

## Conclusion

The dichotomy of apparent and real, as well as the dichotomy of internal and external dichotomy internal and external have dominated philosophical discussion ever since they were invented. Both dichotomies provided solutions to problems that were considered important in the past. The original motivation for these dichotomies has more or less disappeared, but there is more to it. The invention of both dichotomies is based on a firm confidence on the ontological power of mere thought, namely the capacity to create or annihilate real existence.

The Platonic doctrine of ideas saved the ideal of timeless unchanging truths, but the ideas are simply thought into real existence. They are, by definition, beyond the scope of empirical experience. So the only way to gain knowledge about them is to think about them. Mere thought gives knowledge about entities by its own creation. This line of thought was enforced when René Descartes defined consciousness as everything we are conscious about. He was unaware about the subconscious layers of mind, and the contents of consciousness were supposed to be accessible by mere thought, by introspection. This was a methodological basis for philosophers like John Locke to write extensive studies about the functioning of human understanding. And the ones who assume that meanings, concepts, logical propositions and the like can have objective existence independently of how the material world is and of how we experience it continue along similar lines.

However, the argumentation of Descartes is also based on the confidence on the ontological power of mere thought. The independent existence of consciousness was concluded from the observation that one can doubt the existence of one's body while one cannot doubt the existence of the doubt, the *cogito*. But nothing important follows from this difference. Mere doubt cannot really annihilate the body. The doubt can still be the doubt of an embodied mind, as it in fact is. In order to really find out whether *cogito* can exist independently of the body Descartes should have taken some concrete measures in order to destroy the body but this he did not do, as is quite understandable. What's the hurry? Everyone's body will cease to exist some day, and after that point there is all the time in the universe to consider whether *cogito* exists or not. There is not much evidence that it does.

The classical conception of the structure of experience as sense perception and the object of knowledge as the hidden causes of perceptions is based on these considerations that are not tenable if one admits that we are one animal species in nature and that all the vehicles of cognition have developed during natural and cultural evolution to embodied creatures who live in nature, who think, perceive and act in the midst of various interactions in nature.

We are not spectators of nature from the outside, and the spectator theory of knowledge is in need of revision. An organism living in nature needs to know what to do in order to achieve its goals. Accordingly, the actions of the knowing subject must be included in the structure of experience. Experience consists of action and perception, with or without external instruments. Hidden causes of perception are not of much help in controlling behavior in the world. Hidden causes of perception as the ultimate object of knowledge must be replaced by the anticipated consequences of action, which entails that the knowing subject belongs to the object of knowledge and changes the world while acting in it.

The key notion in this analysis is that of habit of action. Habits are schematically structured forms of action that are formed when similar behavior is repeated in similar circumstances. During habit formation the structure of action is accommodated to objective conditions of action, and when formed they are beliefs about those conditions of action. The world is experienced as possibilities of action, and habits as beliefs are vehicles of thinking about those possibilities of action. Thinking with habits is anticipation of action. This is in accordance with the object of knowledge as redefined. Habits are also meanings. Any perceived object may be a meaningful sign-vehicle if some habits are involved. Habitual action enables one to anticipate the consequences of action related to the observed sign-vehicle, which thus becomes to mean those consequences. This definition of meaning holds for non-linguistic tacit meanings as well as for linguistic expressions, which gain meaning when they are used in the context of other practices. Linguistic meanings are formed on the basis of tacit meanings, and the notable feature of tacit meanings is non-conventionality. Objective conditions of action and the physical features of bodily beings restrict the possible habits involved and, thus, meanings that can be associated with them.

Habits are not internal to the body or properties of the body. They are rather forms or modes of interaction. To take them as beliefs and meanings is a way to criticize the dichotomy of external and internal, which supports the conception that beliefs and meanings (ideas, mental contents) are literally internal, within the mind or the brain as opposed to the so-called external world. The rejection of this dichotomy leads to a crucial change concerning the unit of analysis. The correct unit is not the brain or even the body but the organism environment interaction, which consists of perception and action. The problem of what is the relation between mental and physical is thereby also changed radically. There is no need to ask how meanings, mental contents, intentionality and the like are related to neural processes. The answers to this kind of questions are notoriously hard to find. These problems are solved by dissolving them. The right question is what is the relation of meanings, beliefs and intentionality to the physical causal processes

through which the mental loop of perception and action is realized. The notion of habit of action, as a teleological notion enabling anticipation of the consequences of action, gives the answers.

There are internal processes (internal to the body, that is) namely sensations of bodily needs for air, water, food, injuries of the body and so on. There are internal anticipatory mechanisms in the brain created during habit formation, but there is no need to treat these mechanisms as representations. Two-place relations between these processes and things in the world are not enough for these processes to function as representations. But even these internal processes alone are not enough. The world as an object of action and perception is also involved. Cognition proceeds with the mediation of external meaningful entities.

The loop of perception and action as a unit of analysis gives the possibility to take environmental and historical factors into account in explaining behavior. Actually they are necessary elements in habit formation. Some proponents of hard naturalism exclude them because of the insistence that the causative properties of behavior are intrinsic and internal. But this is due to wrong unit of analysis. It is not a conceptual truth that neural processes are the only possible processes for the physical basis on mentality. There are no such things as literally internal intentionality, mental contents or representations. Behavior is an outcome of a complex system of ongoing interactions, a layered system of habits and dispositions, subconscious reactions to environmental cues and long-term conscious planning of activity on the ground of the anticipation of the consequences of behavior.

The inability to see the correct unit of analysis creates futile problems also in explaining normativity in naturalism. Evolution has no goals, neural processes as such are not normative. However, individual organisms and groups of them do have goals. It is a hardwired goal of living organisms to live their life until it eventually ends, and this biotechnical normativity gives an objective basis for a naturalistic value theory. And evolution would not proceed without this one goal of living beings.

The rejection of the two dichotomies of classical philosophy leads also to a re-evaluation of the problems concerning truth and the debate between realism and antirealism. If mind is defined as a property of organism environment interaction, then the notion of mind-independence is changed accordingly. The mind-independent world becomes to refer to those elements of the universe that are not within the scope interaction with the present arsenal of various instruments. There is no reason to deny the existence of such elements, but they are not and cannot be objects of knowledge, as this notion is also redefined.

The difference between observables and the theoretical objects of science is based on the difference between bodily organs and the experimental devices used in science. These instruments determine a physical viewpoint that cannot be avoided and must be distinguished from various conceptual viewpoints based on concepts and theories. They also involve instrumental phenomenology or the instrumental constitution of the world as experienced. The properties of the instruments have an effect on the world as experience by using them. The outcome of inquiry depends on both sides of this interaction mediated by instruments.

Theoretical concepts gain meaning when they are used in the context of scientific practices and refer to theoretical objects as instrumentally accessed under instrumental constitution. This is epistemic access in the sense that it depends on the properties of the instruments. However, this is not a sign of antirealism because both parties of the interaction are equally real and objective elements in nature. The instrumentally constituted theoretical objects are precisely the objects that experimental science deals with.

Realism is often connected to the classical theory of truth as correspondence. Epistemic theories of truth are considered to belong to the arsenal antirealism. The distinction between the physical and the conceptual viewpoint changes the picture. Propositions expressed in language are true about instrumentally constituted objects, observables or unobservable theoretical objects, and these objects are within our epistemic relation to the world. So truth about them is epistemic. But T-schema ("p" is true only if p) can be used in both cases. And there is an explanation of the fit between propositions and the world. It is operational. To know is to know what to do also in the operations of scientific inquiry.

## Bibliography

- Chemero, A. (2009). *Radical embodied cognitive science*. Cambridge: MIT Press.
- Hume, D. (2001). Dialogues concerning natural religion. In J. Fiezer (ed.), South Bend, IN, Infomotions, Inc., 2001. ProQuest ebrary. Web. November 26 2014.
- Kant, I. (KdV) (1956). Kritik der reinen Vernunft, Werkausgabe III-IV. In W. Weishedel (ed.), Frankfurt am Main: Suhrkamp.
- Lorenz, K. (1973). *Die Rückseite des Spiegels: Versuch einer Naturgeschichte menschlichen Erkennens*. München: R. Piper.
- Peirce, C. (CP) (1932–1958). Collected papers 1–8. In C. Hartshorne, P. Weiss & A. W. Burks (eds.), Cambridge: Harvard University Press.

# Index

## A

Achilles, v, vi, 9  
Action, v, viii, ix, 3–5, 12, 17, 20–24, 29–31, 33–38, 45, 53, 54, 58, 60, 88  
Actual, 32, 33  
Anticipation, vii–ix, 8, 13, 22, 24, 30, 32–35, 37, 43, 57, 58, 60, 62, 64, 69, 70, 72–74, 88, 89  
Antirealism, 77, 80, 81, 86, 89, 90  
Apparent and real, v, vi, 9, 17, 86  
A priori, vi, 3–6, 20, 24, 70  
Aprioristic fallacy, 70  
Aristotelian, 70  
Aristotle, 7, 8, 70  
Azzouni, Jody, 78, 79

## B

Baird, Davis, 79  
Belief, vii, 17, 23, 29, 31–35, 48, 57, 59, 63, 72, 85, 88  
Bennett, Maxwell, 2, 9, 47, 53, 56–59, 63, 72  
Biotechnical normativity, ix, 71, 74, 89  
Blakemore, Sarah-Jayne, 35  
Bottom-up analysis, viii, ix, 38, 69, 73  
Brain, vi–viii, 2, 3, 11, 12, 20, 33, 42, 47, 54, 55, 63  
Berkeley, George, 17  
Brentano, Franz, 19, 33, 59  
Brincker, Maria, 35  
Brothers, Leslie, 47

## C

Cahoone, Lawrence, 3  
Causal closure, 1  
Chemero, Anthony, 54

Choudhury, Suparna, 35  
Churchill, Winston, 81  
Clark, Andy, 35, 53  
Cognition, vii, 4, 7, 8, 12, 29, 31, 32, 34, 35, 37, 42, 53, 54, 57, 59, 61, 72, 89  
Cognitive distance, vii, 41, 43  
Concept, vi, viii, 3–6, 10, 13, 19, 20, 32, 37, 38, 49, 50, 55, 81, 83, 87  
Conceptual and physical point of view, 74  
Conceptual and physical viewpoint, ix, 10, 20, 70, 71, 77, 79, 83, 86, 89, 90  
Conceptual constitution, 79  
Consciousness, vi, viii, 9, 10, 18–20, 34, 59–62, 64  
Correspondence, 81, 85, 86  
Crypto-Cartesianism, 53, 56, 61  
Culture, vi, 4, 5, 12, 24, 43, 44, 49, 62, 70, 71, 74

## D

Damasio, Antonio, 72  
Darwin, Charles, 12  
Dennett, Daniel, 59  
Descartes, René, v–vii, 7, 9, 17–20, 29, 33, 37, 42, 47, 53, 54, 56, 59, 87  
Dewey, John, v, vi, 1–4, 6, 8, 9, 12, 21, 23–25, 41, 43–46, 49, 50, 57, 58, 64, 71–74, 80, 81, 83, 84  
Dichotomy of apparent and real, v, vi, 9, 10, 38, 82, 87  
Dichotomy of external and internal, v–vii, 9–11, 17, 19, 29, 37, 54, 59, 77, 87, 88  
Disposition, 30  
Distinction between had and known, 25, 26  
Donald, Merlin, 6, 44, 46–48, 55, 64  
Dynamical systems theory, 54

**E**

- Eddington, Arthur, 77  
 Eliasmith, Chris, 55, 56  
 Embodied epistemic truth, x, 84, 86  
 Emotion, 72–74  
 Empirical access, 10  
 Empiricism, 3, 13, 21, 22, 34, 58, 68  
 Enactivism, 53  
 Epistemic access, vi, vii, ix, x, 9, 14, 17, 23, 78, 80–84, 86, 90  
 Epistemic truth, ix, 81  
 Epistemology, vi, 2, 6, 18–20, 24  
 Evolution, 1, 6–8, 12, 20, 24, 35, 43, 44, 62, 73, 74, 85, 88, 89  
 Experience, v–ix, 3–6, 8, 10, 12–14, 17–19, 21, 23, 24, 31, 32, 34, 35, 37, 38, 43, 45, 46, 49, 58, 62, 68, 74, 79, 83, 88

**F**

- Fact, ix, 12, 13, 67–69  
 Folk-psychology, 2  
 Fox, Neil, 37  
 Franks, David, 29, 36–38, 43, 46, 47, 57, 58, 62, 64  
 Freud, Sigmund, 43

**G**

- Galilei, Galileo, 78  
 Garrod, Simon, 35  
 Generality, 14, 29, 31–34, 44, 56, 57, 61, 85

**H**

- Habit of action, vi–viii, 4, 22, 23, 29–37, 39, 42–46, 48, 50, 53, 54, 57–62, 64, 70, 72, 73, 85, 88  
 Hacker, Peter, 2, 9, 47, 53, 56–58, 63, 72  
 Heidegger, Martin, 46  
 Heisenberg, Werner, 84  
 Hildebrand, David, 42  
 Hobbes, Thomas, 19  
 Homunculus, 55, 56, 59  
 Hume, David, viii, ix, 3, 4, 10, 13, 18, 35, 36, 67–69, 72  
 Hume's guillotine, 67, 69  
 Hutto, Daniel, 53, 54

**I**

- Idea, vi, vii, 9, 18, 29, 33, 38, 49, 82, 85, 87, 88  
 Ihde, Don, 79  
 Induction, 31, 34  
 Information theory, 55, 56  
 Inhelder, Bärbel, 30  
 Instrumental access, 80–82  
 Instrumental phenomenology, ix, 14, 78, 79, 80, 82, 83, 85, 86, 89  
 Intentionality, viii, 3, 12, 19, 23, 33, 36, 37, 42, 45, 54, 59–61, 63, 88, 89  
 Intentional representation, 54  
 Interactionable, 80, 81, 84–86  
 Internal representation, vii, viii, 19, 23, 42, 47, 54–57, 64

**J**

- James, William, 3, 85  
 Johns, Brendan, 35  
 Jones, Michael, 35  
 Johnson, Mark, 18, 29, 31, 33, 44, 46, 64, 81  
 Juarrero, Alicia, 54

**K**

- Kant, Immanuel, ix, 5, 14, 18, 19, 31, 32, 37, 49, 55, 64, 79, 82  
 Kilpinen, Erkki, 29, 35, 73  
 Kim, Jaegwon, 61, 63  
 Knott, Alistair, 37  
 Knowledge, vi, vii, 2, 3, 5, 9–11, 14, 17, 23, 25, 26, 34, 38, 42, 79, 83  
 Knowles, Jonathan, 3, 53  
 Kohonen, Teuvo, 35, 36  
 Krueger, Joel, 3

**L**

- Lakoff, George, 8, 18, 29, 31, 33, 44, 46, 64, 81  
 Language, viii, 5, 34, 37, 38, 44–50, 63, 64, 74  
 Laws of thought, 7, 8  
 Linguistic meaning, viii, 44, 46, 49, 50, 64, 88  
 Locke, John, vi, 18, 55, 87  
 Logic of action, 31  
 Logical necessity, 8, 31  
 Lorenz, Konrad, 6

**M**

- Macdonald, Graham, 54  
 Manifest image, 77, 78  
 Matter of fact, viii  
 Meaning, vii, viii, 4, 5, 13, 19, 20, 22, 26, 29, 31–33, 35, 41–50, 55–57, 59, 60, 63, 70, 72–74, 78, 81, 82, 85, 87, 88  
 Menary, Richard, 53  
 Mental causation, 62  
 Mental causes, 61  
 Mental content, vii, 42, 45, 55, 88, 89  
 Mental loop of action and perception, viii, 3, 30, 57–64, 70, 73, 77, 81, 89  
 Mental state, 11, 14, 33, 54, 59  
 Mereological fallacy, 56  
 Method of analysis and synthesis, 18  
 Millikan, Ruth, 54  
 Mimetic culture, 46–48  
 Mind, vi, viii, ix, x, 2, 8–11, 14, 17–20, 24, 29, 33, 42, 46, 47, 49, 53, 56, 57, 59, 63, 70, 77, 81, 89  
 Mind-independence, ix, 77, 89  
 Motion, 72  
 Määttänen, Pentti, 2, 18, 30, 31, 35, 37, 38, 44–46, 55, 58, 71, 73  
 Myin, Erik, 53, 54

**N**

- Naturalism, vi, viii, 1–4, 6, 10–12, 30, 38, 58, 63, 67, 70, 71, 80, 89  
 Naturalistic fallacy, 70  
 Natural science, vi  
 Neuronal correlates of consciousness, 58  
 Newton, Isaac, 2  
 Niiniluoto, Ilkka, 81, 82, 84  
 Normativity, ix, 12, 13, 67, 69–74, 89  
 Noë, Alva, 22, 24, 53  
 Núñez, Rafael, 8

**O**

- Object of experience and knowledge, v–vii, ix, x, 9, 10, 12, 13, 17–20, 23–26, 34, 68, 69, 84, 85, 88, 89  
 Objective conditions of action, vii, viii, 21, 22, 25, 30, 31, 33, 36, 38, 43, 49, 50, 72, 73, 85, 88  
 Observable, 80, 85, 86  
 Ontological symmetry, vi, 11, 22, 80, 83

**P**

- Papineau, David, 42, 54  
 Peirce, Charles, v, vii, viii, 3, 4, 13, 14, 21–23, 25, 29–35, 38, 41, 42, 45–48, 56–58, 60, 79, 82, 85  
 Percept, 22, 30  
 Perception, v–viii, 3, 9, 12, 17–24, 53, 54, 58, 60, 69, 88  
 Permiss, Pamela, 37  
 Piaget, Jean, 30, 46  
 Pickering, Martin, 35  
 Plato, vi, 4, 9, 18, 38, 49, 82, 87  
 Point of view, ix  
 Polanyi, Michael, 42  
 Popp, Jerome, 12  
 Potential, 32, 61  
 Pragmatic maxim, v, 13, 14, 48  
 Pragmatist law of association, 35–38, 55, 58, 62, 64  
 Psillos, Stathis, 71, 79  
 Psychology, 2, 59  
 Putnam, Hilary, 19, 20, 68

**Q**

- Qualia, 56  
 Quine, W.V.O., 2, 3, 45, 62

**R**

- Rationality, 35  
 Real, v–vii, ix, 9, 23, 38, 77, 81, 82, 86  
 Realism, ix, 77, 78, 81, 86, 89, 90  
 Reason, 4  
 Reductionism, 2  
 Reflex arc, 57  
 Representation, vii, 56, 57, 64, 89  
 Rizzolatti, Giacomo, 36  
 Rockwell, Teed, 53  
 Rorty, Richard, 5, 9, 14, 18, 29, 30, 37, 42, 56, 57, 61  
 Rosenberg, Alexander, 12  
 Rosenthal, Sandra, 85, 86  
 Russell, Bertrand, 81  
 Ryder, John, 3

**S**

- Scientific image, 77, 78  
 Scientific realism, ix, 80, 81

Semantic theory of truth, 81, 82  
 Sensorimotor circuit, 57  
 Shook, John, 80  
 Sinigalia, Corrado, 36  
 Socrates, v, 8  
 Solymosi, Tibor, 3  
 Spinoza, Benedict, 19, 55  
 Syllogism, 7, 8

## T

Tacit (non-linguistic) meaning, vii, viii, 42–44,  
 46–50, 63, 64, 72, 73, 88  
 Tarski, Alfred, 81  
 Teleology, viii, 3, 30, 54, 60, 61, 67, 70, 89  
 Teleosemantics, 54  
 Theoretical concept, 78, 80, 90  
 Theoretical object, ix, x, 3, 26, 78, 80, 83, 84,  
 89, 90  
 Truth, ix, x, 4, 9, 10, 17, 38, 81, 87

## U

Uninteractionable, 80, 81, 84, 85  
 Unobservable, 78, 80

## V

Varela, Francisco, 53  
 Vigliocco, Gabriella, 37  
 Vinson, David, 37

## W

Wittgenstein, Ludwig, viii, 8, 44, 45, 57