



# Facts and Values After David Hume

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## Abstract

According to David Hume values do not belong to the world of facts and cannot be derived from facts. However, Hume’s argument is based on questionable presumptions. His conception of experience as sense perception is erroneous. On contemporary standards it is simply false because sense organs are not channels that passively receive inputs from the world. It is too narrow as it does not take the role of action into account. Further, Hume’s argument is based on the dichotomy between external and internal. Mind is strictly separated from the external world of facts. This entails that experiences, perceptions and ideas do not belong to the world of facts. Causality and values cannot be literally perceived. Therefore they are beyond the scope of empirical knowledge. Hume’s presumptions can be rejected. The consequence is that mind is embodied, and bodies belong to the world of facts. And so do embodied minds. Broadening the notion of experience brings causality and values within the scope of experience. They are experienced on a daily basis in various practices. Values related to vital needs are based on biological facts. More generally, the relation of facts and values can be analyzed if one rejects the hidden causes of perceptions as the object of knowledge. The alternative is the operational conception of knowledge. To know is to know what to do in order to proceed from a problematic situation to future circumstances where the problems are solved.

## 1 Introduction

David Hume is famous for his sharp distinction between facts and values. He asks us to consider a wilful murder and claims that in examining it one can find only certain passions, motives, volitions and thoughts, but the vice “entirely escapes you, as long as you consider the object” [11, 468]. That is, vice is not a fact that can be observed while examining the dead body. Thus values do not belong to the world of facts. On the next page Hume presents the principle that values cannot be inferred from facts: no *ought* from *is* or *is not*. If the premises do not contain any value statements, then

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one cannot add such statements to the conclusions. This is correct. There are no inference rules justifying this. However, Hume's argument can be questioned.

The weakness in Hume's position can be found by examining what Hume writes between these two parts of the argument. According to him vice and virtue may be compared to sounds, colours, heat and cold, "which, according to modern philosophy, are not qualities in objects, but perceptions in the mind" [11, 469]. The first thing to note is that this view of heat and cold barely fits with contemporary definition of heat as molecular movement. A more important point is that Hume here commits himself to a sharp dichotomy between external and internal. The world of facts is "out there" and experiences (perceptions) are in the mind, which is strictly separated from the external world. The dichotomy between facts and values is based on the dichotomy between external and internal. The latter dichotomy can be questioned with good reasons. Further, Hume's notion of experience as sense perception is erroneous in two ways. First, the general conception of sense organs at those days was that they just passively receive inputs from the world. On contemporary standards this is simply false. Sense perception is an active and constructive process and does not function in isolation from other mental capacities. Second, Hume ignores the fact that we are embodied beings that not only perceive the world but also engage actively in the course of events. The notion of experience as sense perception is too narrow. The role of action must be taken into account.

The aim of this paper is to make explicit the weaknesses of Hume's argument and to show that by broadening the notion of experience and by giving up the dichotomy between external and internal we can also give up the sharp dichotomy between facts and values. They do not belong to separate realms but are interwoven in many ways. There are values that can be based on facts.

## 2 Experience as Sense Perception

It has been a common view in philosophy that experience is sense perception. Sense organs function as channels through which the internal mind observes the external world. Visual perception has dominated the discussion after it was discovered that eyes function like *camera obscura*. The idea is that the retinal image continues to the brain and somehow changes into a mental image. This view was originally developed by Johannes Kepler, Leonardo da Vinci and René Descartes [20, 35–48]. Classical empiricism adopted this approach. "The senses at first let in *particular* ideas, and furnish the yet empty cabinet" [12, I, 48; emphasis in the original]. David Hume considered the possibility that perceptions are produced by external objects and came to this conclusion. "But here experience is, and must be entirely silent. The mind has never anything present to it but the perceptions, and cannot possibly reach any experience of their connection with objects" [11, 153]. The object of knowledge in this approach is the external world as the hidden cause of perceptions. The hidden causes as such cannot, of course, be perceived, and therefore the task of the experiencing subject is to find out what we can really know about these hidden causes. This epistemological problem has kept philosophers busy ever since. But is it really a good question?

What do we, according to Hume's notion of experience, actually perceive? Hume considered billiard balls. One ball hits another and seems to cause its movement. Balls are coloured and round. These perceptions may have hidden causes in the external world, we just cannot perceive them. But does causality have any perceived properties? Hume came to the conclusion that there are no such properties. Thus we cannot even ask whether there is something hidden in the external world connected with our idea of causal relations. We are only accustomed to think that there are causal relations between billiard balls. There is only repetition, constant conjunction. The argument concerning values is the same. No perceived qualities, no values in the world of facts. The main source of values is some sort of moral sentiment.

The main problem of Hume's conception of experience as sense perception is that on contemporary standards it is simply false. Sense perception is not passive reception of inputs from the external world. It is active and constructive process, full of interpretations and expectations. And it does not function in isolation. Most importantly, it is closely connected with overt bodily action, as becomes clear already from the title of Alva Noë's book *Action in Perception*. Contemporary findings concerning the mirroring systems of motor cortex show that we (unconsciously) imitate the movements of the persons we watch as the anticipatory motor mechanisms are activated. And more generally: "The environment becomes objectified only in relation to the animal's *motor* capacities" [7, 88; emphasis in the original]. "We actually do what we watch in the sensory motor cortex" [7, 89]. The orientation to the world is practical.

This holds also for language comprehension. Franks describes experiments in which "hearing or reading words associated with the movement of particular body parts such as lick, kick, or pick are simulated in those respective parts of the primary motor cortex that activate respective movement in the tongue, feet, or fingers [7, 92]. Thomas Fuchs gives more examples. Listening to the words grasp, go or shout activates the motor centres for the corresponding actions, and this holds also for the abstract use of the word grasp [8, 201n]. The meaning of words "always remains connected to the interactive and embodied experiences in which they have been acquired" [8, 201]. Hume's conception of experience is clearly outdated and needs to be revised.

### 3 The Notion of Experience in Pragmatism

In pragmatism the notion of experience is broader than that of sense perception. Action must be included in it. And the role of action is primary. The orientation to the world is practical. Overt action is a way to experience the world. The central concept here is habit of action. Habits, as Charles Peirce defined them, are vehicles for cognition, not just a blind routines or bad bodily habits [16, 17, 19].

Habits are formed when similar behaviour is repeated in similar circumstances. The structure of habitual activity is accommodated to objective conditions of action. The outcome is that the structure of habit fits with the structure of the conditions of action. This fit makes the habit a belief about these conditions of action. The structure of the habit is typically schematic because circumstances are seldom fixed

and stable. Ongoing perceptual input is required in order to make habitual activity flexible. If the circumstances are strictly fixed, then habits may become routines, but this is not the essence of the notion of habit as belief. There are physical conditions that Peirce called hard facts. They involve brute force, muscular effort and resistance. Most of us have the habit of using a door and not a window when exiting a room. The reasons for this are obvious. Then there are social conditions like cultural customs and traditions to which people tend to accommodate in order to get on with each other.

The most important feature of habit as belief is that it enables anticipation. When one encounters similar circumstances again, one can anticipate that the outcome of activity is similar to what was earlier experienced. This reference to future possible experiences makes it possible to make reasonable decisions about what to do. Situations are usually complex and open up many possibilities of action on the ground of the vast storage of earlier acquired habits. Complex situations require comparisons between the possibilities of action and the anticipated consequences with the present needs and goals. This is thinking with habits as beliefs.

Practical orientation means that habitual activity proceeds normally until something surprising happens. This creates a doubt about the correctness of the acquired system of beliefs (habits). There is obviously a need to change the earlier beliefs. This change is done by reflection, by trying to find out a hypothesis of what kind of circumstances would explain the surprising event. Peirce called this reflective operation abduction or retroduction, the reverse of deduction. One uses earlier habits as vehicles for cognition by trying to find new combinations of earlier habits or perhaps genuinely new ways of acting as an attempt to solve the problems created by the surprising event. This hopefully leads to successful activity in the new situation. Habits as blind routines would not do the job.

Thus we get this order of events: habitual activity, problem, reflection, new set of beliefs, and new kind of habitual activity. In earlier empiricism the order of events was different: perception, reflection, decision, and (possibly) overt action.

#### **4 The Dichotomy Between External and Internal**

The dichotomy between external and internal originates from the dualism of two substances presented by René Descartes. The dichotomy can be done in two ways. One is open Cartesian dualism of two substances: the material substance with three spatial dimensions and the immaterial substance of reason with only one dimension, time. The other one is called crypto-Cartesian dualism: What René Descartes said about the soul, is said about the brain [1, 111–114]. The brain thinks, wills, decides, and contains experiences, perceptions, thoughts, qualia, and so on. In both cases the essential feature of the dichotomy is that mental processes and contents are separated from the external world of facts.

Cartesian dualism created the epistemological problem of how an immaterial consciousness can acquire knowledge about the external material world, about the hidden causes of perception. Baruch Spinoza already pointed out to Cartesians that if the two substances, material and immaterial, have no common attributes, then

there cannot be any reasonable explication of their connection. It is fairly safe to say that Spinoza got it right. However, the tricky epistemological problem is still with us.

Crypto-Cartesians are committed to explain how mental states and processes can literally reside in the brain. According to David Chalmers a qualitative feel, a quale, really is internal [2]. A look at a red rose produces an internal quale of redness that is entirely subjective. But what are colours? In normal circumstances there is a source of light, a reflecting surface containing pigment that reflects some wavelengths of light and absorbs others, and eyes with retinal cells that also contain pigment. The pigment in the retinal cells functions in the same way as the pigment in the reflecting surface: some wavelengths are reflected away and some are absorbed. In the cells the electro-magnetic energy of photons is transformed into electro-chemical energy, neural impulses. These impulses are not coloured. The point is that the interplay of light, reflecting surface and retinal cells is a necessary condition of colour perception (not sufficient condition as other parts of the central nervous system participate in the process). This interplay, an aspect of organism environment interaction, just cannot be transferred literally in the brain. It is quite inconceivable how a red flash might emerge in the dark brain. By virtue of what would some neural activity in the brain qualify as a red quale? This remains an open question.

John Searle is, however, quite persistent. "These states, qualia, are entirely caused by brain processes. We are not quite sure what the causal mechanisms are, but neural firings at synapses seem to play an especially important functional role" [22, 99]. Unfortunately Searle has nothing constructive or illuminating to say about what these causal mechanisms might be. Of course, some day someone may find out, but instead of waiting for this we might consider an alternative. The dichotomy between external and internal can be rejected as a speculative metaphysical conjecture that has no solid empirical evidence to support it and only creates artificial problems, which are best solved by dissolving them, by showing that these questions are not worth asking. This can be done by presenting a credible alternative.

The dichotomy between external and internal is present also in the discussion about the core features of rational thought, namely the classical laws of thought: the principles of contradiction and excluded middle. Leila Haaparanta appeals to Edmund Husserl and claims philosophical naturalism, which holds that all knowledge is based on experience, is an impossible doctrine because it leads to contradictions and absurdities [10, 99]. According to Husserl naturalism does not acknowledge the ideal realm as "eternal, self-identical, timeless, spaceless, unmovable and unchangeable" [9, 156]. This is the realm of basic forms of thought, which cannot be naturalized. The basic logical concepts and laws "draw the limits of thinkability" [10, 37]. "We may assume that a first logic or the primary epistemic structures are present and they are presupposed in all knowing, but we are quiet about them, because every effort to say something about them would lead to absurdities" [10, 45].

However, the description of how the principles of contradiction and excluded middle were invented is not a bit absurd. Aristotle developed his doctrine of syllogisms as a method of analyzing the validity of a syllogism on the ground of the formal features alone. Aristotle rejected the Platonic dualism of empirical objects and

the ideas or forms of them. Objects can be perceived but forms can only be thought of. Aristotle dragged the Platonic forms down to earth as the essences of empirical objects. The objects can be classified unambiguously. The essence determines the class to which objects belong. Every object belongs to one and only one class by virtue of its essence. No consider the following syllogism:

Animals are mortal.  
 Horses are animals.  
 Ergo: Horses are mortal.

How do we discover the form of the syllogism? In a very simple way: by taking off the content, namely the talk about animals, horses and mortality. In the first sentence there is the class of animals, and in the second sentence there is its subclass, the class of horses. We can drop the talk about animals and horses if we maintain the formal feature, namely the fact the class mentioned in the second sentence is a subclass of the class mentioned in the first sentence. Further, we can drop the talk about mortality if a formal condition is fulfilled, namely the fact that the property under discussion is an essential property of the upper class. All the essential features of the upper class are essential features of all its subclasses. All syllogisms with these formal features are valid.

Now how about the above mentioned laws of thought? The law of the excluded middle says that everything is either A or not-A. Aristotle presumed that the objects in the world are exhaustively classified. Every object belongs to only one class. This law is a generalization of this presumed feature of the world. Any object under examination is either a horse or a cow or a zebra or a rose, and so on. Instead of a long list we can say simply horse or not-horse. The statement that this is a horse is either true or false. Similarly essential features either do or do not belong to an object. Claims about them are either true or false. Animals are not only partly mortal. The law of contradiction says that A is not not-A. That is, if the object under examination is a horse, then it cannot belong to any other class. Horse is not not-horse. Similarly statements about essential features cannot be true and false at the same time.

All this is based on what Aristotle presumed the world to be like. The formal structure of thinking with syllogism is derived from the structure of the world as it is divided to classes of objects on the ground of their essential features. The presumptions of Aristotle about the world are wrong, but it is not the point. This is anyway the origin of the laws of thought. Later on, with the favourable assistance of René Descartes, these laws were lifted up to the heaven as supernatural features of human mind beyond the scope of rational discussion. What part of this story is absurd?

The alternative provided by classical pragmatism is to admit that we are embodied beings living within nature. The focus should be on organism environment interaction, on the practical orientation to the world. To know is to know what to do. The object of knowledge does not consist of the hidden causes of perceptions. The proper object of knowledge is the relation between two situations, a problematic situation and a later situation where the problem is solved. In the problematic situation one has to identify the problem, find out what information is needed for solving

it, use any available method to get that information, and formulate a hypothesis of what to do, what operations might lead to a situation where the problem is solved. If this is successful, then we have knowledge that is valid enough (for time being, new problems tend to emerge). [17]. There obviously are hidden things in nature. The history of science shows that new phenomena are discovered every now and then, but there is no need to take them as objects of knowledge before there are some means (like experiments and measurements with various instruments and devices) to get them within our empirical access to the world.

## 5 Mind as an Aspect of Meaningful Coping with the World

The rejection of Cartesian metaphysics entails that mind is tied with the body, but in which way? Crypto-Cartesians maintain that the mind is a property of the brain, but this view preserves the dichotomy between external and internal. The next alternative is to consider the body as a whole. But what does this mean? What are the criteria on the ground of which mental predicates can be attributed to the body? One answer is that the basic criterion is behaviour, as Max Bennett and Peter Hacker emphasize. And behaviour is an objective and observable phenomenon in the world. By using this criterion they accuse crypto-Cartesians of a mereological fallacy. One cannot attribute to a part of the body (the brain) properties that can only be attributed to the whole person. Mental attributes cannot be attributed to the brain because brains do not behave. Persons behave. Another way of putting this is to say that the brain is the organ of thinking but it is not the brain that thinks. Human beings think with the brain. Just like the legs are the organs of running, but it is not the legs that run. Human beings run with the legs. A brain in a vat thinks exactly as successfully as a pair of legs cut off a body starts to run.

Bennett and Hacker are right, but the analysis is not yet complete. Bodies do not act in a vacuum. Therefore we must turn to organism environment interaction. We are not outsiders looking at nature from above. We live within nature, in the midst of various interactions. Instead of attributing mental predicates to behaving persons we may consider the possibility that mental predicates are attributed organism environment interaction, that mind is a property of this interaction. One way to put this is to say that the objects in the environment belong to the functional organization of mind [13, 105]. These objects function as sign-vehicles, carriers of meaning.

The key concept here is Peirce's definition of meanings as habits of action. According to Peirce, what a thing means is simply what habits it involves [21, CP 5.400]. Habits are formed when similar behaviour is repeated in similar circumstances. As already pointed out above, habits get the schematic structure of the objective conditions of action and are thus practical beliefs about these circumstances. But they are also meanings by virtue of the ability to anticipate. When a similar situation is encountered again, habits involved make it possible to anticipate what would be the outcome of acting in a similar way again. Perceived objects (individual objects or the situation as a whole) refer to the probable outcome in the future, to similar experiences as earlier. John Dewey's definition of meaning is, in effect, the same: "The action and its consequence must be joined in

perception. This relationship is what gives meaning; to grasp it is the objective of all intelligence” [5, 44].

Habit formation requires prevailing objective conditions of action. No activity is possible without environment. Therefore Peirce’s definition of meaning quite naturally forces us to focus on organism environment interaction. Further, thinking with the help of these external carriers of meaning explicates how the mind as an aspect of organism environment interaction actually works. Activity is not immediate reactivity to external stimuli; it is mediated by these sign-vehicles. Semiosis is realized through this interaction [19]. This is to say that mind is a property of this interaction, not a property of the brain or the body as a whole.

As to the topic of this paper, facts and values, the most important consequence of this account of thinking with meanings is the fact that the reference relation is not limited to objects and situations to be met later. That what matters most is the anticipated future experience. Activity is motivated by the reference to anticipated future experiences. Suppose a predator is hunting for a prey by using footprints, smells and sounds as sign-vehicles, which refer to the prey moving nearby. But the incentive, the motivating reference, is the possible satisfaction of hunger. This experience is not separated from the world of facts. There is only one world. We live in it. All experiences are natural elements in the natural world.

The ability to anticipate probable future experiences is based on earlier experiences in the world with sufficiently many relative stable conditions of activity, which make life and habit formation possible. Peirce already pointed out that the future may have an effect on the present but not on the past [21, CP 2.86]. No awkward backwards causation is required because it is the anticipated future that has an effect on present decisions to act. Habit of action is thus a teleological notion. And there are an enormous amount of past experiences that are available as various habits. Long evolutionary experience is the basis of the biological structure of organisms and source of habits [21, CP 1.633]. Sense organs may be considered crystallized habits of perceiving features of the environment that are relevant for survival. Human beings have a long cultural history, which has established social structures, habits and customs. Each new individual has a personal past during which these resources are used as elements of one’s own habit formation. These habits are beliefs and meanings, vehicles for cognition, and they are (consciously and unconsciously) used in thinking about the future, in solving problematic situations for finding out novel ways of habitual activity (by abduction). Peircean habits are far from blind routines and automatic motor programs, even though unconscious and rapid responses to environmental cues may look like it. And an act may be habitual even if it is performed only once in a lifetime because it is based on earlier habits. One may have a tendency to act in a certain way in some very rare circumstances.

Most of the workings of mind are unconscious [7]. Consciousness is only a layer of mind. One way of approaching a characterization of consciousness is to emphasize the practical orientation to the world. This amounts to saying that the world is experienced as possibilities of action (affordances). On this view, to be conscious is to be aware of (1) the possibilities of action that the animal’s environment affords and (2) of the anticipated consequences if these possibilities are acted upon. In



addition there is the need to be aware of the possible activities of other players on the scene. Things may get complicated.

Consciousness goes in degrees depending on the amount and the quality of the available sign-vehicles that mediate activity. Animals' activity is mediated by different sign-vehicles. The degree and quality of awareness depends on the complexity of the biological features of animals, on the quality and quantity of sense organs that are able to perceive significant features in the environment, as well as on the motor organs with which animals move around (on land, in the water, in the air) and are able to respond to these features. Further, the degree and quality of awareness depends on the complexity of the system of sign-vehicles that animals are able to deal with. There are tacit (non-linguistic) sign-vehicles like footprints and tools with fairly direct reference relation. There are preys, fruits and other edible things referring to the possibility of the satisfaction of hunger. There are various systems of communication. The emergence of language with human culture no doubt changes radically the character of consciousness, but it can be subsumed under the same definition of meaning [14, 18]. It enables abstract thought with which one can see connections that cannot be perceived immediately. Water and air seem to be very different elements, which have nothing to do with each other, until one understands what H<sub>2</sub>O stands for.

In this view, mind is an aspect of organism environment interaction, a quality of activity. It is realized through sign-relations in process. Mind is defined in terms of these ongoing sign-relations that mediate animals' activity. These relations are not located in the head. Sign-vehicles that mediate activity are spread all over the environment [15]. Strictly speaking it does not make sense to ask for a location of a relation. A laptop is bigger and heavier than a pen. These physical objects may be located on a table. There is nothing problematic in this. But what is the location of "heavier than" or "bigger than"? This is not a good question because relations do not have locations in the same sense as individual objects. The brain has evidently an important role in the semiotic relations that are realized in organism environment interaction. But the brain is not a place where the meaning relations constituting mind resides. Brain processes are parts of these relations, but to reduce a relation to any of its elements would be a logical category error.

## 6 Facts and Values in Nature

The rejection of the dichotomy between external and internal has several consequences. One of them is the commitment to the notion of embodied mind. As a physical body the knowing subject belongs to nature, that is, it belongs to the object of knowledge. As a natural creature it belongs to nature with all its experiences, perceptions, ideas, meanings, and so on. Note that culture is here regarded as a product of nature, a special environment created by one animal species. Further, the emphasis on the practical orientation to the world changes the notion of experience to the extent that causality ceases to be an unsolvable problem. The body belongs to exactly the same system of causal forces as David Hume's billiard balls. We are not separated from the causal forces in nature; we live in the midst of them. These

forces restrict the possibilities of overt bodily action. Most of us have the habit of using a door and not a window when exiting a room, and for good reasons. By the way, Hume appealed to this fact when he criticized sceptics who doubt seriously the existence of the external world but make consistently the correct choice between doors and windows. Causality is experienced in bodily action as hard facts, which, according to Peirce, involve brute force, muscular effort and resistance. As physical bodies we tend to accommodate to these objective conditions of action. It may be hard to individuate a distinct perception of causality when one looks at things, to notice the moment when a retinal cell absorbs some photons. This is and stays outside the reach of consciousness. However, when skin gets burned in sunshine the causal forces involved are perceived perfectly well.

One reason for missing this point is the urge to individuate perceptions of simple qualities. Naive empiricism starts the analysis from statement like: "I see red here and now." It is understandable that John Locke started from simple qualities as the ideas of biological evolution were not available at that time. The question to ask nowadays is this. Why did the ability to perceive red emerge during biological evolution? The obvious answer is that this ability did improve the possibilities of survival in problematic situations. Wood is on fire, blood is flowing, apples are ripe, and the like. In other words, it is important to ask for the relations of perceptions to other things in the world. This leads us to a new and better definition of the object of knowledge. As pointed out above, instead of looking for the hidden causes of perceptions we should ask: What can we, who are embodied beings within nature, do in order to solve the problems we encounter in life? What operations will bring us from a problematic situation to a future situation where the problem is solved?

The new and better definition of the object of knowledge and of facts can be presented with the formula:

$$S_1 - O - S_2$$

In the first problematic situation  $S_1$  one must find out what operations  $O$  lead to the second situation  $S_2$  where the problems are solved. The object of knowledge is the relation between these situations. As Dewey put it, the guided processes of change are the objects of knowledge [4, 160]. This formula gives also the new and better definition of fact. Facts are also relations. It is a biological fact that hunger is satisfied by eating. Note that the experience of getting satisfied is included here. Quite obviously there are facts that do not involve any activity by live organisms. There are more or less stable regularities that just take place in nature. One state of affairs changes into another in a regular way. Pragmatists typically advocate process ontology. Charles Peirce called these regularities "laws or habitudes of nature" [21, CP 5.587]. This topic, however, goes beyond the scope of the present paper.

Live organisms strive to maintain homeostasis. When animals' activity is mediated by external sign-vehicles, like a prey and its footprints for a predator, we can use the above formula in describing the relation between facts and values. A prey represents to predators a possibility of the satisfaction of hunger in the future. This satisfaction is a basic need for predators and has a positive value for them. And predators act accordingly by applying their habit of eating: hunt, kill and eat. Therefore

they move towards the prey, which evaluates the situation differently, acts accordingly and tries to move so far away as possible. Generally speaking there are many such basic needs and desires that are of vital importance and are based on biology. They dictate what is advisable to do in order to stay alive. This strive creates a natural source of norms that can be called biotechnical normativity [17, 71]. Biotechnical normativity is based on the definition of technical norm: If a goal is given, then the activities and measures with which the goal can be attained are valued higher than other activities.

The above formula helps to see the connection between facts and values. A predator knows for a fact that a positive value is realized if its prey fails to flee. Vegetarians' life is somewhat easier, but the analysis is the same. As a matter of fact, a similar analysis applies in all cases of biotechnical normativity. Facts and values do not belong to separate realms. On the contrary, they are interwoven with each other. They function together in animal life to the effect that homeostasis is possible. There is nothing problematic in this. Experiences and experienced values are most natural phenomena in nature.

Antonio Damasio's [3] somatic marker hypothesis helps to add emotions in the picture. According to Damasio emotions are signs of values. Positive emotions are signs of positive values and negative emotion are signs of negative values. Activity is mediated by external sign-vehicles, which are associated with emotions depending on what objects and anticipated experiences they refer to. Emotions also help to make decisions in complex situations in case there is no time or other resources to think through all the possibilities of action and their outcomes that the players on the scene may have. Quite literally, emotions are motives for motion.

Cultural creatures have also other sources of norms and values: religions, ideologies, cultural conventions and practices, political programs, educational ideals, and so on. The outcome of all this is a complex system of norms and values with many contradictions and inconsistencies, not to mention local differences. Philosophers have traditionally tried to find a proper definition of moral good, which is supposed to explain why different things experienced as good really are good. However, this search has not been successful. The word good gains different meanings when it is used by different people in different contexts. Ethical problems tend to be complex and many-sided. One way to deal with these situations is to apply Dewey's operational concept of knowledge. The first step is to face the problematic situation. Steven Fesmire's advice is to use moral imagination [6]. Then one should identify the problems, get relevant information for solving them, make hypotheses about what to do, test them in practice or in imagination and evaluate the results. If some problems remain, then the process can be reiterated.

## 7 Conclusion

The rejection of unnecessary dichotomies leaves us with organism environment interaction mediated by different sign-vehicles. Philosophical naturalism looks for continuities and connections rather than for separation and compartmentalization. One continuum is that between nature and culture, which is understood

as a product of nature. Activity becomes mediated at early phases of evolution. Cultural mediation changes things radically, but language and other symbolic systems, up to highest mathematics, are created by one animal species as a special social and cultural environment. Another continuum is that between various levels of acquiring knowledge. Dewey developed his operational conception of knowledge by analyzing the progress of physics from Isaac Newton to Albert Einstein and nuclear physics. But the outcome of this analysis is supposed to be applicable at all levels from everyday experience to social studies and natural sciences. The same holds for Peirce's views about reiterated abductive inferences for changing doubtful beliefs to better ones. The connection between facts and values becomes clear once we admit that experiences are facts in the world. Experiences have some value for those who are experiencing the world.

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## References

1. Bennett, M., and P. Hacker. 2003. *Philosophical foundations of neuroscience*. Oxford: Blackwell.
2. Chalmers, D. 1996. *The conscious mind. In search of a fundamental theory*. Oxford: Oxford University Press.
3. Damasio, A. 1995. *Descartes' error*. New York: Picador.
4. Dewey, J. 1958. *Experience and nature*. New York: Dover.
5. Dewey, J. 1980. *Art as experience*. New York: Perigee.
6. Fesmire, S. 2003. *John Dewey and moral imagination: Pragmatism in ethics*. Bloomington: Indiana University Press.
7. Franks, D. 2010. *Neurosociology. The nexus between neuroscience and social psychology*. New York: Springer.
8. Fuchs, T. 2018. *Ecology of the brain*. Oxford: Oxford University Press.
9. Haaparanta, L. 1995. On the possibility of pure epistemology: A Husserlian point of view. In *Mind and cognition Philosophical perspectives on cognitive science and artificial intelligence*, ed. L. Haaparanta and S. Heinämaa, 151–167. Finland: Acta Philosophica Fennica.
10. Haaparanta, L. 1999. On the possibility of naturalistic and of pure epistemology. *Synthese* 118: 31–47.
11. Hume, D. 1978. *A treatise of human nature*. Oxford: Oxford University Press.
12. Locke, J. 1959. *An essay concerning human understanding*. New York: Dover.
13. Määttänen, P. 1993. *Action and experience. A naturalistic approach to cognition*. Helsinki: Annales Academiae Scientiarum Fennicae.

14. Määttänen, P. 2005. Meaning as use: Peirce and Wittgenstein. In *Time and history, Papers of the 28th international Wittgenstein symposium*, ed. F. Stadler and M. Stöltzner, 171–172. Kirchberg am Wechsel: Austrian Ludwig Wittgenstein Society.
15. Määttänen, P. 2007. Semiotics of space: Peirce and Lefebvre. *Semiotica* 166: 453–461.
16. Määttänen, Pentti. 2010. Habits as vehicles of cognition. In *Ideas in action: Proceedings of the applying Peirce conference*, ed. M. Bergman, S. Paavola, A. Pietarinen and H. Rydenfelt. Nordic studies in pragmatism 1. <http://www.nordprag.org/nsp/1/>.
17. Määttänen, P. 2015. *Mind in action. Experience and embodied cognition in pragmatism*. Cham: Springer.
18. Määttänen, P. 2021. Body-language continuity via non-linguistic meanings. In *Meaningful relations. The enactivist making of experiential worlds*, ed. A. Scarinzi, 13–30. Newyork: Academia Philosophical Studies.
19. Määttänen, Pentti. 2022. Semiotics of experience. Interpreting the world with habits and practices. In *Open Semiotics*, ed. Amir Biglari. Paris: L'Harmattan, forthcoming.
20. Noë, Alva. 2004. *Action in perception*. Cambridge: The MIT Press.
21. Peirce, Charles. 1931–1958. *The collected papers of Charles Sanders Peirce*. Ed. C. Hartshorne, P. Weiss and A. W. Burks, Vol. 1-8, Cambridge: Harvard University Press (reference is designated CP followed by volume and paragraph number).
22. Searle, J. 2007. Putting consciousness back in the brain. Reply to Bennett and Hacker. In *Neuroscience & philosophy*, ed. M. Bennett, D. Dennett, P. Hacker, and J. Searle, 97–124. New York: Columbia University Press.

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