Induction and reason: Cognitive tendencies under the tribunal of experience

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Abstract

Induction is a crucial ingredient in the growth of knowledge. Great part of our image of the world is own to our inductive practices, generalising from particular observations, theorising over causal mechanisms. Yet, it is not completely amenable to rational scrutiny. Ever since Hume, it is clear that a full blown justification of induction that would make it the keystone of our knowledge of the external world is out of question. Induction, through our commonsensical image of the world and our scientific theories, provides most of the material on which reason can build arguments and construct justification. Still, it is not itself completely justified.

Naturalists, in a long tradition that goes back to Hume himself, assume that induction grows out of habit, of tendencies or maybe of causal mechanisms that drives our cognition. A strong naturalist-Humean line suggests that talk of justification is out of place. If, however, one wishes to keep the talk of arguments and reason available, one ought to resist this suggestion. Without the talk of arguments and reason available, there is no defense from a skeptical challenge to our claims of knowledge.

In this paper I consider what happens if we reject a strong naturalist line. We are left with compatibilism: reasons and causes must co-exist. My task is to specify what sort of compatibilism is to be desired. I argue against the dangers of falling prey to something analogous to Sellars’ myth of the given whereby our arguments are partly given to us by cognitive mechanisms disconnected to our conceptual capabilities. I then propose a model of interaction between reason and cognitive tendencies (or habits) that
gives a place to induction both in the causal realm of cognitive mechanisms and in the rational realm of arguments and justifications.

1 Naturalisms, skepticism and the myths of the given

Let me start by looking closely at the strong naturalist. For my purposes, a strong naturalist is somebody who takes the following stance towards induction and reason. We have cognitive mechanisms that guide our construction of generalisations and theories and ultimately our image of the world. These cognitive mechanisms were partly crafted by evolution and partly developed through our lifetime. Therefore they can be explained with the help of biological, cognitive, neural and social sciences. All talk of responsibility, justification, support or rationality is out of place. Knowledge acquisition is a mechanical process that involves no choice, no commitments and therefore no responsibility or rationality. Induction, theory construction and hypothesis evaluation can be explained entirely in causal terms. The strong naturalist might emphasise the social dimensions of these causal story, or the neural ones or the biological ones. In any case it is a causal account of reason and there is nothing sui generis about what is epistemic, the world and our knowledge of it could be equally described causally and there is nothing else to neither of them.

The strong naturalist commits herself to the idea that cognitive virtues are to be understood in causal terms. So, instead of describing cognition as aiming at truth, justification and support we describe it as aiming rather at properties that can be analysed in causal terms (success, adaptability, reliability could be good candidates, consult for instance Putnam 1983 for a criticism of some naturalist projects). Once committed to an explication of cognitive virtues, the strong naturalist cannot appeal to truth, justification and support outside this explication; there are no resources beyond the causal system. From the strong naturalist perspective, there is not much room for skepticism: it doesn’t make sense to have doubts that cannot be explicated causally inside the system; to doubt the whole system of causal connections that is supposed to constitute knowledge is meaningless.

Yet, the strong naturalist is generally perceived as having no serious defense against the skeptic. By replacing epistemic notions and cognitive virtues by causal surrogates, the critical ability to connect what is claimed with something understood to be outside it is lost. The skeptical challenge
encounters no resistance. The only alternative at the strong naturalist’s disposal is to dismiss skepticism as meaningless. Therefore, the persuasion power of the position, of course, depends on how easily one is ready to dismiss the skeptical challenges (and the epistemic worries that accompany them).

The alternative to strong naturalism is always some sort of compatibilism. The idea is to try to conciliate (causal, mechanical) cognitive tendencies with some sphere of the epistemic, some *sui generis* space of reasons. Now there are many ways one blend causal mechanisms to arguments. In the remainder of this paper I will recommend a specific version of compatibilism.

A compatibilist has to take care not to take cognitive mechanisms as part of justifications for our beliefs for although causally effective, they play no epistemic role. Outputs of cognitive mechanisms cannot be seen as received from outside the space of reasons. The situation is analogous to that labelled by Sellars as the myth of the given, the unwarranted belief that non-conceptual experience can be used as a justifier. Sellars’s criticism of foundationalist empiricism runs like this. The idea that sensations yield knowledge assumes that one could learn the statement that “ϕ is red” without mastering the knowledge of the concept of ‘red’ and only through a sensation. The empiricist cannot hold both that sense contents can be sensed through a non-acquired ability that entails knowledge and at the same time that no subsumption of particulars under universals can be known through a non-acquired ability. Analogously, the compatibilist cannot hold both that individual inference steps are made through a non-acquired cognitive ability that produces knowledge and at the same time that no subsumption of particulars under universals can be known through a non-acquired ability.

In the empiricist case, if the subsumption of ϕ under “red” has to be acquired, a sense impression information that “ϕ is red” cannot contribute to knowledge. In the compatibilist case, if the soundness of an inference form has to be acquired, an inference token driven only by a cognitive mechanism cannot contribute to knowledge. Of course, one could claim that there are subsumptions of particulars under universals that are not acquired but known *a priori*. The claim is nevertheless hard to defend, in both contexts, given that knowledge depends on concepts that depend on learning a public language. Consider the inference step from a) “I saw twenty emeralds and they were all green” to b) “All emeralds are green”. If this step is driven by habit or by some cognitive tendency, it cannot lead to knowledge if its soundness was not acquired. The claim that the soundness of this inference could be known *a priori* would involve *a priori* knowledge of the complex
structure of the concepts and their meanings that makes the inference sound (see Goodman, 1983).

2 A robust conception of reason

The compatibilist has to take care with the danger of falling into this version of the myth of the given. Additionally, a compatibilist has to make sure that reason doesn’t lose substance, doesn’t get replaced by a surrogate that doesn’t have all of its features. I believe three features of reason have to be kept in order to make sure that an ersatz reason is not taking over. The first feature is that it should provide norms of justification. Rational, therefore, has to be related to what is correct, as opposed to what is evolutionarily beneficial, what is predictively successful or what is neurologically plausible. The naturalist attempts to explicate correctness in causal or nomic terms have to face the objection that reason is always distinguishable from any of its (natural) implementations: norms can be instantiated by contingent mechanisms of nature at a given time and space but can always be distinguished from them. Secondly, reason is the realm of the revisable and therefore it is often said to be spontaneous and not determined by anything outside its scope. Reason is then said to be the space of doubt and therefore connected to burdens and responsibility; it is responsible for its conclusions. Thirdly, reason, to a great extent as a consequence of the first two features, is said to work in a non-nomic manner and not to be describable by any class of nomic statements.

Yet, a compatibilist has to make room for cognitive tendencies that can be understood in causal terms. In particular, she has to make room for inductive mechanisms such as the ones found by cognitive scientists. The underlying inductive mechanisms give shape to our rational process of constructing and evaluating theories. In the next section, I sketch a model of how reasons and inductive mechanisms can be joined together without giving up the three features above.

3 The hull of Neurath’s ship

Reason depends on induction to be about nature. Induction, driven by cognitive instincts, is the lever of all systems of beliefs. Reason acts on the products of inductive instincts. Goodman [?], drawing on Dummett’s work on the justification of deduction, pointed out that as induction depends on
induction, deduction depends on deduction to be justified. However, deductive practices dispense with the world and this is why we wrap the notion of reason around deduction. Although deduction requires deduction to be vindicated, deductive success is not in any sense tied to how the world is. Inductive success, on the other hand, depends on nature since it depends on the environments of tasks for success. An analogy with Sellars’s criticism of the myth of the given can be useful again. Sellars’s notion of endorsement can help us to view the question from a non-empiricist perspective. Observations alone cannot produce contents of reasoning for justification, they need to be in a report. The reporter has to be able to endorse the observation and she can do it only if she is a credible speaker of the language and therefore trained to associate observation statements with observation. Not only has she to have been exposed to the right objects and events but she has also to share the accepted inductive methods. A reporter has to be trained by induction. She has to learn to recognise when a given observation statement is true.

From the reason point of view, it seems that if induction is to be seen as a component of our way of justifying beliefs about the world, it has to gain its credentials outside reason, in a realm of natural laws. However, once we accept a robust conception of reason, induction cannot be easily accommodated in the realm of natural laws. A causal history of our inductive practices has to make room for the emergence of the notion of correctness as distinct from what is only successful. It is in the light of what is correct that rational revisability takes place. Reason brings together deduction and induction and produces constraints in the process of belief acceptance. It represents a stance where new beliefs face other established beliefs and strategies and have to cohere with them. At some point, human users of inductions are held responsible for their conclusions, they can question every assumption their instincts lead them to make. Revisability seems to go beyond mere adaptation to the requirements of the environment when reason engenders skeptical doubts about cognitive practices. In fact, when the skeptic questions our inductive practices, an appeal to reason has to involve an appeal to our inductive tendencies. It seems that it is only through its participation in reason that inductions acquire justificatory capability. But how can these processes, to do with adaptability and tuning to environments, acquire a justificatory power?

John Pollock [?] called the attention of epistemologists, especially those of a coherentist persuasion, to the importance of non-doxastic elements in our process of belief maintenance. The point can be expressed with the help
of Neurath’s famous sailor’s metaphor [?]: our cognitive situation is that of
the sailors who have to rebuild the leaky ship at sea; we can change some of
the timbers while the ship has to remain afloat. Using Neurath’s metaphor,
one could claim that the ship, reconstructed in open sea, has a hull that we
cannot rebuild or reshape to our convenience. Surely, as we become aware
of our cognitive instincts, we can revise them. As the rebuilding of the ship
is done over the hull, revision has to be guided by deeper cognitive instincts.
We can never put in check all of our cognitive tendencies at once but we can
put any of them in jeopardy in isolation. Revisability, one of the grounds of
reason, depends on inductive practices that are in their turn revisable. As
we go down this line, these practices seem to have more causes than reasons.

If induction is part of reason and yet constituted by a causal history
of practices, it looks as though it can bridge the gap between reason and
nature. It can be maintained that induction is a matter for cognitive science
but also part of a revisable, normative, non-law-like space of justifications.
It seems that induction deserves a double-aspect treatment. Double-aspect
approaches are often too vague to be more than a starting point. In this case,
“aspect” seems to mean something closer to components than to viewpoints.

This double citizenship of induction can invoke an analogy with the
argument against the justification, import of observations. The argument
would claim that our cognitive instincts cannot provide justification to any
belief. Nor, the argument stresses, can it provide any sort of departure
point for reasons, since we cannot make sense of any output of a cognitive
instincts without the aid of reason itself. In another attempt to develop a
double-aspect approach to induction, the argument concludes by claiming
that cognitive instinct as such cannot be objects of reason. To talk about
reasons and causes as components of inductive practices would be to engage
in some sort of sideways-on view whereby reason and nature are both seen
from outside.

I claim that this argument reveals the flaws of thinking of reason as
closed in itself. Concerning the role of observations in linking nature and
justifications, one can say that our knowledge is composed of true state-
ments whose empirical contents cannot be specified. This is Davidson’s line.
A similar position concerning the causal history of our inductive practices
would involve the claim that reason cannot be affected by our cognitive
instincts. Reason deals with rational methods and not with tendencies ex-
pressed in instincts. It is only when an inductive practice enters the realm
of vindication and revision that it can be part of reason. One can wonder,
however, about what constitutes reason. McDowell [?] conceives of reason
as being unbounded. Our picture of how reason revises inductive practices is that of a ship that can always be rebuilt or reshaped. Reason can revise anything, to the extent that it takes over, from a causal history, any of our inductive practices. In any particular occasion, revisability has boundaries but reason is made of potentially unlimited reassessment. Neurath's ship's hull is a skeleton of cognitive tendencies that sustain our inductive revisability. In terms of unbounded reason, there is no unrevisable hull. Reason is not open to the influences of external causes, but it is, so to speak, open from within.

One could claim that the hull of the ship is an element of our ways of justifying that acts as a given. As Sellars argued concerning observations, there is no grounds for taking sensations as pre-conceptual unjustified justifiers. Similarly, one can suspect that our cognitive instincts concerning induction enter the space of justifications in an illegitimate way. However, the moving borders of reason are located not where inductive practices start but where they become a rationally processed inductive methods. In fact, Sellars put forward the image whereby observational reports are not sense data but are rather a product of a public language processing of what we learn to observe. The same treatment can be extended to our inductive methods in so far as they are justificatory forces only when they become objects of reason.

If reason is a faculty of judgement which, unbounded, can revise every cognitive instinct, our inductive tendencies are themselves revisable. Reason has the ability to interfere in the changes in our inductive tendencies and to organise a system of the world. Now, the inductive tendencies that reason incorporates could lead it to justify any conclusion since one could find inductive tendencies to produce any conclusion. This is why induction brings nature, the constraints of the environment, inside reason. Our justification procedures, guided by inductive conclusions and inductive methods, are tuned by induction to nature.

The question that needs then to be asked is how can we separate reasons from inductive tendencies. Reason revises and yet the mechanisms of revision are causally determined by inductive tendencies, the hull of Neurath's ship. If rational revisions, informed by reason and not only through inductive tendencies, take place, they have to be located amid the hull of the ship. If there is anything like reason, it has to be diluted in the way we perform cognition guided by our instincts. Perhaps, inductive tendencies act in human cognition by getting entangled with the norms and values of reason.

The mechanism of justification, on the other hand, informed of the en-
vironment through induction, has to take nature into consideration. It has to take empirical reality as constituted by our cognitive instincts into consideration. But if tendencies get entangled with norms and values, at least from the point of view of reason, the distinction between reason and nature begins to seem a product of some sort of sideways-on view. It seems that we cannot separate out what is received by our cognitive instincts from what we spontaneously create through reason.

To resist this conclusion, we need to bear in mind that nature, as empirical reality, can be studied in isolation from our cognitive mechanisms. The same goes for the empirical reality within us; and this is why we can isolate and investigate inductive tendencies. This is how we can discover the internal structure of our cognition from within. Yet, reason itself cannot be isolated from the inductive tendencies behind the epistemic norms. Reason is diluted, but inductive tendencies can still be among its objects for our cognition can focus on them. If reason can look at nature in general, it can look at nature within.

We see our inductive propensities as an empirical reality inside our rational struggle to maintain a system of the world. We know about them because we see reason revising our habits and cognitive science tells us about these habits. From within reason we feel the world and from the world we understand reason. This view may take us close to a vertigo but perhaps there is no hope of grasping an overall picture of reason and nature without vertigoes.