Abstract  This chapter is Grace Andrus de Laguna’s discussion of Margaret Floy Washburn’s *The Animal Mind*.

The second edition of Professor Washburn’s text-book in animal psychology indulges as little as the first in controversy over matters of general theory. Indeed the chief purpose for which the book was written (as the author stated in the Introduction to the first edition) was to bring together, and make available for the ordinary student, the simple facts whose discovery is the result of experimental method in comparative psychology. And it is the rapid accumulation of such facts discovered since the first appearance of *The Animal Mind* in 1908, that has led the author to prepare a second edition, a task which involved the rewriting of more than half of the earlier volume. Of the growth of theoretical controversy which has accompanied this rapid advance in comparative psychology during this decade, little intimation appears in the text. Textbooks are not, of course, the place to discuss such subjects. Yet the reader who peruses the pages of *The Animal Mind* with the issues of current controversy in the back of his head may well find food for philosophical reflection. For the interesting facts of animal behavior which the author sets before us in so orderly and clear a manner are not, after all, presented merely as interesting facts. They are selected and ordered that they may serve as evidence from which the animal mind—or minds—may be deduced. As the author herself remarks in the Introduction, the book might properly be entitled *The Animal Mind as Deduced from Experimental Evidence*. It

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J. Katzav et al. (eds.), *Knowledge, Mind and Reality: An Introduction by Early Twentieth-Century American Women Philosophers*, Women in the History of Philosophy and Sciences 18, [https://doi.org/10.1007/978-3-031-24437-7_19](https://doi.org/10.1007/978-3-031-24437-7_19)
is the conception of the object of psychology, implied in this title and explicitly laid
down in the opening chapters, which gives pause to the theoretically-minded reader.

The conception is a familiar one. The only mind which the psychologist, or any
individual, can know is his own mind; and this he knows directly and immediately.
The only way in which the psychologist can learn to know the mind of another
conscious being is to ask himself how he would feel and think in the other’s place.
Just in so far as he is able to answer this question, can he gain any insight into the
other’s mind. It evidently follows that each of us can know the conscious processes
of others only in so far as they are like our own. In so far as they differ from our
own they must remain a sealed book to us. Furthermore, the feelings and thoughts
of others to be understood must not only be like our own; they must also express
themselves in similar words or acts. It is a fundamental postulate of all psychology,
human and animal, that like behavior is evidence of like conscious processes. There
are thus great difficulties lying in the path of the comparative psychologist. He may
perhaps hope to reconstruct imaginatively the feelings of the questing dog or the
racing horse; but to put himself in the place of the buzzing wasp or the wriggling
worm is beyond his powers. Nevertheless, precarious and devious as the path of the
comparative psychologist must be, it is the only way open, and some progress is
possible, and has, indeed, already been made.

Thus, according to this conception, two distinct but equally important tasks
confront the investigator of the animal mind: first, the discovery and description
of the facts of animal behavior; second, the psychological interpretation of those
facts. In order successfully to accomplish the first, training is necessary to distin-
guish the simple facts from the interpretation of them—what is actually seen from
what is merely inferred. But since what can be observed is only external behavior,
i.e., physical movements, the peculiar task of the psychologist, as distinct from the
biologist, remains to be performed: the inference as to what conscious processes, if
any, accompany these acts.

The frank and clear-cut statement of this familiar position which is given in the
opening chapters raises squarely a number of fundamental problems. What is the aim
of psychological science? Is the goal of the psychologist the imaginative reconstruc-
tion of the experience of the conscious being he is studying? Surely not, since the
pursuit of science is essentially a social enterprise, and the body of facts and theories
constituting a science is a common object. Psychology, in so far as it is a science,
we should all agree, consists in the description of the facts concerning minds, and
the statement of the systematic interconnection of these facts.

What Professor Washburn and others of her school evidently mean to claim is
that it is only in so far as we can imagine the sensations and feelings of another that
we are prepared to give a psychological account of them, or understand the account
given by any one else. Now this claim, while it is so plausible that to question it may
seem mere perversity, I find great difficulty in admitting. For one thing, it carries
with it the acceptance of a whole body of logical doctrine to which there are grave
objections. This is too large a subject to enter upon here. Viewed more directly and
empirically, the claim raises equally serious doubts. The old objection, that, if our
knowledge of the sensations and emotions of animals depended on the possibility
of translating them into terms of our sensations and emotions, no psychology of the
lower animals would be possible, seems to me unanswerable. That after so staggering
a presentation of the difficulties of comparative psychology as our author gives us in
the first chapter she can yet believe in the fruitfulness of the enterprise, is an arresting
observation. One is compelled to ask whether the enterprise be, after all, the sort of
intellectual adventure it is pictured as being.

Let us examine it a little more closely. When I see my dog running along the
walk with his nose to the ground, and I know one of the children went that way to
school a half-hour ago, I describe his experience as an attentive discrimination of the
odor of the child with a feeling tone of pleasurable excitement. This is a description
which has an intelligible and fairly definite meaning to any one of us. And yet no
one of us ever had such a total experience nor even, perhaps, experienced a single
one of the essential elements entering into it. The individual human being has for us
no distinctive odor when he is clean, whereas we know that for the dog each person
of his acquaintance has an unmistakable odor, and that the characteristic odor of his
master is highly agreeable in a peculiar way. To me, as I suppose to most of us, the
idea of a distinctive odor attaching to a person is unpleasant. Even if this were not
so, I could not imagine an odor having the peculiar emotional coloring which the
odor of his master has for the dog—which leads him, for example, to find solace and
contentment in lying on an old glove or other article of clothing. It is true I have had
various experiences of pleasurable excitement attaching to odors. The smoke of a
locomotive always had a peculiarly delightful exciting quality; but it does not seem
to me that my understanding of the experience of the dog who follows the child so
eagerly is brought about by calling up this pleasurable excitement and translating
the dog’s experience in terms of that. It even seems to me very improbable that the
description of the dog’s experience would be unintelligible to me even though some
accident had deprived me in youth of all sense of smell. Is Helen Keller debarred from
entering into an intelligent discussion as to whether the white rat has color-vision,
because she can not imagine red and blue? That her blindness would entail serious
disadvantages to her psychological study of vision is undoubtedly true; but that it
would make the psychology of vision unintelligible to her is not credible.

The crucial question is: What do such psychological terms as red and anger and
unpleasantness and space-perception mean? Does each denote a “this,” an incommu-
nicable bit of private experience, which each one of us identifies to himself by
calling it up in imagination? If so, how can we manage to be mutually comprehen-
sible? Perhaps our author would answer that while I do denote such a “this” by red
or anger, I may enable you to identify a similar “this” by describing it in terms of the
external relations it bears to stimulus on the one hand and response on the other, just
as a description may be used to indicate the denotation of any proper name. What red
or anger denotes is a bit of private feeling, and it is this that the psychologist studies.
To this contention the reply is that such a merely private and incommunicable some-
what can not become the object of scientific investigation. And if this reply seem a
piece of a priori dogmatism, we may point to the empirical facts themselves.

The psychological uniformities holding of sensation-qualities of color, such as the
laws of color-contrast, relation of brightness and saturation, etc., are all formulations
of uniformities of discriminative responses to objectively standardized conditions.

Does the psychologist wish to determine the complementary of a certain shade of red? He selects a piece of colored paper of a standard make and grade, gives it a determinate illumination, places a normal observer in a standard relation to it, etc., etc. In short, what he is studying is no “this;” it is the standard paper in a certain complex set of relations to the observer. The importance and the significance of the introduction of experimental method in psychology lies precisely in the fact that it provides a means for the determination of psychological phenomena. The phenomena thus investigated become in effect functions of the factors constituting the standardized conditions of the experiment. It must not be suggested, however, that this means the identification of psychological research with either physical or biological science. The psychological standardization of the conditions of experiment is almost never equivalent to a physical or mechanical standardization of them. What may constitute a wide variation in conditions mechanically considered, may well fall within the limits of psychological constancy for the particular experiment in hand. Nor is this determined by an unchecked introspection that a given variation does not “look” or “feel” different, but by further experiments which act as mutual checks. In short, one of the most important tasks of the psychologist is the determination of what constitutes the standardization in typical cases.

What has just been said refers primarily, of course, to the investigation of sensation-qualities, which is one of the fields where experiment has proved most fruitful. But it is not less true that other psychological terms such as those mentioned above—anger, unpleasantness, space-perception—denote phenomena which can be determined only by the relations which they bear to stimulus and response. What the psychologist actually means by anger, for example, is an emotional attitude which manifests itself in a certain characteristic mode, or rather modes, of behavior. It is often asserted that anger is first known as a peculiar inner state by each individual, which is later ejectively attributed to others as a result of inference from behavior. Now as a genetic account of the empirical origin of our idea of anger, this seems to me to be on a par with the explanation of simple spatial ideas as due to inferences made in early childhood from differences in sense-data. The child surely perceives his nurse’s anger as immediately as he does her position between the chair and the table—nay, even more directly, since he instinctively responds to her loud threatening tones and her scowling face, while he must learn by experience what modifications of response the position between chair and table call for. But neither the perception of anger nor that of position is the result of inference, but of something much simpler and more direct. Later on, when anger is discriminated by name, it is as likely to denote the attitude Daddy will have if one is naughty, as one’s own feelings when one throws a toy across the room or slaps sister.

2 For example, an illumination may be psychologically constant, even though there be mechanically measurable variation. But a mechanical variation which is too slight to be directly discriminated may nevertheless count as a psychological variation. If it should be found that such a change in degree of illumination was followed by a constant variation in the results of observations of minimal changes in grays, or that the rate of eye fatigue varied with the change in illumination, such change would be classed as truly psychological.
It is an experience which all of us must sometime have had, to be suddenly accused of being angry in the midst of eager discussion. After the first tendency toward indignant denial, we may, perhaps, recognize the justice of the accusation. Now on what is such recognition based? Is it not largely because we catch the echo of our own raised voice, or become aware of our menacing attitude toward our companion? Sometimes, indeed, we may be frankly doubtful whether we were angry or not, if there be no manifest evidences of it. It is, of course, very difficult to make a reliable introspection; one is inevitably prejudiced. But it seems clear to me that what we mean by “being angry” is not the enjoyment of a subjectively identifiable mental process. No psychologist, I venture to assert, ever discriminated such a process and mentally labelled it “anger” for purposes of scientific reference and comparison. Suppose he had done so, and tried to classify later experiences as “anger” or “not-anger” by comparison with this. He would find himself in serious perplexity, first, because it is very difficult to recall a past emotional state for purposes of comparison; and second, because he would probably find himself using the term in an arbitrary way, and making statements which could not be verified by others. As a matter of fact “being angry” seems to cover a somewhat indefinite range of feeling. Cold, still anger is a somewhat different feeling from hot, passionate anger; nor does it seem probable that a psychologist continues to classify them as varieties of a common species because of any identical element in the two experiences. What psychology has done, indeed, just as what every science must do, is to take over classifications and distinctions from common sense and gradually to reconstruct and systematize them. In the case of the emotions, psychology has as yet made but slight progress. Anger and fear as used by psychologists are practically common-sense terms. They can be made scientific, i.e., be given that definiteness of denotation and connotation which science demands, only as they are formulated as determinate functions of behavior.

If the foregoing contention is just as regards emotion, it is more evidently so as regards such a phenomenon as space-perception. Space-perception, unlike red or anger, is no particular conscious experience. Rather it designates a class under which practically all our sensory experiences fall. It can not be said of space-perception, as it is said of a sensation-quality or an emotion, that it is something we first become acquainted with in our own experience and then attribute to others. In one sense of that much-abused term “acquaintance” I am indeed acquainted with space-perception, since my experience includes or involves it; but this sort of acquaintance does not take me very far toward my goal of scientific identification and description. Just what are the specific differentiae of space-perception? The attempts to answer this question constitute a long chapter in psychological controversy. Professor Washburn judiciously speaks of it as “involving the simultaneous awareness of a number of sensations consciously referred to different points in space.” But what is a conscious reference to different points in space? It must include the experience of the two-year-old child who persistently tries to put the largest block of his nest of blocks into the smallest, and the experience of the skillful dressmaker, who after a brief inspection of an illustration of a complicated garment cuts a pattern for it offhand. “Conscious reference,” or “localization,” would seem to stand in need of further analysis before it
can be made the basis of definite and hence fruitful inquiry regarding the experience of
the sea-urchin or the stickleback. That a scientific study of different levels or types of
space-perception and of their relationship to each other can be made without constant
dependence on standardization in terms of stimulus and response does not seem
possible. Space-perception is not an inner mental state whose relations to behavior
are merely external. On the contrary, psychology is forced to treat the relationship
to response as constitutive and determinative of the phenomena it studies.

At this point it seems well worth while to raise the following question: How
different in actual procedure and in results is a study of animal mind and behavior
carried out from the standpoint of such a dualism as our author's, from a similar
study made by a behaviorist?

The bulk of The Animal Mind is taken up with an investigation of the number and
kind of sensory elements which enter into animal consciousness at different levels.
There is first a chapter on sensory discrimination in general, dealing with the problem
as to what constitutes evidence for the presence of distinct sensory qualities. This is
followed by chapters on the special senses: the chemical sense (including taste and
smell), hearing, and vision. Later chapters deal with space-perception, modification
of conscious processes by experience, and lastly attention. In the chapter on the
criteria of sensory discrimination, the author argues that the fact that an animal
responds in some way to a given stimulus, e.g., sound waves, is not evidence that
the animal consciously discriminates such a stimulus as qualitatively distinct. “It is
not,” she writes (p. 57) “the number of stimuli to which an animal reacts that can be
taken as evidence of the qualitative variety of its sensations, but the number of stimuli
to which it gives different reactions.” Even this, however, we are told, is probably
too simple a statement of the case. A given type of stimulus, e.g., sound waves,
may be perceived as qualitatively distinct even though it brings out no specific direct
reaction. If it brings out distinctive modification of other reactions we give it a place
among the sensation-qualities of the animal’s experience.

Now while the language used is different, and while the problems set for inves-
tigation are differently formulated, the difference between the treatment given in
this and the succeeding chapters, and a frankly behavioristic treatment is far less
radical than one might suppose. To ask: “Does the white rat have color-sensations,
and if so which ones?” is not practically different from asking: “Does the white rat
specifically discriminate chromatic wave-length?” And the case is similar throughout
the whole range of sensory discrimination. The actual concrete problems which the
dualistic psychologist is interested in investigating are essentially the same problems
which the behaviorist is led to study. What the dualist does in effect is to add on an
interpretation which can be only characterized justly as “metaphysical.” By this I
mean that just in so far as the dualist claims to infer from the facts of behavior the
existence of an inner order of being, related in an inscrutable manner to those facts,
he is stepping outside the bounds of scientifically verifiable hypothesis and entering
upon purely metaphysical speculation in the bad sense of the term. To the actual
empirical investigation of animal psychology such an attempted interpretation adds
no significance.
The “epiphenomenal” character of such interpretation comes out clearly in the
treatment of various topics. Indeed the treatment of the criteria of the presence of
consciousness itself is a case in point. In the early chapter on the *Evidence of Mind* the
author argues that none of the proposed tests for the inference of mind from structure
or behavior is conclusive. Her conclusion is that no evidence exists for either denying
or affirming the presence of consciousness in animals below the very highest, and that
“for all we know it may exist in simple forms until we reach the very lowest of living
beings” (p. 37). Such a position is, it seems, inevitable so long as one conceives
consciousness as a superadded thing related to behavior in a purely external way.

For the presence or absence of such a metaphysical entity there can be no evidence.
But, on the other hand, the hypothesis that such an entity is or is not present can
make no difference in the scientific treatment of the concrete phenomena of animal
psychology. Thus when the question is asked whether an animal discriminates the
visual qualities “red” and “blue,” the actual answer of the dualistic psychologist
is no whit different from that of the behaviorist. “No evidence of discrimination
between two stimuli on an animal’s part,” writes Professor Washburn (p. 53), “can
do more than show us that for the animal they are different; just what the quality of
the sensation resulting from each may be, whether it is identical with any sensation
quality entering into our own experience, we can not say. The light rays which to
us are red and blue may for an animal’s consciousness also differ from each other,
and yet if our experience could be exchanged for the animal’s, we might find in
the latter nothing like red or blue as we know them.” The same might of course be
said of the sensory discrimination of a fellow man, even though he were a trained
introspectionist. To assert: “A experiences the sensation qualities red and blue,” and
“A has the capacity for discriminatory response to the corresponding wave-lengths,”
are not descriptions of two different facts, but merely different descriptions of one
and the same fact. The belief of the dualist that there is really a difference between
the two facts is a belief which, by Professor Washburn’s own admission, could only
be justified by an appeal to a supernatural insight. For the supposition that “if our
experience could be exchanged for the animal’s we might find in the latter nothing
like red or blue as we know them,” is essentially an appeal to a sort of knowledge
which only a God might enjoy, or perhaps a mortal blessed with a magic power.

One might, if it were worth while, take up one after another the particular prob-
lems of sensory discrimination discussed by our author and show that the so-called
psychological interpretation of the facts of behavior is either a pure piece of meta-
physical speculation, or else merely such a classification of them as a behaviorist
might make. The positive scientific conclusions reached in each case differ only
in mode of formulation. Let one more instance suffice—the case of what is called
by the dualist the “sense of hearing” in frogs and by the behaviorist the “auditory
response” of frogs. The case has been of interest to investigators because frogs under
experimental conditions have not given evidence of hearing, i. e., specific response to
noises. Frogs do, however, possess specialized auditory apparatus and in their native
habitat appear to respond to the croaking of their fellows. Observation by Yerkes\(^3\) revealed the apparent fact that they depend almost wholly upon visual stimuli for avoidance of danger. Upon experiment it was found that while no direct specific response was given to auditory stimuli, such stimulation had a specific indirect effect in modifying reaction to other stimuli, which was particularly marked during the mating season, and which ceased when the auditory nerve was cut. On this evidence the dualist decides that probably the frog does possess a sense of hearing or have “true auditory sensations,” while the behaviorist is content to ascribe merely a capacity for “limited auditory response.” But unless the dualist distinguishes his conclusion as one verifiable only by supernatural insight, he must be content to equate it with that of the behaviorist.

And yet in spite of what seems to me the fatal weakness of the dualist’s position, his protest against the claims of *mechanistic* behaviorism must be granted a large justification. As against the claims of a Bethe or a Loeb, the dualism of Professor Washburn is indeed inevitable. And such a formulation as theirs of the behaviorist position is apparently the only alternative to dualism considered by our author. The behavior of animals, in her view as in the view of the mechanists, is adequately describable as a series of physico-chemical processes, so that if psychological science can not legitimately infer inner psychical states as the accompaniment of these processes, it must confine itself to the observation and measurement of these purely physical phenomena themselves.

Accordingly we find our author writing: “If a physiologist perfected an instrument by which he could observe the nervous process in my cortex that occurs when I am conscious of the sensation red, he would see nothing red about it; if he could watch the bodily movements that result from this stimulation, say, for instance, the slight contraction of the articulatory muscles that occurs when I say “red” to myself, he would not see them as red. The red is in my consciousness, and no devices for observing and registering my movements will ever observe the red, though they may *easily lead to the inference that it exists in my consciousness*. And precisely the same is true of all my sensations, thoughts, and feelings” (pp. 23–24; italics mine).

If certain behaviorists had not actually laid themselves open to the charge of identifying red with a form of nervous discharge, it would be incredible that such a doctrine should be deemed worthy of serious criticism. Need it be pointed out that not even mechanics confines itself to existents that can be observed? As well might a metaphysical physicist declare that since no observation of physical changes yielded a glimpse of energy, he must either deny its existence outright or else assign it to a transcendental realm. The behaviorist surely can claim the same theoretical advantages enjoyed by scientists in other fields. It is open to him to assert of the subject’s red—as the physical chemist asserts of the electrical charge of the ion—that it is a function of directly observable phenomena; in this case, of discriminative responses to a set of standardized conditions. What the red may be “in itself” or for a supernatural insight with which he may imagine himself to be endowed, the psychologist

has no more concern than the physicist. That such a theoretical formulation accords
with the actual empirical procedure of psychology has already been argued.

What stands in the way of such a formulation is the status of introspection as a
psychological method. The mechanistic behaviorist would either ignore it or consign
it to the scrap-heap without further consideration; while for the dualist it is enshrined
as the indispensable and sacred method of the true faith. But as a matter of fact the
one rejects it and the other clings to it for the same reason. It is because both alike
regard it as a sort of observation wholly different from the observation of objective
phenomena engaged in by the behaviorist, an immediate vision of an inner world
hidden from all but one. The mechanistic behaviorist is led by this preconception to
deny the value of the empirical fruits of introspection; the dualist, made confident
by the attested value of the empirical fruits, entrenches himself the more obstinately
in his theoretical conceptions.

But we may ask: May not behaviorism find a place for much of the empirical
procedure which is labelled introspection; and may not one be convinced of the
fruitfulness of introspective investigation without becoming a dualist? That is for me
the critical question of psychological methodology.