Witold Marciszewski
DAVID HUME'S EMPIRISTIC THEORY OF JUDGMENT

1. THE PUZZLE OF BELIEF

"(. . .) belief is a lively idea produced by a relation to a present impression (. . .) This operation of the mind, which forms the belief of any matter of fact, seems hitherto to have been one of the greatest mysteries of philosophy; though no one has so much as suspected, that there was any difficulty in explaining it. For my part I must own, that I find a considerable difficulty in the case; and that even when I think I understand the subject perfectly, I am at a loss for terms to express my meaning." (Hume 1951: 99)

The most puzzling problems are not those which seem to have no answer at all, but rather ones that produce many answers, each seeming equally legitimate. For all they are, those *aporias* continue to puzzle subsequent generations of philosophers. For Hume, one such puzzle arose with beliefs because, as far as his radical empiricism is concerned, they give rise to peculiar confusion.

Radical empiricism proposes that there is no cognition beyond cognition through senses. One particularly straightforward version of radical empiricism is physicalism. It advances the view that states of the cognizing subject can be exhaustively explained by the laws of optics, acoustics, mechanics, or physiology, with the latter further broken down into the vocabulary of chemistry and physics. This idea of copying, or mapping, can be then phrased in the language of physics and causation — for example, chemical changes of the retina are prompted by light stimuli, electro-chemical changes in the optic nerve are triggered by the impulses sent by the retina,

etc. We can then say that retina maps certain configuration of light stimuli to arrange specific patterns of signals transferred by nerves.[1] Hume was no physicalist, and couldn't be, given the state of natural sciences at the time, but he moved as close as possible to what would eventually crystallize as such. He treated mind states as biological states, even if he never proposed to break down complex (biological) states into simpler states describable in the language of physics and chemistry. This reductionism, prominently featuring in positivist thought, is also present in Comte, eventually culminating in Carnap's physicalism.

Radical empiricism itself, driven by its insatiable hunger for dissolving philosophical mysteries, gives birth to at least three ideas, namely theoretical concepts, cognition errors, and probability. If each concept maps a particular state of things in the physical environment of the subject, then what is mapped by abstract or theoretical concepts like strength, electromagnetic field, biological immunity, social bond, suppression of libido, etc.? The extreme positivist will seek to exorcise these elusive phantoms from science, while the more flexible positivist will resort to responses along the lines of Carnap's reductionistic theories, Peirce's pragmatism, or Bridgman's operationism. Hume was lucky that the problems emerging from theoretical concepts were not yet within sight. Nonetheless, it would be rather reductionists more than hardline empiricists who would find inspiration in Hume, for instance in his suggestion to investigate which impression is the source of the concept that eludes our understanding. Its link with sense impression, says Hume, makes the concept meaningful, but he never specifies how far this linking can go, thus paving the way for interpretation along reductionistic lines. If contemporary reductionism is right, the mystery of theoretical concepts can be solved with the tools of empiricism. However, the mystery itself didn't exist at the time of Hume. Vaguely aware of the problems lurking on the horizon, he could have perceived it as some sort of mystery.

If we perceive the cognizing subject as passive material exposed to external physical stimuli, errors in sense cognition are equally difficult to explain. Certainty of such cognition would match certainty found in the laws of nature, where each cause always has the same effect — so the same stimulus would always prompt the same reaction in the cognizing subject. If something is reflected in the mirror, it must also reflect on the retina, if the acoustic wave must cause the tuning fork to vibrate, it must also

---

[1] I attempt to give a precise account of this perception in Marciszewski 1963.

affect the eardrum. An attempt to dodge the problem by drawing analogies with the malfunctioning instrument can be only partially successful. It may explain the perception of a colour-blind or hard-of-hearing individual, but it fails to deliver when it comes to explaining why two people with perfect eyesight and hearing can give two entirely different accounts of the same situation. Thus, we are led to assume that data provided by senses are transformed further internally. But if we wished to say that each specific transformation leads to errors, we would disqualify many correct acts of perception. On the other hand, if we were to admit that such transformations are less harmful than useful, we would have to depart from radical empiricism because cognition would have to be redefined as something else than mere copying of the environment. Also, there would be hardly any place left for volition. In that sense, Hume undeniably had passivistic inclinations, as in his view belief "depends not on the will, nor can be commanded at pleasure. It must be excited by nature, like all other sentiments" (Hume 1977: 31) On this account, there's no place for choice between two hypothesis, each competing to become our belief. This epistemological determinism is woven into Hume's radical empiricism, and may lead some to the conclusion that errors in cognition simply don't exist, something which other authors, like Descartes, tried to eschew by implying that assertion is an act of free will (Marciszewski 1971). However, errors in cognition do exist and cannot be easily brushed aside. Hume himself, with his levelheaded skepticism, was particularly sensitive to human erroneousness, which is why reconciliation between natural determinism and errors in cognition amounts to a central theme of his philosophy.

Finally, a third belief-related mystery is probability. If judgment is a product of specific physical causes, what does it mean that judgment can be more or less probable? It would seem that there's only one alternative here, either this product exists, in which case someone judges something as such and such, or it doesn't exist, meaning that the judgment never occurs. It follows the path mapped out by the alternative, either something is reflected in the mirror, or it isn't. Thus, the second major challenge for Hume is to come up with the concept of probability so as to reconcile it with the naturalistic concept of judgment, conceived as an effect of causality imposed by the laws of nature.

Out of three difficulties ensuing from Hume's theory of judgment, two were minutely addressed by the man himself. I shall now present them in two parts that follow.

2. JUDGMENT AS AN IDEA FED BY IMPRESSION

Under the traditional judgment doctrine, advanced by Aristotle, Port-Royal logicians, and the likes of Jan Śniadecki, Alexius Meinong, or Kazimierz Twardowski, judgments are created by the joining and disjoining of concepts. A judging mind may err in cognition, as we're assured by the tradition, in which the voice of Aequinas discussing angelic intellect resonates with the Polish Enlightenment rationalist Jan Śniadecki. Let me quote the latter — the rather underexposed Polish philosopher, deserving, perhaps, of more appreciation at home, — where he discusses "various states of mind in regard to the truth:" "When, within the judgment and sentence joined and disjoined names are in accord with concepts, and concepts with things and phenomena, the result is truth (*veritas*), a product of reason and a goal pursued by reason in its workings. Where within the judgment and sentence joined and disjoined names are neither in accord with concepts nor phenomena, or disjoined are those which shouldn't be disjoined, this gives rise to falsehood (*falsitas*), which is opposite to truth" (Śniadecki 1958: 338). As things stand, truth and falsehood dwell in judgment, to use a past but illustrative turn of phrase, while concepts, or "the output," that being a product of another power - not power of judgment, but the power of intellect (*intellectus*) — are free from error. "But in the absolute consideration of the quiddity of a thing, and of those things which are known thereby, the intellect is never deceived," says Thomas Aquinas (Thomas Aquinas 1886, *Pars prima*, q. 85, a. 6). This infallibility of intellect was attributed to the fact that the concept is created when a proper object (*obiectum proprium*) exercises its influence on the mind; therefore, if there's a concept, there must be an object responsible for its creation. Judgment, in turn, is a result of a more independent activity of the mind, consisting in said junctions and disjunctions, which may ultimately prove to be inconsistent with the reality. Authors discussing judgments in this context meant probably general judgments which, methodologically speaking, are "synthetic judgments." This is because only in general judgments concepts are considered in their full scopes, and two independent concepts appear only in synthetic judgments.

If someone modified those assumptions to treat judgment as some sort of a concept, and accepted the premise that intellectual cognition must relate to *obiectum proprium*, he would be right to conclude that we cannot err in judgment. Precisely this idea was employed by Hume in his effort to escape skepticism: he defined judgment as an idea, understood as a concept that remains in certain relation to impression. Each impression is caused by external stimuli, which are real by necessity. Now, if the idea somehow stems from the impression, the idea itself must also be real.

This, in short, is Hume's strategy. For its comprehensive account, it is perhaps useful to quote the passage from Hume himself, where he elaborates on the meaning of terms "idea," and "impression."

"Here therefore we may divide all the perceptions of the mind into two classes or species, which are distinguished by their different degrees of force and vivacity. The less forcible and lively are commonly denominated THOUGHTS or IDEAS. The other species want a name in our language, and in most others; (...) Let us, therefore, use a little freedom, and call them Impressions; (...) By the term impression, then, I mean all our more lively perceptions, when we hear, or see, or feel, or love, or hate, or desire, or will. And impressions are distinguished from ideas, which are the less lively perceptions, of which we are conscious, when we reflect on any of those sensations or movements above mentioned" (Hume 1977: 10-11). Grouping feelings and impressions into one category will have far-reaching implications for the theory of beliefs as it helps explain the origin beliefs that are false. It is also quite intuitive due to the ambiguousness of such terms as "sensations" or "feelings," which can be easily applied to both sense impressions and various emotions.

Both concepts are introduced to clarify the nature of beliefs: "Thus my general position, that an opinion or belief is *nothing but a strong and lively idea derived from a present impression related to it*" (Hume 1951: 107).

This can be illustrated as follows. Seeing his fishing rod quiver, an angler is convinced he's caught a fish. Since he's not seeing the fish yet, it's not an impression, but an idea of the fish. The idea is nevertheless vivid and forceful thanks to the current impression of the quivering rod. Building on his experience, the angler associates this with the image of the fish writhing on a hook.

It is only the impression that can infuse the idea with such realness, it can never be derived from another idea, however strong the association between those two may ever be. Imagine an amateur angler midweek. Weary from paper-pushing, his thoughts drift towards his eagerly-awaited fishing trip. In his mind's eye, he sees and feels the quivering rod, which immediately evokes the image of a writhing fish. But however real this would feel, he'll never start bragging around about the size of his catch. This is because the image of the rod was not an impression, but an idea, and thus couldn't lend the vivacity and forcefulness required for the idea to become belief.

There are various kinds of impressions and relationships between impressions and ideas. Some lead to rational, while others to irrational, beliefs. Hume prided himself on exposing a universal mechanism behind the creation

of beliefs. If that was indeed the case, we would have to credit him with yet another success: delivery of criterion for rational beliefs. It can be roughly described in two points. First off, it's sense data, not feelings or passions, that shape our correct beliefs (for Hume, feelings that give "illegitimate" rise to strong beliefs include human inclination for mysteriousness which makes us believe in miracles). Second, relation between the object of the impression and the object of the idea must be of causative nature, thereby excluding temporal or spatial relations.[2] One example for correct, i.e. causative, relation is situation, where the current impression (the quivering rod) is caused by the object of the idea (the withering fish). The effect is then correctly inferred from the cause, while the impression of the effect lends realness to the idea of the probable cause. An incorrect relation occurs for Hume when a pilgrim, upon seeing holy lands, is emboldened in his belief that events recounted in the Scripture really took place. This is because the idea of those events is, in the given system of beliefs, associated with the idea of holy lands, and when the latter is enlivened with a vivid image of those grounds, its force and vividness are transposed to the idea of events themselves, strengthening faith that they indeed are real (Hume 1951: 112).

Having commented on the definition of belief, we may now proceed to compare the traditional concept of judgment with Hume's own approach to the matter, thus shedding new light on the criteria governing rationality of beliefs. Hume was acutely aware that his idea was a controversial novelty, as indicated by a polemic footnote in the *Treaty*, section "On the nature of the idea and belief:" "We may here take occasion to observe a very remarkable error, which being frequently inculcated in the schools, has become a kind of established maxim, and is universally received by all logicians. This error consists in the vulgar division of the acts of the understanding, into conception, judgment and reasoning, and in the definitions we give of them. Conception is defined to be the simple survey of one or more ideas: Judgment to be the separating or uniting of different ideas (. . .). But these distinctions and definitions are faulty in very considerable articles" (Hume 1951: 98). He goes on to argue against the traditional conception of judgment, saying that in the existential judgments, such as "God exists," junction or disjunction

---

[2]While Hume writes that „belief arises only from causation" (Hume 1951: 109-110), he also defines belief as an idea fuelled by impression. Some authors, like Passmore, accuse Hume of inconsistency, since said definition permits beliefs that have nothing to do with causation (e.g. beliefs induced by emotional manipulation). See Passmore 1952: 61-62. However, in the broader context (chapter 9 of the Treaty), causation appears to explain only rational beliefs, not all beliefs falling under said definition. It seems, therefore, that there is no inconsistency between the two.

of concepts does not take place. Hume may have not explicitly exposed the flaws of a traditionalist approach to the subject-predicate sentences, but the argument might as well be reconstructed from various examples provided in the *Treaty* and the *Inquiry*. Such examples always use singular statements, which often happen to be of a perceptual nature. The subject of such a statement is not a predicate, but some sort of a proper name or pronoun, which means that it is not expressing any concept at all. The only concept existing is represented by the predicate, which means that although we're dealing with a subject-predicate statement, it is not a result of the junction or disjunction of concepts. It is only general propositions that, categorized as synthetic propositions, fit the traditional definition of judgment, but these lie outside Hume's interest. It appears, then, that the traditional definition of judgment is too narrow. Nevertheless, unflagging support for this rather patent error doesn't seem so extraordinary given the persistence of even more obvious errors occurring in traditional definitions of induction and deduction (which apply to the notions of "specific" and "general"). Particularly the latter seems to have been misconceived from the very outset, as it is entirely at odds with practical deduction in mathematics. Nonetheless, it has survived for two thousand years, and continues to prosper in dictionaries and encyclopedias.

There's more to Hume's discovery than mere correction of some syntactical theory: it also leads to serious methodological implications. If judgment is not built by a junction of concepts, there's no chance of being in error while doing so. The same pertains to disjunction occurring in general negative propositions. Thus, if concepts are infallible, the same would have to be said of judgments that share their lack of complexity. Hume himself didn't draw this parallel, so using it to shed new light on Hume's thought would be entering grounds of comparative history rather than interpretation.

In scholastic doctrine, concepts are infallible by virtue of being a kind of natural sign. The latter is an irrefutable proof that a particular thing exists, signified via a causal link between the thing and the sign. Some contemporary authors prefer the term "token," or "index," thus associating sign with certain linguistic convention (these, perhaps more fortunate, terms express the same idea, but for historical reasons I shall continue using the term "natural sign"). Treating signs as things has a longstanding tradition, first founded by the immortal Artistotle and preserved for posterity by Porphyry and Boethius. In his commentary to Aritotle's *De Interpretatione*, taking Porphyry for witness, Boethius singles out three types of discourse, each corresponding with a separate type of sign, those being written, oral, and

mental signs. The doctrine inspired intellectual efforts throughout the Middle Ages and penetrated the theory of supposition and theory of signification. Also, combined with the theory of judgment, it became refined enough to the point of being capable of clarifying the difference between the judgment and the concept: concepts are natural signs of things, whereas judgments are effects of operations made on those signs (Bocheński 1961: 153-154, 167-168; Marciszewski 1971: 115-139).

This conception of sign may sit uneasily with interpretations preferred by some contemporary authors, it is therefore important to clarify differences and similarities occurring between those two. The main question that needs to be asked in this regard is whether one wishes to define the sign as a relation consisting of three or rather four elements. In the former, definiendum is structured as follows: x is a sign of a thing y for person z. In the latter: x is a sign of a thing y in a communication between u and z. It appears that the latter has the upper hand today, but the former can be by no means written off, as such is precisely definition of sign proposed by the esteemed author Max Black in Dagobert Runnes' *Dictionary of Philosophy* (let's just add that it's the only definition of sign found in the entire dictionary).[3]

This sign-relation is also of inferential nature, legitimising the conclusion that if there's a sign, there's also the signified, thus promising the existence of the signified object. So, if concept is understood as a sign of a certain thing, the thing itself must exist. If, concepts aside, one chose to treat judgments as signs of certain states of affairs, judgments would be infallible much in the manner of concepts. This would eliminate one source of possible error, namely incorrect composition or decomposition of concepts in judgments. This, of course, would not secure the absolute infallibility, but as such is also beyond the reach of concepts, or any other sign, because along with reliable signs there exist ostensible signs or fakes. According to scholastic doctrine, complex concepts may qualify as objectless signs; this is because they, similarly to propositions, result from the activity of the mind. This does not concern simple concepts, as their origin would be inexplicable if we were to assume that they aren't traces of reality lingering in the mind. For Hume, habits established by causation (following the formula discussed above) produce reliable judgments. Temporal or spatial links, or various passions enlivening the ideas, constitute insufficient title to represent the

---

[3]The definition goes: „Any event of character A whose occurrence is invariably accompanied by another event of character B may be said to be and index of that event. Any index which is recognized as being such may be said to function as a sign. Thus, as contrasted with 'index', the use of 'sign' presupposes a triadic relation."

reality.

3. PROBABILITY — A PROPERTY OF BELIEF WEAKENED BY INCOHERENCE WITH IMPRESSION

Readers of the *Treaty* may be surprised to discover that Hume splits probability into two varieties. Addressed in two separate sections titled "Of the probability of chances" and "Of the probability of causes," both have an exotic quality about them. Antony Flew sees that as a modern equivalent of difference between probability *a priori* and probability *a posteriori*, with the latter being empirical (Flew 1961: 106). His reading would be useful for handling Hume's idea provided both concepts are first given clear and precise meaning.

Hume's distinction relates to two types of knowledge. Pre-experience knowledge about a certain mechanism, say a dice throw, provides us with some basis to assess the probability of events. This is the probability of chances; it does not involve the actual throwing of a dice, being therefore probability *a priori*. The contingent result shouldn't create an impression that the causes here don't exist at all because — to quote Hume — "unless we allow, that there are some causes to make the dice fall, and preserve their form in their fall, and lie upon some one of their sides, we can form no calculation concerning the laws of hazard" (Hume 1951: 127-128). This isn't probability *a priori* found, for example, in Carnap's confirmation theory, where it's of purely linguistic character, and depends, among others, on the number of predicates in the given language.[4] As a consequence, what we would be inclined to call in Hume probability *a priori* is ultimately empirical. It's *a priori* only in relation to a series of observations that constitutes the basis for what we would now call probability *a posteriori*.

Hume is also strikingly consistent when he insists on explaining probability of chances in empirical and causative terms. The following passage serves well to illustrate this tendency: "the imagination passes from the cause, viz. the throwing of the dye, to the effect, viz. the turning up

---

[4]Carnap differentiates three probability-related meanings of "*a priori*" and "*a posteriori*." One of them appears to correspond with the distinction made by Hume, where probability *a priori* is defined as conditional probability of hypothesis assessed according to the empirical evidence to date, and probability *a posteriori* is relativized to conjunction of such evidence with results of the experiment or observation. Carnap himself preferred to use those terms differently; in his works, probability *a priori* is based exclusively on logical truths, while probability *a posteriori* is based on facts (Carnap 1951: 308).

one of the six sides; and feels a kind of impossibility both of stopping short in the way, and of forming any other idea. But (...) this principle (...) directs us to the whole six sides after such a manner as to divide its force equally among them." If a dice has the same figure on each of four sides, "it is evident, that the impulses belonging to all these sides must re-unite in that one figure, and become stronger and more forcible by the union." Here's one more example how chances are reduced to causes: "what the vulgar call chance is nothing but a secret and concealed cause" (Hume 1951: 131). This means that Hume's theory is concerned primarily with probability of causes, i.e. probability *a posteriori*, which he goes on to explore in greater detail. I shall follow suit and focus solely on this kind of probability.

Probability *a posteriori* is subjective, based on the objective probability of events, frequency and finite sets. On this account, subjective probability is attributed to singular propositions about events. Such judgments, however, need not be verbalised, they can be expectations or attitudes, something we can observe in animals.

This is Hume's theory of probability in a nutshell. It is an account of the relationship between subjective and objective probability is where it's most resilient. But although Hume repeatedly stressed that beliefs arise objectively, it didn't suffice to quench controversies surrounding his theory. The criticism included for example Reichenbach's objection that Hume failed to embrace the concept of objective probability: "Empiricists, including Hume, have repeatedly studied the nature of probability; but they came to the result that probability is of subjective nature and applies to opinion, or belief (...) Hume might have been led to the discovery of an objective meaning of probability had he studied the mathematics of probability" (Reichenbach 1957: 93-94).

Probable judgments considered by Hume always relate to the prediction of single events, therefore specific judgments take the shape of singular statements, or, as Popper calls them, formally singular probability statements (Popper 2002: 202). These look as follows: *There's an n-degree probability that this ship will sink while at sea; There's a k-degree probability that this citizen will win a lottery; There's an m-degree probability that 1st May will be sunny.* In Popper's nomenclature, "formally singular" is meant to show that although statements are singular in form, their content refers to statements about sets, namely about the frequency with which elements of one set appear in the other set, for example the occurrence of the elements of the set "missing ships" in the set called "ships on distant voyages." Subjective probability of the singular statement will increase with the observed frequency.

This shows how subjective probability depends on the objective probability, expressed by Hume in the following passages.

"It would be very happy for men in the conduct of their lives and actions, were the same objects always conjoined together, and, we had nothing to fear but the mistakes of our own judgment, without having any reason to apprehend the uncertainty of nature. But as it is frequently found, that one observation is contrary to another, and that causes and effects follow not in the same order, of which we have had experience, we are obliged to vary our reasoning on, account of this uncertainty, and take into consideration the contrariety of events." Here, Hume is acknowledging that objective probability does influence subjective probability, and proposes to treat the former as a statistical matter. He offers similar thought here: "When the conjunction of any two objects is frequent, without being entirely constant, the mind is determined to pass from one object to the other; but not with so entire a habit, as when the union is uninterrupted" (Hume 1951: 133-134).

"A wise man (...) weighs the opposite experiments: he considers which side is supported by the greater number of experiments: to that side he inclines, with doubt and hesitation; and when at last he fixes his judgment, the evidence exceeds not what we properly call probability. All probability, then, supposes an opposition of experiments and observations, where the one side is found to overbalance the other, and to produce a degree of evidence, proportioned to the superiority. A hundred instances or experiments on one side, and fifty on another, afford a doubtful expectation of any event; though a hundred uniform experiments, with only one that is contradictory, reasonably beget a pretty strong degree of assurance" (Hume 1977: 73-74).

Taking a cue from those passages, we shall now undertake an in-depth examination of thought processes that lead to probable judgments. One starts with a statement that a B-type fact is accompanied by a fact of A-type variety. The same is said of the fact number two, three, etc. But at the same time it is noted that certain A-type facts or objects are not of B-type variety. What we can say about the next A-type fact is that we can predict that it will be also of B-type variety with the same degree of probability that can be expressed by the relation between the number of A's being simultaneously B's to all A-type objects. Let's mark the observed A-type and B-type objects as A^* and B^*, respectively, and call them representations of classes A and B. We will now use these and other self-explanatory symbols to describe the process of arriving at probable beliefs:

$$(X_1 \in A) \ \& \ (X_1 \in B)$$

$$(X_2 \in A) \ \& \ (X_2 \in B)$$

$$\ldots\ldots\ldots\ldots\ldots$$

$$(X_k \in A) \ \& \ (X_k \in B)$$

$$(X_{k+1} \in A) \ \& \ (X_{k+1} \notin B)$$

$$(X_{k+2} \in A) \ \& \ (X_{k+2} \notin B)$$

$$\ldots\ldots\ldots\ldots\ldots\ldots$$

$$\underline{(X_{k+n} \in A) \ \& \ (X_{k+n} \notin B)}$$

$$(1) \ \mathrm{P} \ (X_{k+n+1} \in B) \ / \ (X_{k+n+1} \in A) = \frac{k}{k+n} = \frac{N \ (A^* \cdot B^*)}{N \ (A^*)}$$

Expression N (A^*) stands for the number of objects belonging to class A^*; N $(A^* \cdot B^*)$ stands for the number of objects belonging to the shared part of A^* and B^*.

Since Hume doesn't formulate definition of probability as shown in formula (1) (or in any other formula, for that matter), we shall treat (1) as valid until proved otherwise by other findings Hume has to offer on the subject of probability.

Definition (1), as we know, allows deducing, on the grounds of set theory and arithmetic, important laws of probability theory, such as law of addition, multiplication and division of probability, as well as the complement law:

$$(2) \ \mathrm{P}(q) = 1 - \mathrm{P}(\neg q)$$

The idea of such a law seems to be pervading in Hume's statement, that when a proof stands against a proof, the stronger has to prevail, but at the same time it loses the amount of its strength equivalent to the strength of the other proof; as well as in the subsequent: "to every probability there is an opposite possibility (...) Since therefore each part of the probability contributes to the production of the belief, each part of the possibility must have the same influence on the opposite side." This is promptly followed by the remark that "belief which we have of any event, encreases or diminishes according to the number of chances" (Hume 1951: 137). Since the increase of events speaking for q must inevitably lead to diminishing of $\neg q$ events,

it would mean that the higher probability of q the less $\neg q$ events there are. Precisely this correspondence is expressed by (2).

While discussing the projecting of past experiences on future events, Hume often speaks of "proportion." In the cited passage from the chapter where he discusses miracles, Hume writes about certainty that it is proportional to the advantages that some experiences have over others. The following quotes clarify this matter further: "When we transfer contrary experiments to the future, we can only repeat these contrary experiments with their particular proportions" (Hume 1951: 140). "If our intention, therefore, be to consider the proportions of contrary events in a great number of instances, the images presented by our past experience must remain in their first form, and preserve their first proportions" (Hume 1951: 135) Proportions invoked here nicely correspond with (1) when confronted with the following equation:

(3) $\dfrac{N\ (A^*\cdot B^*)}{N\ (A^*)} = \dfrac{N\ (A\ \cdot\ B)}{N\ (A)}$

The above formula reads that the relation between the observed cases and the total number of cases remains the same both in the sets that are representations and in the sets in which they are represented. Insofar as this sameness is secured, representation is adequate. The above quotes from Hume seem to suggest that speculation about probability of an event from B occurring in A is only legitimate as long as proportion, i.e. adequacy of representation, is secured.

In what way probability relates to beliefs? The answer is provided in passages, which — as the passage from the chapter discussing miracles — point to the advantage of positive experiences over negative ones. The greater the advantage, the stronger the belief, which originates when said advantage is of the smallest possible margin, i.e. when the probability exceeds 50 per cent. On these baseline conditions Hume writes as follows: "When the chances or experiments on one side amount to ten thousand, and on the other to ten thousand and one, the judgment gives the preference to the latter, upon account of that superiority" (Hume 1951: 140). This can be expressed in a short formula, where Axq will serve as a shorthand for *x believes that q*, while index x standing by P indicates a subjective probability of a person x:

(4) $Axq = P_x(q) > 1/2$

The above result (10001 : 20000) is produced when we put Hume's

numbers in (1).

According to Hume, positive cases outnumbering negative ones is not the only factor intensifying the power of belief. In the closing part of the section "Of the probability of causes," he introduces the third type of probability (different from probability *a priori* and *a posteriori*), namely probability "arising from analogy:" "Without some degree of resemblance, as well as union, it is impossible there can be any reasoning: but as this resemblance admits of many different degrees, the reasoning becomes proportionably more or less firm and certain. An experiment loses of its force, when transferred to instances, which are not exactly resembling; though it is evident it may still retain as much as may be the foundation of probability, as long as there is any resemblance remaining" (Hume 1951: 142). This is further illustrated by remarks made in the *Inquiry*, section "Of the reason of animals:" "nor does any man ever entertain a doubt, where he sees a piece of iron, that it will have weight and cohesion of parts; as in all other instances, which have ever fallen under his observation (...) The anatomical observations, formed upon one animal, are, by this species of reasoning, extended to all animals; and it is certain, that when the circulation of the blood, for instance, is clearly proved to have place in one creature, as a frog, or fish, it forms a strong presumption, that the same principle has place in all."

Interestingly, in the *Treaty*, Hume speaks of the third type of probability, differing it from probabilities *a priori* and *a posteriori* discussed above. As both boiled down to the frequency principle, we may ask whether this casually floated "third species" of probability somehow departs from the conception of frequency, which he happens to strongly espouse, or is it some sort of its variation. It would require a separate study to treat the problem at length, here we shall only signal the following.

This "third species" probability depends on two factors: the number of observed cases and degree of similarity occurring between the predicted event and those already observed. The latter can only be determined if there's an *a priori*, i.e. independent from observation, classification that would allow us to measure the degree of probability. One good example for that is zoological systematics. It allows us to predict that there is a greater probability that certain human features will be rather present in monkeys than in reptiles. This is based on the assumption that humans and monkeys are sets that together belong to the greater number of superior classes than, say, sets of humans and reptiles. If there is some similarity between humans and reptiles, this is because they both belong to a superior

set (e.g. the vertebrate). Such comparison of semantic scopes, serving as a basis for assessment of similarity and co-determinant of the extent of "third species" similarity, introduces what may be called *a priori* factor (Keynes) or logical factor (Popper), which frequency theory gives no account of. Linking logical probability with the result of observation to enable the definitive probability of the hypothesis is a complex and paradox-prone matter, as particularly Carnap's attempts seem to suggest. At any rate, it appears that Hume, perhaps involuntarily, may have loosened here his orthodoxy towards the frequency theory, which would push him closer towards the line of thought presented by Carnap in his work on induction and probability.

4. HUME'S CONTRIBUTION TO THE PROBLEMS OF ASSERTION

As the above seems to suggest, theory of judgment advanced by Hume is radically empiristic, passivistic, allogenetic (defines judgments in terms of other mental states), and based on frequency conception of probability.

If Hume's theory is to be understood as a general theory of judgment, it fails in every respect. Radical empiricism's thesis that cognition is nothing more than sensual copying of the world is false. Further, the passivistic stance is flawed in that it rules out the choice between hypotheses or assumptions, forcing humans to adopt one or the other by the sheer power of external impulses. Further, judgments cannot be boiled down to ideas, only they can be more vivid. It is perfectly legitimate to imagine something extremely vivacious and be deeply moved by the ensuing emotions, while at the same time being aware that such dream images are not real. Finally, it's wrong to insist that the force of belief should depend solely on quantitative relation between two sets of impressions, one speaking for certain judgment, the other against it. This would suggest that all judgments lacking opposite instances to outweigh or weaken them would have the same maximum level of probability. But such a level hinges on other factors, such as, for example, the number of cases confirming current knowledge or logical probability (in Carnap's terms — probability *a priori*, see footnote 5).

As self-evident as they are, these observations need not further elaboration. Taken as a whole, Hume's theory must therefore be rejected. But if applied to certain types of propositions or situations, it soon turns out to be quite well aimed and illuminating. It supersedes the orthodox theory of judgment in at least two points. The first one is related to the characteristics of perceptual judgments, the other to emotional aspects of assertion.

Perceptual statements, more than any other statements, align with radical empiricism in that they express corporal states triggered by copying

of states in the environment. They are not a matter of choice, but rather function as a direct reaction forced by the reality. For this reason, they fit into the passivistic stance, even if this doesn't apply to empirical hypotheses, philosophical assumptions, or axioms in deductive systems. Although not without reservations, the allogenetic theory also could apply to perceptual judgments; this is because perceptual judgments aren't derived from concepts, which brings them closer to acts of perception, or apprehension.

For these reasons, one should perhaps introduce certain corrections to language, which deceives us in that it offers similar grammatical forms to express mental states that greatly differ psychologically and epistemologically. Indicative mood is used to make both perceptual statements and empirical hypotheses. It also serves to express analytic truths which greatly differ from the first two. These grammatical properties of language imply that judgment, i.e. assertion, has a similar status in each of those cases. However, perceptual statements should be made in different "logical tonality" than hypotheses, yet another should be reserved for analytic propositions.

The influence of passions on assertions deserves to be considered separately. The topic is fairly well explored, but Hume offers here a unique contribution of his own. In his view, passions, by lending intensity to other mental states, can substitute sensations, which, *ex officio*, are meant to lend intensity to ideas, thus transforming them into beliefs. To quote Hume:

"passions in their turn are very favourable to belief; and not only such facts as convey agreeable emotions, but very often such as give pain, do upon that account become more readily the objects of faith and opinion. A coward, whose fears are easily awakened, readily assents to every account of danger he meets with (. . .) When any affecting object is presented, it gives the alarm, and excites immediately a degree of its proper passion; especially in persons who are naturally inclined to that passion. This emotion passes by an easy transition to the imagination; and diffusing itself over our idea of the affecting object, makes us form that idea with greater force and vivacity, and consequently assent to it" (Hume 1951: 120-121).

Such a substitutive theory of passions is perhaps untenable. Bundling passions and sensations together in a single higher-order set of impressions finds no justification in known facts. Passions trigger heightened activity, for example increased electric conductance of the skin, but it hasn't been observed that such activity also causes sensations (see e.g. Woodworth, Schlosberg 1946:287-292). Also, our day-to-day experience suggests that perception is "contemplative," free from tensions carried by emotional states. Further on in the above-cited passage, Hume once more invokes the mys-

teriousness shrouding beliefs. One may suppose that he is mystified by the fact that sensations and emotions are two radically different sources of beliefs.[5] Hume seeks to dispel this mysteriousness by construing them both as impressions, but, as we can see, he is not entirely satisfied with the solution. The less so if, contrary to Hume, one draws a distinct line between sensations and emotions. The problem lies not in the fact that each on its own suffices to evoke the same phenomenon, but that we're unable to identify their common feature that causes the effect. Let's illustrate this with the following example. When a light bulb goes out, it may happen due to a number or reasons, for instance a burned filament, or fuse. But what is common to all occurrences that may trigger such an effect is that they happen because of the disconnected circuit. This makes it possible for each of them to make the bulb go out. As for causes of beliefs, those being either sensations or emotions, Hume saw their common feature in "liveliness," or "vivacity," capable of invigorating lifeless ideas. But even if we're ready to admit that this "liveliness," or "vivacity," serves well to express our intuitions, we will be compelled to agree that those intuitions are in each case different, with the word itself having at least two meanings. The liveliness of emotions hinges on certain tensions, which makes them different both from abstract thinking and sensations. The liveliness of sensations rests on them being highly concrete, which makes them different from reproductive or productive representations that are schematic and highly incomplete. Hume's theory profited from this equivocation, but the profit must be deemed illegal under the laws of logic. The mystery laid bare by Hume is therefore still waiting to be solved.

In the closing remarks of this paper I will provide a draft solution of my own. I propose to differentiate between several kinds of assertions, each having a separate system of postulates. What these assertions have in common is that their systems of postulates share some of the postulates. Symbol A (read as the quantifier "it is believed that," "it is considered that," etc.) stands for the concept characterized by this common pool of postulates, and

---

[5]This problem was addressed by moralists who hold that intrusion of emotions into the sphere of beliefs compromises intellectual integrity. Classic examples of this approach was offered by John Locke in "Of enthusiasm," a chapter in the second volume of "An Essay Concerning Human Understanding." Other authors, however, would rather argue that, as common as it is, emotions' influence on the formation of beliefs cannot be regarded as an ethical flaw or psychological anomaly. This is also the argument made against Locke by Wilhelm Gottfried von Leibniz in New Essays on Human Understanding (chapter 20), and, later on, John Henry Newman in An Essay in Aid of a Grammar of Assent (chapter 6: 181-183).

comprises at least three of them:

P.1   If it is believed that q, it is false that it is believed that not q. The same, but shorter:

$$A(q) \rightarrow \neg A(\neg q)$$

P.2 $A(p \rightarrow q)\ \&\ A(p) \rightarrow A(q)$
P.3 q is tautology $\rightarrow A(q)$

As easily demonstrated, one can use these postulates to deduce the laws of distribution and association of A in conjunction and alternatives (Marciszewski 1967). Using A, it is possible to define rejection and suspension of judgment, marked here by R and N, respectively.

D.1 $R(q) \equiv A\ (\neg q)$
D.2 $N(q) \equiv A\ (\neg A(q)\ \&\ \neg R(q))$

Those concepts, along with a variable running through a set of time-sections, can now be employed to distinguish two variations of assertions, let us call one spontaneous, and the other reflexive. Assertion of a specific judgment in a specific moment (small time-section) is reflexive, if in the given moment the judgment is perceived as valid, but it is preceded by another moment, in which it was rejected or suspended. In symbolic notation:

D.3 $Ar_t(q) \equiv A_t(q)\ \&\ (Eu)\ ((u \leqslant t)\ \&\ (R_u(q) \vee N_u(q)))$,

where "$\leqslant$" means "precedes or is concurrent with." Definition D.4 (spontaneous assertion) is produced by a negation of the second part of the conjunction that constitutes the right-hand side of D.3. Thus, assertion is spontaneous when there isn't a moment in which the present judgment was rejected or suspended. Reflexive assertion is always linked with valuation; this is because choosing the present assertion over the moment in which there was no particular assertion calls for motives that make us ascribe greater value to assertion rather than to the opposite. In case of spontaneous assertion such valuation is not necessary, although it is possible, and often happens, manifesting itself in a positive emotional attitude towards the judgment. This positive attitude may arise because the judgment reflects the person's views, represents moral fairness, strikes as brilliant, comes from a respected school of thought, etc. To clarify the matter further we shall

introduce two more concepts. Non-valued assertion, i.e. assertion where there's no evaluative attitude towards the judgment, shall be called passive assertion, whereas valued assertion shall be called active assertion. Thus, each reflexive assertion is active, while spontaneous assertion can be either active or passive. This terminology will help emphasise that here we're dealing with two largely different phenomena, both falling under the term "assertion" by virtue of sharing a common property (expressed in their relevant system of postulates). Judgments derived from sensations, or even perceived as such, are characterized by passive assertion. Scientific or daily-life hypotheses, as well as opinions structuring the worldview, beliefs, or worldly wisdom are experienced as active assertions. Trying to find a common denominator for such diverse mental states is therefore futile, even if all function as judgments phrased in the indicative. Language may not be the best guide for the philosophy of mind, with various complications and puzzles emerging if one chooses to follow it blindly. One such complication pertaining to belief has been acutely pointed out by Hume, and although his solution is far from satisfactory, this by no means dwarves his contribution to the matter at hand.

5. EPISTEMOLOGY AND SEMIOTICS

Remarks on Hume's conception of assertion belong rather to the history of epistemology or theory of cognition than strictly semiotic analysis. There are, however, good reasons to link epistemological investigations with semiotic research, and to promote the former while discussing issues explored by linguistics.

The relevance of semiotics has been insightfully demonstrated by Kazimierz Ajdukiewicz in *Epistemologia i semiotyka* [*Epistemology and Semiotics*]*, W sprawie "uniwersaliów"* [*Concerning "Universals"*], *Obraz świata a aparatura pojęciowa* [*Worldview and Conceptual Apparatus*], *O stosowalności czystej logiki do zagadnień filozoficznych* [*On Application of Pure Logic to Philosophical Problems*] *Problemat transcendentalnego idealizmu w sformułowaniu semantycznym* [*Semantic Approach to Transcendent Idealism*], *W sprawie pojęcia istnienia* [*Concerning the Notion of Being*].[6] Also, Rudolf Carnap has devoted much of his work to relations between language and cognition, most notably in *Philosophy and Logical Syntax, Testability and Meaning, Foundations of Logic and Mathematics.*

---

[6]Those essays are published in Ajdukiewicz 1960 and 1965.

Those two names stand out in analytical philosophy, or logical analysis, as it's sometimes called. The discipline uniquely explores traditional philosophical problems, most notably epistemology, by reformulating them in the vocabulary of syntax, semantics, or pragmatics. It may be using language that is still a far cry from what some philosophers would wish for in terms of exactness, but it still fares better than the traditional theory of cognition. Precise formulation of the problem, although not sufficient, is ultimately necessary for its eventual solution. Thus, the language of semiotics, as long as it's properly translated into epistemology, may be well positioned to successfully drive forward "an inquiry concerning the human understanding."

As demonstrated, the path bridging semiotics and epistemology sees an animated, if one-way, traffic. Semiotics, with its new tools, offers a fresh perspective on traditional problems of epistemology. In its first phase (early works of Carnap and other neopositivists) the movement was inspired primarily by research into syntax. Later, in the 1930s, the pioneering work of Tarski opened new possibilities and spurred research in semantics. In recent years interest in pragmatics has been rekindled bordering on epistemic logic.

However, one might be wondering whether the opposite direction of research — from epistemology to semiotics — wouldn't be just as legitimate. Indeed, contemporary work on Hume, intent on introducing greater precision to pragmatic conceptualization of assertion, appears to be progressing along those very lines. Without being properly rooted in epistemology, assertion is destined to remain a vague concept, as exemplified by rather scarce remarks in *Principia Mathematica*. Indeed, Bertrand Russell, co-author of *Principia*, has much more to say on this particular topic in his epistemological essays entitled *Human Knowledge*.

If the whole ontology boils down to one simple question: "what exists?," the primary problem of epistemology can take an equally compact form, namely "what can we know?" Possible answers range from the skeptical "nothing" to the optimistic "everything." Those answers also determine the cognitive process itself, identify dispositions involved, and serve to evaluate the achieved results of the inquiries. For example, if we were to assume that what we cognize are platonic ideas, it would be immediately implied that the process is not sensual but intellectual, leading therefore to certainty, not illusory conceptions. This would mean that even purely formal properties of assertion would be different than assertion in empirical hypotheses, with still others found in observations. Thus, the epistemology of Platonic-Cartesian-phenomenological descent would imply assertion that is formally identical with the concept of necessity developed in modal logic

(Marciszewski 1971). In empiricistic epistemology, such as Hume's, assertion has formal qualities found in conditional probability and probability *a priori*. These are just two examples of various associations between epistemology and the theory of assertion. Other examples include conventionalism in the philosophy of science, and yet another comes with epistemology and methodology developed by Karl Popper.

If so, epistemological problems cannot escape the attention of those interested in exploring the nature and mechanisms of language. Also, one shouldn't forget that specific areas of inquiry are often arbitrarily pigeonholed, with particular fields of research assigned to specific disciplines for purely "administrative" reasons or because of more or less confusing terminologies. The problem of assertion crystallizes at the intersection of semiotics and epistemology, as well as logic and psychology. Those wishing to make forays into this sphere may face reproach for disloyalty or invite critiques for straying off the sanctioned discourse. I'm offering these remarks being aware of those risks, and if my opponents are kind enough to accept a terminological maneuver, my proposal is to establish a new discipline called semiotic epistemology. If the new discipline had an academic department, and maybe even scientific society to its name, it would certainly extinguish any controversies surrounding the present subject of my considerations.

Bibliography

1. Ajdukiewicz, Kazimierz, (1960) *Język i poznanie*. Vol. 1, Warszawa: PWN.

2. Ajdukiewicz, Kazimierz (1965) Język i *poznanie*. Vol. 2, Warszawa: PWN.

3. Bocheński, Józef Maria (1961) *A History of Formal Logic*. Ivo Thomas (trans. and ed.) Indiana: Notre Dame Press.

4. Carnap, Rudolf (1951) *Logic Foundations of Probability*. London: Routledge and Kegan Paul.

5. Flew, Antony (1961) *Hume's Philosophy of Belief*. London: Routledge and Regan Paul.

6. Hume, David (1977) *An Enquiry Concerning Human Understanding*. Eric Steinberg (ed.). Indianapolis: Hacket Publishing Company.

7. Hume, David (1951) *Treatise of Human Nature.* London: J. M. Dent & Sons Ltd.

8. Leibniz, Wilhelm Gottfried Freiherr von (1996) *New Essays on Human Understanding.* Cambridge: Cambridge University Press.

9. Locke, John (1995) *An Essay Concerning Human Understanding.* New York: Prometheus Books.

10. Marciszewski, Witold (1963) "Redukcjonizm w świetle analizy zdań spostrzeżeniowych." *Studia Filozoficzne* 3—4: 77—92.

11. Marciszewski, Witold (1967) "O pewnym pojęciu uznawania." *Studia Filozoficzne* 3: 161—179.

12. Marciszewski, Witold (1971) "'Significatio' u Dunsa Szkota." In *Studia z historii semiotyki*, vol. 1, 115—139. Wrocław: Ossolineum.

13. Marciszewski, Witold (1975) "The Cartesian Concept of Conviction." *PoznanŚtudies In the Philosophy of Science and the Humanities*, vol. 1, 4: 27—55.

14. Newman, John Henry (1903) *An Essay in Aid of a Grammar Assent.* London: Longmans, Green, and Co.

15. Passmore, John (1952) *Hume's Intentions.* Cambridge: Cambridge University Press.

16. Popper, Karl Raimund (2002) *The Logic of Scientific Discovery.* London and New York: Routledge.

17. Reichenbach, Hans (1957) *The Rise of Scientific Philosophy.* Berkeley and Los Angeles: University of California Press.

18. Śniadecki, Jan (1958) "Filozofia umysłu ludzkiego, czyli rozważny wywód sił i działań umysłowych." In *Jan Śniadecki - Pisma Filozoficzne*, vol. 2, 247—432. Warszawa: BKF.

19. Thomas Aquinas (1886) *Summa Theologica.* Romae.

20. Woodworth, Robert and Harold Schlosberg (1946) *Experimental psychology.* New York: Holt.