

### §II.D.3. Object Hypotheses and Hypothetical Instantiation.

As we mentioned in §II.D.1, two perceptual theorists who have particularly stressed the active nature of perception are Richard Gregory {1} and James Gibson {2}. However, two figures more opposed in their views would be difficult to discover. Indeed, Gregory has repeatedly attacked Gibson for holding an unreasonably **passive** view of perception {3}, and, implicitly at least, Gibson makes the same charge against Gregory and his ilk {4\*}. The paradox is perhaps resolved when we realize that Gregory and Gibson understand "perceptual action" in very different ways - or rather, they lay the stress on quite different aspects of action. For Gregory it is primarily a matter of mental processes, while for Gibson it is primarily a matter of bodily movement. In fact, surely, both these aspects are essential to our idea of action. Mere reflexive movements - knee jerks and the like - are not really actions, but, by the same token, still and silent cogitation is also far from a paradigm case of activity. Activity normally implies movement.

The central theme of Gregory's perceptual theorizing has for many years been to draw a very close analogy between the processes of perception and the positing and testing of scientific hypotheses {5\*}. Thus he

tells us that

the senses do not give us a picture of the world directly; rather they provide evidence for the checking of hypotheses about what lies before us. Indeed, we may say that the perception of an object is an hypothesis, suggested and tested by the sensory data. {6}.

Perceptual activity is thus, for Gregory, the positing of such hypotheses (sometimes referred to as "object hypotheses", hypotheses about the nature of the objects before us) and the testing of them against the sensory data which are coming in {7}.

To the best of my knowledge, Gregory has never put forward a theory of mental imagery. However, it seems fairly clear what sort of imagery theory would go with his theory of perception. To imagine something would be to entertain a perceptual hypothesis which is not directly derived from, and which is not tested against, the sensory input. If the hypotheses in question are conceived of as 'propositional' descriptions, sets of 'mental sentences', then it does not seem as if such an account of imagery differs significantly from the 'descriptonal' theories which we discussed in the previous chapter. Gregory's insistence on the close analogy between his "object hypotheses" and scientific hypotheses in the usual sense {8}, and his generally very positive views as to the relevance of AI research to psychology {9}, would seem to support such a reading. However, it seems that he does not wish to commit himself to such a view {10}, and if we allow that 'perceptual hypotheses' can be non-sentential

representations then we will find that a theory of imagery in this mould has in fact been proposed - by Sarbin and his student Juhasz {11}. This work is of particular interest because, to the best of my knowledge, Sarbin and Juhasz are the only imagery theorists who acknowledge a debt to Ryle's {12} work {13\*} and who are aware and mindful of the roots of our concept of imagination in the Aristotelian notions of **phantasia** and **sensus communis** {14\*}. This theory would also seem to be what led Morris & Hampson to dub 'perceptual activity' theories of imagery in general as "rôle playing" theories, since Sarbin {15\*} explicitly describes imaging as "muted rôle taking" (i.e. playing the rôle of a perceiver).

In common with practically all psychological theories of imagery, the "rôle taking" theory of Sarbin & Juhasz is developed in the context of a theory of perception, and in this case the relevant theory of perception is that which was proposed by Sarbin, Taft & Bailey {16}. This theory has in fact had a negligible impact upon cognitive psychology (it was developed in the context of a consideration of certain methodological problems in **clinical** psychology), but, as it is formally very similar to Gregory's more mainstream proposals, the theory of imagery which derives from it remains worthy of consideration. Instead of speaking of "object hypotheses", Sarbin, Taft & Bailey prefer to speak of "modules", which they conceive of as regions in a multi-dimensional space, each of whose dimensions represents some property which a

stimulus object may possess in greater or lesser degree {17}. Of course, this cannot be considered as anything more than a metaphor (there are no spaces with more than three dimensions inside our heads, or anywhere else). The notion of "module" denotes some sort of description just as much as "perceptual hypothesis" does, but "module" is at least overtly metaphoric, whereas 'propositional' descriptions are generally taken to imply the literal existence of inner sentences. But like all such descriptions, "modules" will denote types rather than particulars, and thus the theory takes it that each module represents a particular class of thing. Perception thus involves an act of "instantiation" by which perceptual input is matched to one of the modules, so that the perceived object is recognized as being of a particular type {18}. The theory of imagery which derives from this treats imaging as an act of "hypothetical instantiation", of perceptually classifying a non-existent object or event:

In the case of the image the occurrence being instantiated is a hypothetical one. It is neither a purely cognitive activity in which only concepts or "modules" are utilized, nor a purely classificatory one in which actual perceptual inputs are dealt with, but rather a proper enough instantiation of hypothetical occurrences. {19}.

In the spirit of Ryle, this act of "hypothetical instantiation" is assimilated to rôle playing behaviour in general. The imager is taking the rôle of someone seeing (or otherwise perceiving) the object or scene being imagined. This conceptualization led Juhasz to the notion that people's skill in rôle playing generally might be

expected to be correlated with their ability to utilize imagery, and he set out to test this hypothesis experimentally {20}. He devised a test of "imagining ability" which was not restricted to the visual modality and did not depend on introspection, and he looked for correlations between scores on this test and the subjects' abilities in imitating somebody's movements and vocalizations, and in play acting certain suggested rôles (e.g. an old lady who has just heard of her son's death, a middle aged man who has caught his daughter smoking marijuana, etc.) {21\*}. The "imagining" test involved 13 tasks which included such things as : smelling (or tasting) two substances and then judging which of 5 subsequently presented smells (or tastes) was a combination of the initial two; a similar task involving listening to complex musical sounds; judging whether the speed of a model train was altered during the time it passed through a tunnel; a block visualization, 'painting' and 'slicing' task (similar to that used by Baylor {22}); and feeling the shape of an "abstract-shaped" tile whilst blindfolded, and then picking it out visually from amongst similar tiles {23}.

Juhasz reports that the data from this experiment show a direct positive correlation between the subjects' scores on the "imagining" test and the fidelity of their attempts at imitating another's movements and vocalizations {24}. There was no direct correlation between the test scores and the ratings given to the subjects' attempts at rôle playing, but upon further statistical analysis

(multiple regression analysis) it appeared that the rôle playing score accounted for far more of the variance in the test scores than did any of the other variables examined (besides the rôle playing and the imitating there were six such variables assessed: an introspective test of imagery vividness; a vocabulary test; sex; college grade point average; field of major subject of study; and a test of assessing the appropriateness of metaphors used in poems {25\*}). The subjects used in the experiment were all undergraduates at U.C. Berkeley, and Juhasz classified them into several groups according to their major subject of study. They were categorized into: hard sciences and engineering; life sciences; social and behavioural sciences; humanities; and arts. In the event there was little sign that "imagining ability" as measured by the test varied significantly between these areas of specialization. However, when Juhasz subsequently administered his test to some students at the San Francisco Art Institute, markedly better scores were obtained than with the 'academic' students at Berkeley. These Art students' scores also seemed to be significantly correlated with the 'creativity' (as assessed by their tutors) which each of them displayed in their studio courses {26}. This provides at least some *prima facie* reason for thinking that what the Juhasz test measures bears some relation to our 'folk' notions of imaginativeness.

Although the experimental results reported by Juhasz seem to lend some much needed experimental report to

the sort of theory of imagery which I want to recommend, I must confess that I have some reservations about resting too much upon them. For one thing, the "imagining" test seems to be a rather arbitrary hotchpotch of items, thrown together in a somewhat *ad hoc* manner. Although I must applaud the consideration given in its devising to the conceptual connections between imagination and the Aristotelian *sensus communis*, it is not at all clear how much connection there is between many of the items included in the test and imagery in the sense in which we have been concerned with it in the remainder of the present work. Furthermore, psychological measurement of individual differences is a field fraught with methodological pitfalls, and tests to measure such differences can only really demand to be taken seriously after they have been refined and successfully applied in a number of different studies (preferably by a number of different researchers). Juhasz has made a start at refining his test (adding one item and dropping six others {27}), but it must be extremely awkward to set up, and, so far as I am aware, no further work has been done with it, even by Juhasz himself. I am also rather dubious about the crucial relationship found between the test scores and the assessments of rôle playing ability. While such impromptu acting performances may well call on the subjects' imaginative resources, I should have thought that many other factors (e.g. shyness, theatrical experience, extroversion, current mood) would have large, and very likely overwhelming, influence on the performances. Perhaps this is why the relation only

appeared at all after statistical 'massaging' of the data. I have described Juhasz's experiment because it is virtually unique in directly addressing a version of the 'perceptual activity' theory of imagery, but although the results essentially suit my book I would not like to have to place too much reliance on them. It is a great pity that more work along similar lines has not been done.

But quite apart from reservations about the experiment, I think there are still problems with the 'rôle playing' theory as Sarbin & Juhasz present it. Positing a hypothesis (or activating a "module") may perhaps be properly regarded as an action, but it is a single, unitary, one-off action which, presumably, is done quite quickly. When theorists like Gregory or Sarbin speak of perception as an activity {28}, the term seems appropriate because they see perception not only as involving the **positing** of a hypothesis (module), but also checking and rechecking it against the sensory data, and revising or perhaps even rejecting it {29}. But none of this latter activity seems to be relevant to the case of imagery, where there is nothing to check against. Images can, nevertheless, surely be 'held' for some time, and if they are to be identified with activity of perceptual mechanisms such activity must surely be continuing whilst the image remains in our consciousness. Identifying imaging with a unitary mental act of "instantiation" does not seem to allow for this. It may seem that this difficulty is easily overcome - the act of instantiation or hypothesis selection

might be identified with **forming** an image, whilst **having** an image would be identified with **entertaining** a hypothesis or having a "module" in some way '**activated**'. However, to make this move in fact amounts to an abandonment of 'perceptual activity' theory altogether, and a return to some form of **descriptive** theory. After all, any account given by **descriptive** theorists must involve some initial act of selection or activation, usually conceptualized as bringing the relevant description from the long term memory (LTM) into the short term, conscious, memory store (STM). 'Having' or experiencing the image, however, is just a matter of having the description in STM. This is hardly an action, and it is only the choice of metaphor which distinguishes it from the notions of entertaining a perceptual hypothesis or having a "module" activated. To escape the problems of descriptive theories we need a richer concept of perceptual activity, which goes beyond the bare mental act of instantiation.

#### **§II.D.4. James Gibson's Account of Perception.**

Perhaps a more useful notion of perceptual activity can be arrived at if we consider the theoretical approach of the late J.J. Gibson (1\*), which, as we suggested at the beginning of the previous section, embodies a conception of activity which can be seen as complementary to that found in the work of Gregory. It is also particularly appropriate