Hume on unobservable entities

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Abstract

Although the main trend of Hume’s analysis of perceptions and knowledge of matters of fact push strongly toward scepticism about unobservable entities, such as those typically postulated in theories of the natural sciences, Hume has not only written approvingly of certain scientific theories referring to unobservable objects, but also introduced himself several hypotheses about unobservable entities and processes in his own science of man. This article aims to pinpoint and comment some of the main passages of the Treatise of Human Nature and of the Enquiry concerning Human Understanding in which Hume appears to take a positive stance toward unobservables.

1. Introduction

It is a commonplace that the main trend of Hume’s analysis of perceptions and knowledge of matters of fact pushes strongly toward scepticism about any theory postulating unobservable entities. There is, first, the fact that Hume’s theory of ideas does not even seem to leave room for ideas of unobservable entities. Secondly, the inferential tool of causal relations, essential, according to Hume, to
justify belief in anything that has not been observed, is *a fortiori* inapplicable to the case of unobservable matters of fact, as Hume noticed in his discussion of realism about ordinary bodies. (See Chiben 2005.) Furthermore, Hume himself issued explicit warnings against hypotheses going beyond what can, in principle, be observed. Perhaps the most conspicuous of these warnings in the passage in the *Abstract* in which Hume remarks, famously, that the author of the *Treatise*

...proposes to anatomize human nature in a regular manner, and promises to draw no conclusions but where he is authorized by experience. He talks with contempt of hypotheses; and insinuates, that such of our countrymen as have banished them from moral philosophy, have done a more signal service to the world, than *my Lord Bacon*, whom he considers as the father of experimental physicks. (*Abs.* 2; see also T 1.4.6.23.)

Particularly interesting in this passage is the parallel drawn by Hume between the “science of man” and anatomy, which is a *phenomenological* branch of natural science. In the *Enquiry* we find a similar instance of the same point:

...And if we can go no farther than this mental geography, or delineation of the distinct parts and powers of the mind, it is at least a satisfaction to go so far; and the more obvious this science may appear (and it is by no means obvious) the more contemptible still must the ignorance of it be esteemed, in all pretenders to learning and philosophy. (EHU 1.13; see also EHU 4.4)

These passages may suggest that Hume’s intention was to restrict the enquiries and principles of the “science of man” to the phenomenological level, rejecting any conjecture about unobservable mental mechanisms and processes. But, as I will try to show in the sequel, Hume’s sceptical remarks on hypotheses, especially those involving unobservables entities, should be taken *cum grano salis*. I believe that the parallel of his own science with anatomy and geography is actually intended to indicate *the epistemic priority, not the exclusivity*, of the phenomenological level in the sciences generally, as compared with theoretical
conjectures going beyond experience, the latter being important, however, when deeper explanations of the phenomena are sought for.

2. Hume’s way of hypotheses. Unobservable entities in the science of man

As a starting point, I will take a passage from the *Enquiry* coming just two paragraphs below the paragraph partly quoted above, in which Hume seems to be ready to consider an eventual extension of the science of man beyond the observational level:

But may we not hope, that philosophy, if cultivated with care, and encouraged by the attention of the public, *may carry its researches still farther, and discover, at least in some degree, the secret springs and principles, by which the human mind is actuated in its operations?* Astronomers had long contented themselves with proving, from the phaenomena, the true motions, order, and magnitude of the heavenly bodies: Till a philosopher, at last, arose, who seems, from the happiest reasoning, to have also determined the laws and forces, by which the revolutions of the planets are governed and directed. The like has been performed with regard to other parts of nature. And there is no reason to despair of equal success in our enquiries concerning the mental powers and oeconomy, if prosecuted with equal capacity and caution. (EHU 1.15; my italics.)

If these words are taken at face value – and I do not find in them any trace of irony –, Hume’s indictments on hypotheses should be construed as deliberate overstatements, intended to underline the epistemic priority of experience over theorizations on unobservables. Close attention to his epistemological works, and to what Hume has effectively done as a scientist of the human nature, indicates, indeed, that his stand toward hypotheses does *not* seem to be uniformly contemptuous. When Hume discusses several *specific* cases belonging to the scope of the natural sciences – his explicitly avowed methodological model – he seems to relax the strict constraints imposed by his theories of ideas and causal inferences, in order to make room for the successful explanatory hypotheses already devised by
the scientists of the seventeenth and eighteenth centuries.\(^1\) Furthermore, when constructing his own science of human nature Hume frames a series of hypotheses on the functioning of the mind. Elsewhere, I discussed some relevant cases of use of hypotheses in Hume’s epistemological writings (Chibeni 2005, sect. 5). I concluded that hypotheses going beyond the empirical level figure in an essential way at certain key points of his epistemological theory. The most important cases in which *Hume himself* says he is framing, or adopting, hypotheses are found in:

1. The explanation of the function of general terms (T 1.1.7.1 and 16);
2. The “system of the double existence” (T 1.4.2.52);
3. The thesis that custom is the determinant of causal inferences (EHU 5.5);\(^2\)
4. The reason of animals (T 1.3.16.2);\(^3\)
5. An explanation of the nature of belief (T 1.3.7.3);\(^4\)
6. Purported attempts to solve certain problems related personal identity (Appendix, 21).

The analysis of these cases will not be resumed here. I wish, rather, to focus on another set of passages in which Hume discusses the epistemological status of hypotheses. Let us consider, first, what Hume says in a seldom-noticed paragraph in the middle of his rather lengthy and technical discussion of the paradoxes involving space, time and infinity (T 1.2.5.20). In order to explain certain “mistakes and sophisms” related to this issue, he is led to devise a series of hypotheses on the physiological correlates of the phenomenological principles of association of ideas. When first presenting the principles of association of ideas, Hume compares them

\(^1\) For a critical survey of the passages in Hume’s texts referring to the principles of natural philosophy, see Chibeni 2003.

\(^2\) For a general analysis of the causal inferences in Hume’s epistemological theory, see Chibeni 2008.

\(^3\) On this case, see Chibeni, forthcoming.

\(^4\) For a concise analysis of Hume’s theory of belief, see Chibeni 2006.
to “a gentle force” connecting our ideas, without which they would be “entirely loose and unconnected” (T 1.1.4.1). He adds that although their “effects are everywhere conspicuous” (i.e. we can know the pattern according to which the principles operate: resemblance, contiguity and causation), their causes “are mostly unknown, and must be resolv’d into original qualities of human nature, which I pretend not to explain” (T 1.1.4.6). Notwithstanding these remarks, in the mentioned passage of part 2, book 1 of the Treatise Hume does frame hypotheses on the possible neurological causal mechanisms of the principles of association:

When [in T 1.1.4] I receiv’d the relations of resemblance, contiguity and causation, as principles of union among ideas, without examining into their causes, ’twas more in prosecution of my first maxim, that we must in the end rest contented with experience, than for want of something specious and plausible, which I might have display’d on that subject. ’Twou’d have been easy to have made an imaginary dissection of the brain, and have shewn, why upon our conception of any idea, the animal spirits run into all the contiguous traces, and rouze up the other ideas, that are related to it. But tho’ I have neglected any advantage, which I might have drawn from this topic in explaining the relations of ideas, I am afraid I must here have recourse to it, in order to account for the mistakes that arise from these relations. I shall therefore observe, that as the mind is endow’d with a power of exciting any idea it pleases; whenever it dispatches the spirits into that region of the brain, in which the idea is plac’d; these spirits always excite the idea, when they run precisely into the proper traces, and rummage that cell, which belongs to the idea. But as their motion is seldom direct, and naturally turns a little to the one side or the other; for this reason the animal spirits, falling into the contiguous traces, present other related ideas in lieu of that, which the mind desir’d at first to survey. […] (T 1.2.5.20)

It is, of course, possible to interpret this reference to the hypothetical material counterparts of the mental processes as merely metaphorical. But a more literal reading should not be ruled out without further examination. The hypotheses put forward by Hume in this paragraph – deriving, evidently, from Descartes’ and Malebranche’s psychophysical theories – is explicitly regarded by him as providing
a “plausible” explanation for the phenomenological laws of the association of ideas.

Furthermore, similar conjectures on unobservable entities and mechanisms in the nervous system are found in several other passages of Hume’s works. One of them is about the explanation of the “maxim” put forward in T 1.3.8.2, according to which “when any impression becomes present to us, it not only transports the mind to such ideas as are related to it, but likewise communicates to them a share of its force and vivacity”. Hume’s initial justification of this maxim (under which the important principle of habit is subsumed) is framed in terms of the same set of hypotheses employed in the explanation of the association of ideas, namely, neurological hypotheses on the “elevation” of the animal spirits, their assuming “a new direction”, etc. (T 1.3.8.2).

Notice, however, that in the following paragraph Hume acknowledges – consistently with his general epistemic hierarchy – that in order to “prove” the maxim he “place[s] [his] chief confidence in experience”. It follows, then, an enumeration of six “experiments” designed to this end. Thus, we may perhaps conclude that, similarly to the principles of association of ideas, the maxim on the transfusion of vivacity from impressions to ideas has a “dual” character: mental-phenomenological and physical-ontological.

A third passage in which Hume speculates about the brain’s “pipes or canals”, through which the animal spirits would flow, occurs two sections ahead, in T 1.3.10.7 and 9, again in an effort to supplement and explain certain phenomenological laws which regulate the workings of the mind.

3. Unobservable entities in natural philosophy

I will now analyse some of the many passages in which Hume refers to unobservable entities and processes in the realm of natural philosophy. Several of
them involve the attempt – central in Hume’s philosophical project – to draw parallels between the methods of natural philosophy and those that should be employed in the study of human nature. Let us begin resuming the already partly quoted paragraph 15 of *EHU* 1. In that paragraph, as we saw, Hume expresses his view that we can reasonably hope that the science of man can advance beyond the descriptive level of the “mental geography”, in order to “discover, at least in some degree, the secret springs and principles by which the human mind is actuated in its operations”. This is followed by an explicit reference to similar progresses *already achieved* by the natural philosophers:

Astronomers had long contented themselves with proving, from the phænomena, the true motions, order, and magnitude of the heavenly bodies: Till a philosopher, at last, arose, who seems, from the happiest reasoning, to have also determined the laws and forces, by which the revolutions of the planets are governed and directed. The like has been performed with regard to other parts of nature. (EHU 1.15; my italics)

The “philosopher” here referred to is, evidently, Newton. Notice the explicit distinction between the phenomenological level (the motions of the celestial bodies) and the hypothetical level (the “forces by which the revolutions of the planets are governed”). Forces, let us recall, are unobservable, hypothetical entities par excellence (if interpreted realistically). In apparent contrast with this view, we may cite a passage from the *Treatise* in which Hume draws a general philosophical lesson from the study of the principles of association of ideas:

Nothing is more requisite for a true philosopher, than to restrain the intemperate desire of searching into causes, and having establish’d any doctrine upon a sufficient number of experiments, rest contented with that, when he sees a farther examination would lead him into obscure and uncertain speculations. In that case his enquiry wou’d be much better employ’d in examining the effects than the causes of his principle. (T 1.1.4.6)
This is one of the many passages explored by commentators who defend that Hume is entirely sceptical about any attempt to extend human knowledge beyond experience. But there is an alternative reading that favours my interpretive option. The advice not to go beyond what the experiments show is a qualified one: “... when he sees a farther examination would lead him into obscure and uncertain speculations”. Notice that this important proviso is perfectly adequate to accommodate the case in natural philosophy that certainly inspired Hume to write the above paragraph: Newton’s quest for the cause of gravitation. As is well known, the great scientist believed that he had discovered the common cause of countless terrestrial and celestial phenomena, namely, the force of gravitation. But Newton warned that he would not frame hypotheses on the cause of the gravitational force. This is generally acknowledged by Newton scholars as being only a cautious expression of his “official” position, since he clearly hoped to make further progress in the discovery of causes of gravitation. In fact, we know from his correspondence that he actually toiled with some curious hypotheses to explain gravitation mechanically. Being, however, aware of their crudeness – seeing perhaps that they “would lead him into obscure and uncertain speculations” – he refrained to present them in his magnum opus.

Notice, now, that even if we stop scientific inquiry at the point indicated by Hume we shall have already gone beyond the merely phenomenological regularities, since forces are not observable, as I have already remarked. The parallel between Newton and Hume, according to the construal favoured in this paper, is, thus, complete.5

5 Notice that the parallel I am tracing here differs completely from that advocated by many scholars in the past, which assumed that both Newton and Hume adopted a purely phenomenological, or “inductivist” approach to science. I believe that this view results mainly from an incorrect reading of Newton’s famous declaration that he “frame[d] no hypotheses”
I shall now consider several other passages that seem to disavow the present interpretation. I begin with \textit{T 1.2.5.26} and part of its footnote, added in the Appendix:

\begin{quote}
[M]y intention never was to penetrat into the nature of bodies, or explain the secret causes of their operations. For besides that this belongs not to my present purpose, I am afraid, that such an enterprize is beyond the reach of human understanding, and that we can never pretend to know body otherwise than by those external properties, which discover themselves to the senses. As to those who attempt any thing farther, I cannot approve of their ambition, \textit{till I see, in some one instance at least, that they have met with success}. But \textit{at present} I content myself with knowing perfectly the manner in which objects affect my senses, and their connections with each other, as far as experience informs me of them. This suffices for the conduct of life; and this also suffices for my philosophy, which pretends only to explain the nature and causes of our perceptions, or impressions and ideas. (T 1.2.5.26; my italics)
\end{quote}

As long as we confine our speculations to the appearances of objects to our senses, without entering into disquisitions concerning their real nature and operations, we are safe from all difficulties, and can never be embarrass’d by any question. [...] If we carry our enquiry beyond the appearance of the objects to the senses, I am afraid, that \textit{most} of our conclusions will be full of scepticism and uncertainty. [...] Nothing is more suitable to that [Newtonian] philosophy than \textit{a modest scepticism to a certain degree}, and a fair confession of ignorance in subjects, that exceed human capacity. (T 1.2.5.26, footnote, Appendix; my italics.)

These statements are repeated in almost the same words in T 2.3.1.3-4 and Abs 32. Similar remarks are made by Philo in the \textit{Dialogues}, on the principles of reason, instinct, generation and vegetation. Returning now to the \textit{Enquiry}, in the paragraph immediately before the one from which last quoted passage is draw, we read:

\begin{quote}
(\textit{Principia}, General Scholium, p. 547) and by Hume’s similar declaration in the \textit{Abstract}, as quoted in the Introduction of this paper.
\end{quote}
It must certainly be allowed, that nature has kept us at a great distance from all her secrets, and has afforded us only the knowledge of a few superficial qualities of objects; while she conceals from us those powers and principles on which the influence of those objects entirely depends. Our senses inform us of the colour, weight, and consistence of bread; but neither sense nor reason can ever inform us of those qualities, which fit it for the nourishment and support of a human body. Sight or feeling conveys an idea of the actual motion of bodies; but as to that wonderful force or power, which would carry on a moving body for ever in a continued change of place, and which bodies never lose but by communicating it to others; of this we cannot form the most distant conception. (EHU 4.16)

Thus, according to Hume, the causes of nutrition and inertia would be unknown, and perhaps also unknowable to us.

I submit that the sceptical remarks in all the above passages concern the particular cases Hume is discussing, since, as we have also seen, in certain other cases he adopts a positive stance toward unobservables. Thus, he seems, quite sensibly, to have adopted a case-by-case strategy for examining the epistemic credentials of the many scientific hypotheses of the natural sciences of his time.

We should now test this interpretive proposal against what Hume writes in EHU 4.12:

It is confessed, that the utmost effort of human reason is to reduce the principles, productive of natural phenomena, to a greater simplicity, and to resolve the many particular effects into a few general causes, by means of reasonings from analogy, experience, and observation. But as to the causes of these general causes, we should in vain attempt their discovery; nor shall we ever be able to satisfy ourselves, by any particular explication of them. These ultimate springs and principles are totally shut up from human curiosity and enquiry. Elasticity, gravity, cohesion of parts, communication of motion by impulse; these are probably the ultimate causes and principles which we shall ever discover in nature; and we may esteem ourselves sufficiently happy, if, by accurate enquiry and reasoning, we can trace up the particular phenomena to, or near to, these general principles. (EHU 4.12; my italics)
At first sight, this passage seems to insist on the same sceptical themes as those of EHU 4.16. However, what Hume says here deserves closer scrutiny. The principles productive of natural phenomena to which Hume refers are, obviously, their inner causal mechanisms. As Hume remarks in the Introduction to the Treatise, one of the methodological principles that, according to him, would characterise a science, is precisely the continued attempt to “reduce” principles of a lower level of generality to more general principles. In the passage we are now considering, Hume apparently introduces an epistemological cut just after the first step in this process of reduction. But there seems to be no principled reason for placing the cut at this point, since in many of the cases allowed by Hume, here and elsewhere, the first explanatory step is already a step into the unobservable (gravitational and elastic forces, inertia, etc.). It is tempting, therefore, to take Hume’s cut as a contingent one, determined by the actual development of science of his time. The fact that Newton and the vast majority of natural scientists did not at all let their research to be curtailed by philosophical qualms about unobservables lends further plausibility to this view.

In connection with this point, it is worth examining other passages in Hume’s writings in which he does not seem to be embarrassed by sceptical restraints. Among these passages, perhaps the most striking are those in which he endeavours to defend the thesis – central in his philosophy as a whole – that “chance is nothing real in itself” (T 1.3.11.4), or that “there [is] no such thing as Chance in the world” (E 6.1). His argument takes as a starting point that in his time natural philosophy was already exhibiting considerable success in discovering “secret causes” in the operation of bodies. The search for such causes was motivated precisely by the desire to explain why apparently random events happen. Rhubarb, for instance,

6 For a detailed analysis of Hume’s stand on this issue, see Chibeni 2012.
does not always purge, nor opium make sleep (EHU 6.4). Once sufficiently deep, generally unobservable, causes are found and taken into account, complete regularity is recovered. This view is expressed in a passage of the Treatise (1.3.12.5), reproduced *ipsis literis* in the Enquiry (8.13):

The vulgar, who take things according to their first appearance, attribute the uncertainty of events to such an uncertainty in the causes, as makes them often fail of their usual influence, tho’ they meet with no obstacle nor impediment in their operation. *But philosophers, observing that almost in every part of nature there is contain’d a vast variety of springs and principles, which are hid, by reason of their minuteness or remoteness*, find that ‘tis at least possible the contrariety of events may not proceed from any contingency in the cause, but from the secret operation of contrary causes. *This possibility is converted into certainty* by farther observation, when they remark, that upon an exact scrutiny, a contrariety of effects always betrays a contrariety of causes, and proceeds from their mutual hindrance and opposition. (T 1.3.12.5; EHU 8.13; my italics)

Thus, the “operation of secret causes” is at first judged *possible* by the scientists. Then, through “farther observation” this possibility is “converted into certainty”. What could these additional observations be? The reality of “secret” causes cannot, on pain of inconsistence, be established by direct experience, since by ‘secret’ Hume certainly means ‘unobservable’. Thus, *inferential* processes would necessarily be involved here. But what kind of inference would this be? Since logical and inductive inferences are of no help in this case, the only remaining possibility seems to be *abductive inferences*. Abduction is indeed the main tool explored by scientific realists to argue that the limits of direct perception can be transcended. Investigation of the presence of this form of inference in
Hume’s thought, and in particular, in the defence of his own hypotheses involving unobservables, constitutes a topic of its own, which will not be pursued here.7

As a Humean-style conclusion for the present article I could perhaps say that Hume’s texts on the issue of the epistemological status of unobservable entities exhibit a typical oscillation between the sceptical stance informed by a strictly empiricist epistemological analysis, and a positive stance informed by the theoretical achievements of the natural sciences, which were already rather impressive in Hume’s time.8, 9

References


7 I have elsewhere examined the difficulties of the attempt to configure abductive inferences in the framework of Hume’s epistemological theory, and offered a tentative solution to the main one: this kind of inference depend crucially on the notion of explanation, which in its turn is classically conceived as involving the notion of cause; but in the present case there is, as pointed out in the text, a fundamental problem in establishing causal relations between the putative unobservable entities and the phenomena that we observe. See Chiben 2005.

8 A bewildering instance of such oscillation is found in a set of paragraphs in the Dialogues (D 136-137), where Cleanthes defends, before an enigmatically silent Philo, a robust realist construal of the “minute anatomy of the rays of light” made by Newton in the corpuscularian theory put forward in the Optiks, as well as of the Copernican astronomical system, which also involves unobservable items, such as epicycles, the absolute motion of the Earth, etc.

9 I wish to thank Claudiney José de Sousa for commenting a previous draft of this text.


6. ——. Hume e a razão dos animais. Forthcoming in *Coleção CLE*, proceedings of the III Seminário Materialismo e Evolucionismo: Evolução e acaso na hominização, organized by J. C. K. Quartim de Moraes, Unicamp, 24-26 October 2011.

