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Thoughts about Space, Time, and the Concept of Identity

I

Space, we believe, is where things are and Time what provides the stretch for them to be there when we look again.

By saying "things are" or "are there", we convince ourselves that they exist and what "exists", we intend, must do so, irrespective of our perceiving or experiencing it in any way. Mount Etna towers over Sicily regardless of any Sicilians, the Monalisa smiles whether the Louvre is open to the public or not, and the river Inn flows down the Engadin even when no one dangles a toe in its icy water. All that (and more) is what we hold to be reality. The mountain, the painted smile, and – in spite of what Heraclitus said – even the flowing river, are supposed to have their place and to remain what they are. They must keep their identity, must remain the self-same individuals, or else cease to exist. There does not seem to be much of a problem in this. The pen I hold in my hand does not become another while you're watching it. You are quite sure of that – at least until you've seen a sharper do a sleight of hand with cards. Then you suddenly realize that things can change their identity under your very eyes. It is a question of speed – and speed, after all, is the quotient of space an time. The conservation of individual identity may be more of a problem than it seemed.

Space is the medium in which things maintain or, as the case may be, change their location; time is the medium in which they must conserve their identity lest they disappear qua "things" and be reduced to momentary apparitions.

II

The reality in which things are and perdure is so firmly embedded in the way we think that it seems downright indispensable. Berkeley, who questioned whether a tree falling in the depth of the forest made a sound, was met with indignation and ridiculed as a fool. But, as so often, ridicule and indignation were to cover up a feeling of unease. Berkeley, indeed, touched a sensitive spot. He had realized that conceptions such as "tree" and "falling" and "making a sound" contained, as integral parts, relations; consequently, in order to know any such relations, the knower had to do the relating.

The suspicion that any concept involved some doing on the part of the conceiver was, it seems, in the air at that time. Vico stated it bluntly: Facts are the result of *facere*, which is Latin for "to make".. It was an uncomfortable idea. It undermined the traditional notion of truth and thus the solidity of all one wanted to consider "real". What one makes oneself can hardly be expected to have that perennial reliability one would like to attribute to the real world.

III

Juan Caramuel, a Spanish nobleman who became Bishop of Vigevano in the second half of the 17th century, was perhaps the first to speak quite explicitly of the conceptual constructions of the mind. He was also the first, at least in the Western world, to realize that a number system does not have to be decimal. Among a dozen he designed, right up to base 12, there was the binary one which, today, is used by computers. He seemed to love numbers, and some of his thoughts about the roots of mathematics and algebra were far ahead of his time. More than 30 years before Vico and Berkeley published their respective treatises in 1710, Caramuel knew that "number is a thing of the mind". He demonstrated the point by means of a delightful story:

> There was a man who talked in his sleep. When the clock struck the fourth hour, he said: 'One, one, one, one – this clock must be mad – it has struck one four times.' The man clearly had counted four times one stroke, not the striking of four. He had in mind, not a four, but a one taken four times; which goes to show that counting and considering several things contemporaneously are different activities.
> If I had four clocks in my library, and all four were to strike one at the same time, I should not say that they struck four, but that they struck one four times. This difference is not inherent in the things, independent of the operations of the mind. On the contrary, it depends on the mind of him who counts. The intellect, therefore, does not find numbers but makes them; it considers dif-ferent things, each distinct in itself, and intentionally unites them in thought.[1]

I know of no earlier mention of "operations of the mind". Locke employed the term to specify an object of reflection, Vico used it repeatedly in his revolutionary epistemological treatise[2] and Berkeley certainly implied such a constructive activity in several of the notes in his *Commonplace Book*[3]. They all came after Caramuel, and none of them attempted to specify in any detail what these mental operations could be and how they might work.

IV

To my knowledge, operational analyses of concepts were provided for the first time by Jeremy Bentham in his *Theory of Fictions*. It is there, that I found the following insight:

> No two entities of any kind can present themselves simultaneously to the mind (nor can so much as the same object present itself at different times)

> without presenting the idea of Relation. For relation is a fictitious entity, which is produced, and has place, as often as the mind, having perception of one object, obtains, at the same time, or at any immediately succeeding instant, perception of any other object, or even of that same object, if the perception be accompanied with the perception of its being the same: Diversity is, in the one case, the name of the relation, Identity in the other case. But, as identity is but the negation of diversity, thence if, on no occasion, diversity had ever been, neither, on any occasion, would any such idea as that of identity have come into existence.[4]

Here, Bentham does not seem to have found the clearest way of saying what he had in mind. When I came upon this passage, I had to read it several times before things fell into place. What he did have in mind is obviously beyond my or anyone else's reach. But I can try to interpret what I make of his statement.

The insight which, to me, seems so important is somewhat obscured by the inherent ambiguity of the word "same". This has at times confused the clearest thinkers, because it is not the kind of ambiguity that is usually and easily resolved by the context. There are, however, contexts in which it does come out clearly. Take, for example, the two statements: "This is the same girl I saw yesterday" and "She bought the same dress as her sister." The girl is one and the same individual, seen twice; the dresses are two, considered equivalent in every respect that one chose to take into account when comparing them.

Bentham is not concerned with the difference between individual identity and equivalence. He opposes identity to diversity. Yet, in this passage, he comes very close to making two further distinctions. He begins by saying that the mind cannot focus on more than one item at one moment, but makes up for this by relating items registered at different moments. Relations, therefore, are not "perceived" but fictitious – and he uses that word in the same sense as Vico's *factum* (made). No sooner has he said this, he seems to contradict it by speaking of the mind "having perception of one object" and "at the same time" obtaining perception of another object. The operative word, here, is "obtaining". It is intended actively, as procuring or producing, and it springs from what is stated at the beginning of the sentence where Bentham introduces all this as an example of how relations are produced.

"Sameness" and "difference", then, refer to relations, and relations are instituted or constructed by the experiencing subject. Any such construction is a sequential affair, a succession of moments of a mind's focused attention plus the mind's activity of relating.

There are no two items in the flow of one's experience that could not be considered "the same", nor are there two items that could not in some respect be considered "different". The experiencer is always free to choose the criteria of similarity. If and when, however, one decides to consider two segments of experience to be the same, this decision by itself does not yet determine whether one will consider them two experiences of one and the same individual item or experiences of two equivalent items.

V

The construction of individual identity is perhaps the most crucial in the conceptual edifice we call "reality". William James, who formulated quite a few ideas that shallow, bigoted psychologists after him tried to bury, was well aware of the importance of this construction.

> Permanent 'things' again; the 'same' thing and its various 'appearances' and 'alterations'; the different 'kinds' of thing ... it is only the smallest part of his experience's flux that anyone actually straightens out by applying to it these conceptual instruments. Out of them all our lowest ancestors probably used only, and then most vaguely and inaccurately, the notion of 'the same again'.[5]

It is remarkable how many contributors to the history of Western epistemology remained, in this respect, on the most primitive level of reflection. To become aware of an experience being the repetition of another, certainly requires reflection, if only to the extent that it requires registering the outcome of a comparison with an experience that is no longer actual. It does not, however, require the conception of "permanent things". It concerns experience alone, experience segmented into chunks, if you will, but not items that exist in their own right, independently of the experiencer. I may judge the pain I have at this moment to be different from the pain I felt last week; and to make that judgement I do not have to hypothesize that the one comes from my sinus, the other from an impacted wisdom tooth; in fact, to compare any two percepts, I do not have to externalize their origin. Nor do I have to believe that these percepts are images of "objects". But, as William James suggested, to do so, greatly helps in "straightening out" the flux of one's experience. It also creates the conceptual structures that are usually called "space" and "time".

VI

I do not want to reiterate here how an experiencer might come to generate recurrent items that can then be judged "equivalent" or "different". A model that could do that has been worked out and it includes the conceptual operations that generate "objects" and the relational world they need to "exist".[6]

The book to which Jean Piaget gave the title *The Construction of Reality in the Child* deals with just that.[7] It is a difficult book and part of its difficulty stems from the fact that books must present ideas sequentially. This one begins with a section on Permanent Objects, continues with chapters on Space, Causality, and Time, and ends with one on the resulting Universe that constitutes "reality". Though it deals with different aspects of one and the same development, they necessarily are presented one after the other and the reader is left with the task of integrating them. Judging by the vast majority of what has been written about Piaget, his approach to cognitive development, and particularly his theory of knowledge, it seems that very few readers were able to accomplish the required integration. (In fact, one gets the impression that few read much beyond the first chapter.)

I felt it necessary to say this because I believe my conclusions are similar to Piaget's, though I have come to them on a different path and am not particularly

concerned whether or not the model I present is applicable to children's development. If it should be – and I tend to think that it is – it merely confirms my belief to have come up with a viable interpretation of Piaget's theory.

VII

The question that remains, then, is this: If an experiencing subject can come to conceive of repetition, what else must he or she do to conceive of "objects" or, if we want to use the traditional term, of "things-in-themselves"?

In order to maintain that the thing I am picking up now is the self-same individual item I had in my hand yesterday, even if it has not been continuously present in my experiential field, I have to do a good deal more than decide that there is no relevant difference between today's item and yesterday's. What is needed is precisely a conceptual construction that can substitute for the actual experience of an item's continuous presence. Such a construction is complex, indeed, because it must satisfy several requirements.

In order to conceive of the continuity of an item that is not being experienced continuously, the knowing subject must, first of all, have a means to recognize the experiential items when they turn up again. This, of course, is the mechanism of repetition. The recurrence of comparisons that yield the judgement "This is an item I have experienced before", will lead to the abstraction of whatever it is that is used to recognize the item in its repeated occurrences. Depending on what other tasks such an instrument of recognition is supposed to perform, it is variously called a "template", a "concept", or a "definition". The point that matters in the present context is that any such instrument of recognition, once it is assembled, may serve also as "re-presentation".

I insist on the hyphen, because without it the word has been persistently used by more and less naive realists who want to make us believe that representations are mental images of things that lie outside. In my way of speaking, instead, re-presentation simply means "presenting again", on an imaginary level, something that is not available as immediate experience.

Re-presentations play an important part in perception because they enable the perceiver to "recognize" items when only part of their necessary components is actually being perceived at the moment. Re-presentations make it possible to complete experiences so that they can be considered a repetition of a prior one, and they make it possible to conjure up, for instance, a visual experience when the visual field is blank. But – and I want to emphasize this – they can consist of nothing but experiential material which, in one form or another, they produce as a re-play. Thus, there is no basis for the assumption that re-presentations arise as internal images of an outside world; instead, it seems quite plausible that they constitute the material which the cognizing subject externalizes in the construction of reality.

Only when one has abstracted a more or less permanent re-presentation of an item from repeated experiential situations, can one possibly conceive of that item as being in any sense independent of the flow of one's immediate experience. Such independence, however, is precisely what must be specifically attributed to the item if one wants to think of it as continuous irrespective of its being experienced.

The attribution of that independence brings with it the need for further conceptual expansion. The continuity of the item implies that it must be at least potentially accessible even when it is not in the subject's experiential field. That is to say, there must be a place where it can await being experienced. This place, by definition, lies outside the range of present experience and constitutes what I have called "proto-space" because it has yet no metric and is no more, but also no less, than a space where externalized items can hibernate while they are not being experienced.

By using metaphorical expressions such as "await" and "hibernate", I have in a somewhat surreptitious way introduced the conception of time. This is, indeed, inevitable. It is, however, again a "proto-time" because, like the primitive conception of space, it has no metric and serves to provide no more than the mere continuity of items while they are not themselves involved in the flow of immediate experience. It does no more than spin a thread from appearance to appearance, outside and beyond the succession of items and events that the subject registers with deliberate awareness. It is like a second lane, in which hypothetical continuities can be maintained, out of sight, as it were, while the subject's attention dwells on the flow of immediate experience. These hypothetical threads bridge the experiential gaps in which the items they connect are not actually experienced. As such, they do not constitute time – they are merely threads of individual identity. But they become an indispensable component of the conception of time when, as threads of continuity, they are mapped onto the succession of actual experiences registered between the occurrences of the individual item they connect. Then they are suddenly seen as running along or through that succession of experiences, lending it both continuity and extension.

VIII

In this model, the conception or, as Bentham would have said, the fiction of individual identity is the key element in the conceptual construction of the basic notions of space and time. Both arise as corollaries of the shift that takes place when the relation of sameness is transposed from the realm of the subject's experience to the fictitious realm of independent reality. Whereas experiential items can, indeed, be compared to one another by the reflecting subject who can then judge them to be the same or different, items posited beyond the experiential interface are not accessible to any such operation and must, therefore, remain incomparable in the original sense of that word. If, in spite of their inaccessibility, one attributes to them a more or less permanent individual identity, one necessarily has to create a space "where" they can reside and a time "during" which they conserve their identity "while" other things occupy the experiencing subject's attention.

IX

Incidentally, this model also throws an interesting light on the concept of change and, consequently, on the concept of causation. To say that the flowers on my desk "have faded", I must believe that the dry, drooping things I now see are the identical individuals that I saw bright and dewy a few days ago. If I suspected a substitution, I

could not rightly think of fading, nor would I have grounds to look for some agent that might have caused the change that did not take place.

In fact, the construction of the concept of change requires a judgement of "different" with regard to the two experiential items that are considered to be one and the same in the sense of individual identity. On the other hand, it is precisely the concept of change that makes possible the attribution of individual identity to experiential items that are found to be different. Indeed, that attribution has sometimes nothing whatever to do with sameness in the sense of equivalence and may be based solely on whatever is taken as evidence of continuity.

A person whose identity is questioned because the years of absence have made him unrecognizable to his family, will, as a last resort, recount memories of events experienced in their company. More often than not, this will do the trick, because the possession of specific memories is accepted as unquestionable proof of individual continuity. (It does not matter how he looks or sounds today – if he remembers how we climbed the wall and stole the strawberries from the garden next door, he must be my brother!) It may come as a shock to realize that this "proof" is valid only because we do not believe in telepathy. If we considered possible the transmission of thoughts, memory could no longer serve as evidence of identity.

x

One question that remains is surely this: Why should we be so eager to invest experiential items with individual identity? There may be several answers, but the one that seems the most satisfactory to me stems from the suggestion made by William James when he spoke of subjects "straightening out" their experience. This straightening out means making order, attempting to systematize. Whatever form that effort takes, it must be based on repetition, on the abstraction of regularities, and therefore on the assumption that experience will always allow us to maintain something constant. And what could be a more powerful way of keeping an "object" constant than simply to assume that, when we are not experiencing it, it must remain the individual it was when we did experience it. When people first did this, they were probably unaware of creating the world of "being" which would for ever supply philosophers with the unsolvable problems of ontology.

References

1 Joannes Caramuel, *Meditatio prooemialis*. In A.Parea, P.Soriano, & P.Terzi (Eds.), *L'aritmetica binaria e le altre aritmetiche di Giovanni Caramuel*, Vescovo di Vigevano. Vigevano: Academia Tiberina, 1977. Originally published, 1670. (p.13; my translation)

2 Giambattista Vico, *De antiquissima Italorum sapientia.* Naples: Stamperia de' Classici, 1858. Originally published, 1710.

3 George Berkeley, *Commonplace Book* (1706-1708). London: Faber & Faber, 1930.

4 C.K. Ogden, *Bentham's Theory of Fictions.* Paterson, New Jersey:1959. (p.29)

5 William James, *Pragmatism*. New York: Meridian Books, 1955. Originally published, 1907. (p.119)

6 Glasersfeld, E.von, Notes on the concept of change, *Cahiers de la Fondation Archives Jean Piaget, No.13,* 1993, (91-96). Geneva: Fondation Archives Jean Piaget.

7 Jean Piaget, *La construction du réel chez l'enfant.* Neuchâtel: Delachaux et Niestlé, 1937.
