomy

At a given level of the hierarchy resulting from the iteration of the process of distinction and indication, Varela (1979) says,

a particular system can be seen as an *outside* to systems below it, and as an *inside* to systems above it; thus, the status (i.e., the mark of distinction) of a given system changes as one passes through its level in either the upward or the downward direction. The choice of considering the level above or below corresponds to a choice of treating the given system as autonomous or controlled (constrained). (p. 86)

In systems theory, as well as in psychology, the autonomy/control distinction appears more specifically as a recursion/behavior distinction: the behavioral view arises when emphasis is placed on the environment, while the recursive view, as expressed in the thesis of organizational closure, arises when emphasis is placed on the system's internal structure.

Kelly on determinism and free will

Given that, according to Varela (1979), what is applicable to a system created by an observer also applies to the observer's properties in that «whatever we describe is a reflection of our actions (perceptions, properties, organization)» (p. 101), the similarity with Kelly's view of determinism and free will becomes quite striking. Consider the following quote from Kelly (1955):

Determination and freedom are two complementary aspects of structure. They cannot exist without each other any more than *up* can exist without *down* or *right* without *left*. Neither freedom nor determination are absolutes. A thing is free *with respect to something*; it is determined *with respect to something else*.

The solution proposed for the problem of determinism and free will provides us with the pattern for understanding how persons can vary and still be considered as lawful phenomena of nature. A person's construction system is composed of complementary superordinate and subordinate relationships. The subordinate systems are determined by the superordinate systems into whose jurisdiction they are placed. The superordinate systems, in turn, are free to invoke new arrangements among the systems which are subordinate to them.

This is precisely what provides for freedom and determination in one's personal construct system. The changes that take place, as one moves toward creating a more suitable system for anticipating events, can be seen as falling under the control of that person's superordinating system. In his role identifying him with his superordinating system, the person is free with respect to subordinate changes he attempts to make. In his role as the follower of his own fundamental principles, he finds his life determined by them. (p. 78)

Complementarity and the Dependence/Independence of Reality

In spite of the striking similarities between Kelly and Varela as to the process of knowledge and the ordinal relations between levels of a system, the two diverge with respect to their views on reality.

Kelly and the separate realities of the observer and the observed

It has already been stressed (Kenny, 1985) that Kelly's epistemology is a type of *trivial constructivism* in that, while endorsing the notion that we invent or construct our own reality,

at the same time he believes in an “absolute”, independently existing reality. This aspect of Kelly's theory is particularly apparent in the following quotes, where we enclosed into brackets a possible reframing from a radical viewpoint:

Life is characterized, not merely by its abstractability along a time line, but, more particularly, by the capacity of the living thing to *represent* its environment [to *bring forth* a world]. Especially is this true of man, who builds construction systems *through* which to view the real world. The construction systems are also real, though they may be biased in their representation. Thus, *both* nature *and* human nature are phenomenologically existent [and *interdependent*]. (1955, p. 43, italics added)

At best, the confirmation of a prediction is no more than tentative evidence that one may be *on the track of something* [no more than evidence that one's experience is *viable*]. The psychology of living in a world that is *largely unknown* [living in a *definite* but *not definitive* world] — and in rapid transition, besides — leads us to hope for little more than ad interim support for our beliefs. (1966/1969, pp. 38-39, italics added)

The discovery of an ultimate *correspondence* [The maintenance of *internal coherence*] between the constructions we are able to devise and the flow of actual events is an infinitely long way off. In the meantime, we shall have to be content to make a little progress at a time, to invent new alternative constructions — even before we have become dissatisfied with the old ones, and hope that, in general, we are moving *in the right direction* [in a *possible* direction]. (1961/1969, p. 96, italics added)

Varela and the star observer/observed

Radical constructivism, which is Varela's as well as Maturana's position, according to von Glasersfeld (1984) «is *radical* because it breaks with convention and develops a theory of knowledge in which knowledge does not reflect an 'objective' ontological reality, but exclusively an ordering and organization of a world constituted by our experience» (p. 24). In Varela's (1984) words:

Tradition would have it that experience is either a subjective or an objective affair, that the world is there and that we either see it as it is or we see it through our subjectivity. However . . . we may look at that quandary from a different perspective: that of *participation* and *interpretation*, where the subject and the object are inseparably meshed. This interdependence is revealed to the extent that nowhere can I start with a pure account of either one, and wherever I choose to start is like a fractal that only reflects back precisely what I do: to describe it. By this logic, we stand in relation to the world as in a mirror that does not tell us how the world is: neither does it tell us how it is not. It reveals that it is *possible* to be the way we are being, and to act the way we have acted. It reveals that our experience is *viable*.

That the world should have this plastic texture, neither subjective nor objective, not one and separable, neither two and inseparable, is fascinating.... It shows that reality is not just constructed at our whim, for that would be to assume that there is a starting point we can choose from: inside first. It also shows that reality cannot be understood as given and that we are to perceive it and pick it up, as a recipient, for that would also be to assume a starting point: outside first. It shows, indeed, the fundamental *groundlessness* of our experience, where we are given regularities and interpretations born out of our common history as biological beings and social entities. Within those consensual domains of common history we live in an apparently endless metamorphosis of interpretations following interpretations. (p. 322)

But what about the implications of the different types of constructivism held by Varela (and Maturana) and Kelly? In our opinion, the main difference should regard the problem of adaptation or variation in a personal construct system through the validation/invalidation of anticipations. But, when we tried to deepen this issue, we faced a rather ambiguous situation.

In fact, Kelly's belief in the separate reality of the world is congruent with a reliance on this external reality as a source of in/validation of constructs; and it is easy to find confirmation of this position in Kelly's references to «the revelation of events inviting the person to place new constructions upon them», or «the revision of one's anticipations in the light of the unfolding sequence of events», and so on. Consequently, Kelly's view on the

development of personal construct systems has been regarded as similar to the Piaget's processes of assimilation and accommodation (see, for instance, Mancuso & Adams-Webber, 1982).

At the same time, it would be extremely hard to consider Kelly as referring to a “pure” observation of events, and Kelly himself (1955) says that «the constructions one places on events are working hypotheses which are about to be put to the test of *experience*» (p. 72, italics added), not to a *reality-testing* (and experience is a construction). In other terms, each individual is presumed to use the hypotheses which he derives from his own construct system both to anticipate events and to assess their predictive accuracy. Thus, according to Warren (1964), Kelly employs internal consistency, not correspondence with reality, as a criterion of validity:

[Kelly] makes the business of validation of constructs also a matter of construing, either at a different level of construing from the original construction or by employing different but systematically related constructs.... Construct theory attains consistency on this particular issue by positing as criterion for a person's assessment of the outcome of his anticipations the internal consistency of the constructions within the person's construction system. Thus, there is no recourse to the awkward notion of “reality”, which doesn't make much sense within construct theory anyway, and truth becomes a matter of coherence within a system rather than of correspondence with reality. (p. 11)

In our opinion, only in the light of this interpretation of Kelly's theory his realism is deprived of much of its meaning, the triviality of his constructivism becomes more difficult to sustain, and his revolutionary contribution to psychology is preserved even with respect to the most recent and advanced scientific theories.

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