Chapter 5
Intentionality

Abstract This chapter, following Franz Brentano, defines intentionality as the essential feature of the psychological, and, following Immanuel Kant, an a priori temporal–spatial format. It is argued, against Kant, that the format can be placed in the extra-mental world by making it a corollary to the second law of thermodynamics. Living beings can only exist under this law if they are regularly sustained by an outside source of energy, food in the case of animals, and it is argued that the self-initiated locomotion toward this food brings the format of intentionality into existence. It is further shown how locomotion through the interspace between organism and goal passes through four distinct phases, each of which has been the focus of a major field of psychology.

Anchoring Intentionality in the World

For Franz Brentano, psychology began with intentionality.[1] For William James too; in the American's seminal *Principles of Psychology* he wrote "The pursuance of future ends and the choice of means for their attainment are thus the mark and criterion of the presence of mentality in a phenomenon."[2] But if intentionality marks the crux of psychology, it involves a mystery too, only this one can be solved with present means.

Leontiev introduces distance perception at this stage in animal evolution; that is, Locke's primary qualities. This is not wrong; but lest the nerve of Berkeley, the analytical solemnity of Hume, and the intellectual courage of Kant be in vain, neither is it possible without a priori immanent objectivity. That is, the framework of time, space, and objects must be in place on beforehand and cannot be induced by the senses on their own.

Leontiev wavers. On the one hand, he agrees "that the concept of its object is already implicitly contained in the very concept of activity," and "the expression

[1]See Engelsted (1989).
[2]James (1890, p. 8).

N. Engelsted, *Catching Up With Aristotle*,
SpringerBriefs in Theoretical Advances in Psychology,
DOI 10.1007/978-3-319-51088-0_5

'objectless activity' is devoid of any meaning."[3] On the other, he remains loyal to Sechenov, and everybody else since Galileo, and insists that reactivity must precede activity: "All activity has a circular structure: initial afferentiation → effector processes regulating contacts with objective environment → corrections and enrichment by means of reverse connections of the original afferent image."[4] Or in plain English, activity is the active exploration of the source of stimulation, which initiated the event. But while this stimulus-induced activity is a step up from the mere orienting reflex, it is still a response to stimulation and does not solve the philosophers' problem.

The solution requires two steps: First, to accept as valid Kant's Copernican reversal of *mind-in-the-world* (A) into the opposite *world-in-the-mind* (non-A); and then, to reverse the reversal and bring the a priori world-in-the-mind back into the physical world (non-non-A), but with the immanent objectivity intact.

The A → non-A → non-non-A sequence is called the *negation of the negation*. Already an old idea among Jewish scholars—*omnis determinatio est negatio*, Baruch Spinoza famously said[5]—it was developed by Fichte as a reaction to Kant, and exploited to the hilt by Hegel as the principal dialectical vehicle by which new knowledge was gained and consciousness born through contradictions.[6]

Immanent objectivity in the natural world outside the mind certainly seems like a contradiction. Is it at all possible? It is, in fact, it could be called a corollary to a law of physics even more fundamental than the mechanics of Galileo. Namely, *the second law of thermodynamics*, which states that energy must disperse in the universe, and order become disorder (*entropy*), and that local pockets of order can persist over any length of time only if they are fed energy from outside the pocket.

The organism is such a pocket of complex order and entirely dependent on an outside energy source for its continued existence. It follows therefore (Fig. 5.1) that *the smallest natural unit of life*—the living being—is an organism *and its energy source;* and, consequently, that *the smallest natural unit of animal life* is an animal *and its food*. They belong together as an inseparable set, the primordial subject and object, and make immanent objectivity defining of the living being, and food the original Aristotelian telos; or, as the Greek says himself, nutrition is "the first and most common capacity of soul, in virtue of which life belongs to all living things."[7]

In other words, to understand life, your unit must have two centers, the subject *and the object*. You could call this the Keplerian turn on Kant's Copernican revolution. Like Copernicus' heliocentric model was correct, but still not right until

[3]Leontiev (1978, p. 52).

[4]Ibid., p. 53.

[5]Every determination is negation. Spinoza's letter of June 2, 1674 to his friend Jarig Jelles.

[6]In Chap. 11 we shall use the double negation to explain the arrival of the human consciousness, but here an everyday example should provide the gist of how negation and contradiction can serve as development. When your unmarried stand (A) is negated, you become married (non-A), but if your married stand is negated, you do not simply become unmarried again (A), you become divorced (non-non-A), which is something entirely different. Even when negated, the intermediate stage stays, as divorced people will happily tell you.

[7]Aristotle, *De Anima* ii, 4, 415a24–25.

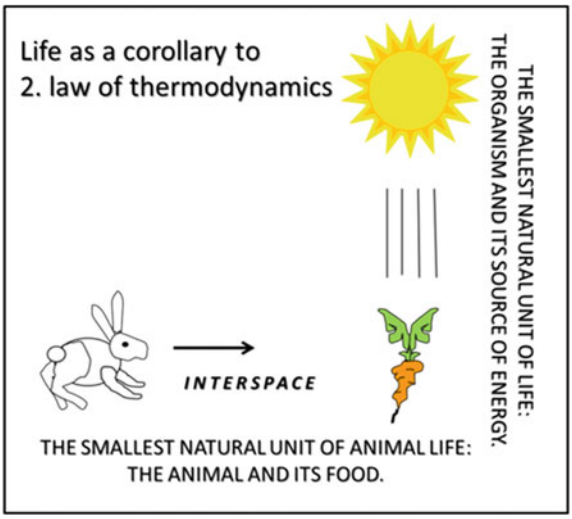

Fig. 5.1 Life as a corollary to second law of thermodynamics

Kepler added another center to make the Earth's orbit elliptical, Kant's immanent objectivity notion is correct, but still not right until a real object is added as the second center to confront the subject.

Two Defining Paradigms: Dash and Slash

While animal and food are inherently (or bio-logically) inseparable, in real life, they become separated all the time. Now you have the pudding, and now it is gone. It is here *locomotion*, the second defining feature of the animal being, enters the equation. All animals are able to move spontaneously, i.e., under their own power and volition, and this enables them to re-connect with food, when contact has been lost.

Locomotion requires an investment of energy, as does the sprouting of light-capturing leaves in plants. Life can therefore be defined as *the investment of energy to gain more energy*, which again can be invested and so forth.[8] As the subject *by virtue of the whole setup* is directed toward the object (S → O), locomotion is activity and intentionality, and with the object out of sensuous contact, it is a priori and immanent objectivity. As the subject and object find themselves separated, the immanent objectivity must take on the dimensions of locomotion, that is, the traversing of spatial distance and temporal duration, in other words, the time and space dimensions in Kant's a priori matrix of intuition. *Sentience* brought *the present moment* or *Now* into being; *intentionality* brings *the future* into being.

[8]If you write the sequence as *E-Activity-E'*, a Marxist will recognize the structural similarly with the *M-C-M'* of capitalist production. It is no accident. Capitalism is the life algorithm taking on a life of its own like the broom in the story of the Wizard's Apprentice.

This gives intentionality the double meaning of immanent objectivity and future direction, and the Aristotelian activities their so-called teleological character.

"Not to explain but to accept the psychological phenomena - that is what is so difficult," said Ludwig Wittgenstein, and though not a favorite of mine, he is right here.[9] But if you for a moment can suspend the imparted mind-set of empirical RT psychology and accept the explanation, the pieces of the puzzle fall into place. You will even get a better understanding of RT psychology and its important place in the scheme of general psychology.

The solution leaves us with two setups, *dash-psychology* (S–O), where a dash connects subject to object, and *slash-psychology* (S/O), where a slash keeps them apart. In the first, the subject and object are connected *and separated* by an *interspace*, in the latter by an *interface*. The interface connection is causal and physical and based on *local motion*; the interspace connection is intentional and non-physical, and based on *locomotion*, as explained above.

As the vital connection to food defines the first interspace, and the organism–food link constitutes the basic element of the ecology, the connection can be called *ecological.* The interface connection can then be called *environmental* as it concerns the forces impinging on the surface of the organism. The distinction between ecology and environment is important and useful, though often confused.[10] *Ecology* is what sustains us. *Environment* is what surrounds us. It is not the same.

While RT psychology ($s \rightarrow r$) and interface psychology (S/O) are obviously the same, AT (S → O) must be founded in interspace psychology (S—O) and intentionality. Only this AT foundation must not serve to expel RT from the class; rather it must caringly instruct the bully in his proper place and thus secure the general peace, Bühler's general psychology.

The Interspace Passage

You cannot have AT without RT, only RT must be subordinate to AT rather than the opposite as presently taught. This follows from the passage through interspace, which has four clearly distinguishable stages as shown in Fig. 5.2.

In the first stage (*Search*), with the object out of touch and out of view, and the subject setting out into the blue, the object takes the form of a pure *existence* claim: "There is food to be found out there in time and space." Obviously *uncertainty* reigns, but the animal must take the existential plunge (S → O).

[9]Wittgenstein (1980, #509).

[10]James Gibson's ecological psychology, for instance, is basically an environmental psychology, where the term ecology is mainly reserved for the title, while the term environment is used throughout the text.

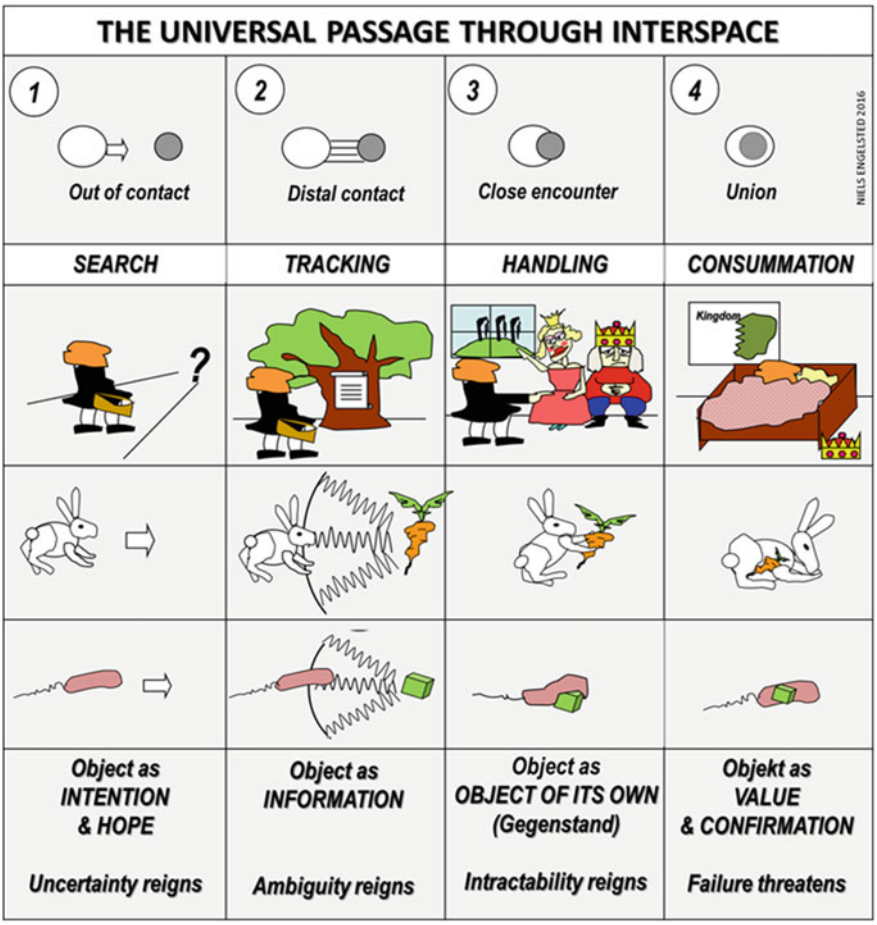

Fig. 5.2 The universal passage through interspace

Thus, as inherent in the activity itself, the concepts of hope and belief are brought into the world.[11]

With any luck, locomotion brings the animal into contact with distant traces emanating from the object, be they chemical, electro-magnetic, or mechanical, and it enters the second stage (*Tracking*). Here the object takes the form of *information.* Gregory Bateson sometimes defined information as the answer you get to a question. This definition is appropriate here with locomotion serving as the question that

[11]E.C. Tolman in his Purposive Behaviorism convincingly argues that the basic psychological concepts are grounded in patterns of behavior before they become mental and not the other way around.

frames the input much like Kant's a priori bottle did. Fed into the programs of the stimulus-response apparatus ($s \rightarrow r$), the information, if correctly read—*ambiguity* reigns—will steer the animal toward the object.

When this taxis, as it is called, eventually brings the animal in direct tangible contact with the object, it enters the third stage (*Handling*). Here the object takes the form of a numerical identical *thing* with the ability to stand up against the subject (*Gegenstand*) and offer resistance.

If the resistance is overcome—*intractability* reigns—the animal enters the final stage (*Consummation*), where the object takes the form of *confirmation* and *value*, and while every successful stage transition is reinforcing in itself, it is here the whole sequence receives its final validation, satisfaction, and disappointment equally possible.

Observe how major fields of psychology have each taken their own piece of this pie: Existential psychology, the searching first; cognitive psychology, the informing second; behaviorism, the handling third; and humanistic psychology, the self-congratulating fourth. Existential and humanistic psychology are, of course, traditionally reserved for humans able to talk with themselves, but *the logic* of the hopeful (and risky) plunge, and its subsequent validation, resides in the activity itself prior to any conscious reflection and is shared throughout the animal kingdom.

If we call this logic spanning the beginning and end of the epic interspace passage for the *psycho-logic*, the two intermediate steps in the basket, tracking and handling, could be called the *psycho-logistics,* as they deal with the ways and means of accomplishing the already given project. The majority of psychology has been about psycho-logistics. As long as you do not lose sight of the psycho-logic, this is reasonable. While the beginning and end from the first animal life have remained the unchanged premises, it is the logistics stages that have developed and undergone change, often tremendous, worked upon by natural selection in evolution, and thereafter by human culture, design, and engineering. Nature—and today human ingenuity—has been on the constant look out for more efficient algorithms to connect the premises, you might say, and quite appropriately, as the logistic stages are where RT rules and algorithms are applicable.

Modern psychology began with Fechner's equation, and German cognitive psychology thereafter ruled for a long time until overtaken by American behaviorism. Cognitive psychology is straight RT; behaviorism can be, as for instance Watson's chain-reflex behaviorism ($s \rightarrow r$) based on Pavlov's classical conditioning. But often behaviorism integrates AT also, as, for instance, in William McDougall's early—"*the healthy animal is up and doing*"— behaviorism, and in Tolman's purposive behaviorism. In B.F. Skinner's operant conditioning behaviorism, the latest arrival, the scheme is, in fact, demonstrably the same as the one argued here, as the *operant* is the animal's spontaneous activity *prior to* its meeting with the stimulus that will steer its behavior toward the goal. Or, put one–two–three simple: (1) AT, the operant; (2) RT, the stimulus; and (3) AT&RT, the handling response.

Skinner's operant behaviorism triumphed for a while, but then he also became guilty of the grievous fault of overgeneralizing and when trying to explain language was easily slain by the cognitivist Noam Chomsky. Hereafter—and with the explosive development in computer science probably inescapable—American cognitive psychology, and thus RT, has ruled supreme.

Psychology was never in more dire straits. Like Galilean science, cognitive psychology has been a great success, and you cannot argue against it within its own bounds, neither would you want to. However, staying within these bounds, cognitive psychology is blind to the psycho-logic, and as RT—like in a variation of Gresham's Law—drives out AT, psychology is soon reduced to brain-science and cybernetics. Tellingly, the enterprise has been rebranded as *cognitive science*; psychology proper has been turned out and a different science has taken its place. This, of course, explains why partisans from humanistic and existential psychology have kept sniping at cognitive science.

Soldiers of cognitive science have returned fire with a vengeance and they have a big gun: mathematics. As we do here, the tender minded humanists employ ordinary descriptive language in their argumentation, which their tough-minded opponents think is entirely inadequate and wishy washy; terms like 'philosophy' are even used. What they demand is the rigor of mathematics, without which, as Galileo said above, it "is humanly impossible to understand a single word," and "one is wandering about in a dark labyrinth."

Most humanists buckle under this attack; but it is not really true that the existential realities are beyond mathematical description; only it requires an existential mathematics and not only the traditional rule-bound one. One such is found in the fundamental *axiom of choice*, which has caused the mathematicians some anxiety. "It is not altogether uncontroversial that the axiom of choice should be accepted as something that is universally valid… The trouble with this axiom is that it is a pure 'existence' assertion, without any hint of a rule," Roger Penrose writes.[12] Exactly!

Existence and rule is the same fundamental distinction as we have here made between interspace AT and interface RT. The intimate correspondence between mathematical description and the physical order, which never fails to amaze, has its counterpart in a similar correspondence with the psychological order!

To discover and unfold the axiom of choice as the mathematical gateway to a true psychology is a feat comparable to Fechner's, when he discovered the gate between the physical and the psychical, and should have a similar impact on the future of psychology. The discovery and its unfolding in a rigorous mathematical topology was made and first presented by the Danish psychologist Jens Mammen in 1983.[13]

[12]Penrose (2004, p. 366).

[13]See Mammen (1983, 2016).

References

Engelsted, N. (1989). What is the psyche and how did it get into the world. In: N. Engelsted, L. Hem, & J. Mammen (Eds.), *Essays in general psychology. Seven Danish contributions* (pp. 13–48). Århus: Aarhus University Press. http://engelsted.net/almenbiblio/biblioengelsted/whatispsyche.pdf

James, W. (1890). *Principles of psychology*. New York: Holt.

Leontiev, A. N. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, NJ: Prentice-Hall, Inc. https://www.marxists.org/archive/leontev/works/1978/

Mammen, J. (1983). *The human sense. An essay on the domain of psychology* [In Danish]. Copenhagen: Dansk psykologisk Forlag. http://engelsted.net/almenbiblio/bibliomammen/DMSheletext.pdf

Mammen, J. (2016). Using a topological model in psychology: Developing sense and choice categories. *Integrative Psychological and Behavioral Science, 50*, 2.

Penrose, R. (2004). *The road to reality, 2004*. New York, USA: Alfred A. Knopf.

Wittgenstein, L. (1980). *Remarks on the philosophy of psychology*. Chicago: University of Chicago Press.