

Hume and Kahneman's dual systems

Abstract: This paper draws attention to similarities between Hume and Kahneman: Hume's contrast between custom and reason anticipates Kahneman's contrast between System 1 and System 2. Each appeals to similar psychological and epistemic features to make the contrast.

1. Introduction

Hume's distinction between custom and reason parallels Kahneman's distinction between System 1 and System 2. For both thinkers, the contrast is between distinct psychological mechanisms, with distinct epistemic features. They mark their contrasts in similar ways. The operations of Hume's custom and Kahneman's System 1 are rapid, automatic, easy and typically not under voluntary control. The operations of Hume's reason and Kahneman's System 2 are slower, typically involve deliberate marshaling of premises, and are frequently laborious. These are psychological contrasts. They also agree on the epistemology, giving custom (for Hume) and system 1 (for Kahneman) a special role. For Hume, custom is "the great guide of life" (A 16). For Kahneman, system 1 is "the origin of most of what we do right" (2011: 416).

The comparison suggests that Hume made a significant though under-appreciated contribution to empirical psychology. His "attempt to introduce the experimental method of reasoning into moral subjects" (T frontispiece¹) was, in this respect, a resounding success. But it had to wait more than a quarter of a millennium to be rediscovered.

Justifying the accuracy of the comparison involves detailed exegesis of Hume, whose use of the terms "reason" and its cognates is not stable. The required exploration both helps support my thesis, and also leads to a better understanding of Hume's texts, for example his "fork" argument concerning induction.

¹ Please see the References for a list of abbreviations used to refer to Hume's works.

2. Demonstrative and probable reasoning

In Hume's philosophy, reasoning is typically an activity involving reason, where reason may be the faculty exercised when we reason, or the abstract rules which govern the operations of the faculty (the reasonings), or a proposition that is an output of the faculty. Hume distinguishes two kinds of reasoning, demonstrative and probable². The kinds are alike in many ways: both typically involve marshalling and evaluating premises, and issue in an argument. They differ in that different standards of evaluating them are appropriate. Demonstrative reasoning is to be evaluated in terms of validity, probable reasoning in terms of its respect for the principle that "the course of nature continues always uniformly the same" (T 1.3.6.4). Both kinds involve "arguments" and the provision of "reasons". In this respect, probable and demonstrative reasoning are the same kind of activity, and, I claim, are activities falling under Kahneman's system 2.

By contrast, custom, or habit, is the automatic and typically involuntary projection of observed regularities. It involves no marshaling of premises, and may not even involve thinking of premises. In one sense, it is not a species of probable reasoning, because it is not, properly speaking, a species of activity. To reason is to actively do something, but one is simply affected by custom. Hume's custom, I claim, is Kahneman's system 1.

Establishing this thesis confronts the problem that Hume sometimes uses "reason" for custom. For example, the body of the section entitled "Of the reason of animals" (T 1.3.16; 1E 9) says that animals, like humans, learn by experience thanks to custom: "It is custom alone, which engages animals, from every object, that strikes their senses, to infer its usual attendant" (E 9.5; compare T 1.3.16.8). So the "reason" of animals, referred to in the title of the section, is custom. The title of the very next section in the *Treatise* uses "reason" in a narrower way. The title is "Of scepticism with regard to reason" (T 1.4.1), and this section discusses our fallibility in demonstrative reasoning. Its "rules are certain and infallible", but, being fallible creatures, we may err in applying them. This is a surprising shift from using "reason" for custom and using it just for demonstrative reasoning.

² "Probable reasoning" is the most common phrase. He also refers to the same activity as "moral reasoning" and "experimental reasoning".

Another example of the instability in Hume's use of "reason" is his claim that reason is (and ought only to be) the slave of the passions (T 2.3.3.4). What is here contrasted with passion is any belief, whether reached by demonstrative reasoning, probable reasoning or custom. Nothing is implied about how the belief is formed.

There are many places in which Hume contrasts custom and reason, for example: "when we pass from the impression of one to the idea or belief of another, we are not determin'd by reason, but by custom or a principle of association" (T 1.3.7.6); "All inferences from experience, therefore, are effects of custom, not of reasoning" (E 5.5). But there are also many places in which custom is presented as a form of reasoning: "According to my system, all reasonings are nothing but the effects of custom" (T 1.3.13.11); "*all our reasonings concerning causes and effects are deriv'd from nothing but custom*" (T 1.4.1.8). One has to attend to context to determine whether one has encountered the contrastive use of "reason" or "reasoning", in which it is opposed to custom, or the use that includes custom as a species.

In saying that Hume's reason (or more properly reasoning) is Kahneman's System 2, I refer to a conscious activity involving argument and the marshaling of premises; this excludes custom. This activity can be classified as "demonstrative" or "probable", depending on the associated standard of evaluation. Hume's "probable reasoning" is typically of the controlled, non-automatic, variety, differing from demonstrative reasoning not in how it relates to agential control but in how it is appropriately evaluated. Probable reasoning is contrasted with custom if it evaluates evidence, marshaled as premises, to draw empirical conclusions. It would be exemplified by a thinker who applied Hume's "rules for judging of causes and effects". It is system 2 activity. By contrast, custom can induce belief even in a subject who is not explicitly thinking about the facts which cause the belief, and which, therefore, are not premises to be marshaled, as in the example of foreseeing the consequences of walking into a river: one may anticipate problems without bringing to bear any specific memories (T 1.3.8.13). The anticipation is not reached by a process of argument, since no premises are consciously available for marshaling.

My thesis, therefore, needs to be linked to Hume's texts with care. However, I believe this care pays exegetical dividends beyond supporting my thesis, as I illustrate in §3 below.

3. The similarities between how Hume and Kahneman mark the contrast

Various features are used by Hume and Kahneman as markers of the distinct cognitive activities they aim to describe: in Hume's terminology, the difference between custom and reason, in Kahneman's the difference between the operations of system 1 and those of system 2. The table in the appendix summarizes the differences.

Speed: Hume says that "custom ... operates immediately, without allowing any time for reflection" (T 1.3.12.7), whereas reason is "slow in its operations". Kahneman says that "System 1 and System 2 ... respectively produce fast and slow thinking" (2011: 13). It is common nowadays to use processing speed ("mental chronometry") to distinguish distinct mental processes. Setting aside Hume, the earliest references I have found to the use of speed as a marker of distinctive cognitive activities dates to the second half of the nineteenth century.³

Automatic: Hume says that, when we extrapolate in accordance with custom, we make "the transition without any reflection"; "custom depends not upon any deliberation" (T 1.3.12.7). It is "an instinct or mechanical tendency" (E5.22). By contrast, reason is characterized in terms of "the laboured deductions of the understanding". For Kahneman, "*System 1* operates automatically and quickly ..." (2011: 20) whereas "The operations of System 2 are often associated with the subjective experience of agency, choice and concentration" (2011: 21).

Voluntary: For Hume, custom is something that affects us, whereas reasoning is something we do, and so is under our control. In custom, "our imagination passes from the first to the second [cause to effect], by a natural transition, which precedes reflection, and which cannot be prevented by it" (T 1.3.13.8). The operation of custom is "as unavoidable as to feel the passion of love, when we receive benefits; or hatred, when we meet with injuries. All these operations are a species of natural instincts, which no reasoning or process of the thought and understanding

³ Franciscus Donders, in 1869, "was the first to use differences in human reaction time to infer differences in cognitive processing". https://en.wikipedia.org/wiki/Franciscus_Donders. The Wikipedia entry on mental chronometry gives the mid 1850s as the earliest date, mentioning the more familiar names of Helmholtz and Wundt: https://en.wikipedia.org/wiki/Mental_chronometry#Types.

is able, either to produce, or to prevent” (E5.8). Likewise Kahneman: “System 1 operates ... with no sense of voluntary control” (2011: 20). “Several of the mental actions in the list [of System 1 features] are completely involuntary (2011: 22).” “You cannot prevent System 1 from doing its thing” (2011: 27). By contrast, “System 2 [is] the conscious, reasoning self that has beliefs, makes choices, and decides what to think about and what to do” (2011: 21). And “there are vital tasks that only System 2 can perform because they require effort and acts of self-control in which the intuitions and impulses of System 1 are overcome” (2011: 31).

Ease: Custom is distinguished by the ease or effortlessness with which it operates, contrasted with the effort that needs to be put into reason. “The change of the objects [from cause to effect, or from effect to cause] is so easy, that the mind is scarce sensible of it ...” (T1.3.8.2). Again, “we must from custom make an easy transition to the idea of that object, which usually attends it ...” (T1.3.9.16). This contrasts with the “laboured deductions of the understanding”, already mentioned. Kahneman says that “System 1 operates ... with little or no effort ...” (2011: 20) whereas “The defining feature of System 2 ... is that its operations are effortful ... ” (2011: 31).

Causation: According to Hume, “the mind is determin'd by custom to pass from any cause to its effect ... ” (T1.3.11.11). Hence custom is a basic source of causal knowledge. Kahneman agrees: “Finding such causal connections is ... an automatic operation of System 1” (2011: 75). “System 1 is highly adept in one form of thinking—it automatically and effortlessly identifies causal connections between events ...” (2011: 110).

Correction: Hume was aware that the operations of custom might need to be “regulated” by reasoning, as in the beliefs of the man in the cage of iron. Regulation could come from the rules by which to judge of causes and effects. “We shall afterwards take notice of some general rules, by which we ought to regulate our judgment concerning causes and effects... ” (T 1.3.13.11). And concerning the senses, which are closely associated with custom: “we must correct their evidence by reason” (E 12.6). Kahneman says “Self-criticism is one of the functions of System 2” (2011: 103), and he gives many examples of this in practice. The air force instructor who thought experience showed that blaming bad performance was more effective than praising good performance needed to correct that judgment by an understanding of regression to the mean (2011: 175f).

Babes and beasts: Both authors regard the more automatic cognitive system as available to non-humans and to very young humans. “’Tis therefore by means of custom alone, that

experience operates upon them [beasts]” (T 1.3.16.8). “Animals ... are not guided in these inferences by reasoning. Neither are children” (E 9.5). “Though the instinct be different, yet still it is an instinct, which teaches a man to avoid the fire; as much as that, which teaches a bird, with such exactness, the art of incubation, and the whole œconomy and order of its nursery” (E 9.6). Kahneman on “beasts”: “The capabilities of System 1 include innate skills that we share with other animals” (2011: 21). And on human infants: “Experiments have shown that six-month-old infants see the sequence of events as a cause-effect scenario, and they indicate surprise when the sequence is altered” (2011: 76).

A guide to life. Perhaps the most important commonality between Hume’s custom and Kahneman’s system 1 is the epistemic value each author attributes to it compared to the alternative. Thus Hume: “Tis not, therefore, reason, which is the guide of life, but custom” (A 16). “Custom, then, is the great guide of human life” (E 5.6). By contrast, reason is less reliable: “nor can an operation of such immense consequence in life, as that of inferring effects from causes, be trusted to the uncertain process of reasoning and argumentation” (E 9.5). “Reason is so uncertain a guide that it will always be exposed to doubt and controversy ...” (CP 5). Kahneman likewise stresses the value of system 1: “all of us live much of our life guided by the impressions of System 1 ...” (2011: 64); “System 1 is ... the origin of most of what we do right—which is most of what we do” (2011: 416). He points out how we can be misled by system 2: “We do not always think straight when we reason, and the errors are not always due to intrusive and incorrect intuitions. Often we make mistakes because we (our System 2) do not know any better” (2011: 415).

4. Custom, reasoning and Hume’s fork

Hume’s “fork” argument has sometimes been regarded as having as its conclusion that we should be skeptics about induction. A dilemma is presented: inductive conclusions, if justified, must be derived either by demonstrative reasoning or by probable reasoning, but neither kind of reasoning is up to the job. So there are no justified inductive beliefs. This would not fit with the interpretation of Hume I am offering. Hume thinks custom delivers inductive beliefs in its role as the great guide to life, just as Kahneman describes system 1. One could not coherently entertain general skepticism about beliefs issuing from what one regards as the great guide to life.

Accordingly, if Hume's position is coherent, he should not be regarded as a skeptic about induction. How, then, should one interpret the fork argument?⁴

The fork argument begins with a disjunction: all reasoning is either demonstrative or probable ("moral"). The first prong is unproblematic: most people agree that we cannot use demonstratively valid reasoning either to justify specific inductive conclusions on the basis of non-inductive premises or to justify the practice of deductive reasoning in general. The second prong concludes that we also cannot use "probable reasoning" to justify inductive conclusions from non-inductive premises. The target is not specific acts of probable reasoning, but our confidence that the general practice will continue to lead to truth often enough. This cannot be justified by probable reasoning for precisely the reason Hume gives. The justification would require us to justify the view that the future will resemble the past: that probable reasoning, which has worked so well for us up to now, will continue to do so. But a "probable" justification of this would be "founded on the presumption of a resemblance betwixt those objects, of which we have had experience, and those, of which we have had none; and therefore 'tis impossible this presumption can arise from probability". The alleged justification would be "going in a circle, and taking that for granted, which is the very point in question" (E 4.19).

My proposed interpretation is straightforward: the fork argument does not generate skepticism because it fails to take into account a third way of forming inductive beliefs, custom:

We infer a cause immediately from its effect; and this inference is not only a true species of reasoning, but the strongest of all others, and more convincing than when we interpose another idea to connect the two extremes. (T 1.3.5n 20)

In this quotation, Hume is describing how custom operates. This way of forming beliefs is beyond skeptical challenge. Hume calls it a "skeptical solution" because he recognizes that it does not meet the expectations for justification demanded by traditional skeptics, but he does not himself regard the solution as epistemically problematic. On the contrary, it is clearly a position he considers resolves the skeptical doubts under discussion.

It's unclear whether custom, the third way, should be classified as a frequently overlooked species of probable reasoning, or as an additional form of reasoning, neither demonstrative nor

⁴ A paradigm of a skeptical interpretation of Hume on induction is Stove (1965). Garrett (2015) provides a good non-skeptical interpretation.

probable. Hume sometimes seems more inclined to one way if putting it, sometimes more inclined to the other. This is confusing, but merely terminological.

The present interpretation of Hume depends on distinguishing three things that can be called reasoning: demonstrative reasoning, probable reasoning and custom. Custom is distinguished from probable reasoning not by its subject matter or its logic but by its psychology. Neither probable reasoning nor custom appeals to logic, which is in the domain of demonstrative reasoning. Both custom and probable reasoning may lead us to beliefs about the unobserved. The contrast is that whereas to engage in probable reasoning is to be active, we are passive when custom operates in us. These passive cognitive transitions are operations of Kahneman's system 1, whereas the deliberate transitions of both demonstrative reasoning and controlled probable reasoning are operations of his system 2. In recognizing this distinction, based on careful attention to his own mental states, Hume was hundreds of years ahead of his time.

References

- Garett, Don (2015). *Hume, David. (T) Treatise of Human Nature. 1739–40*
- Hume, David. (E) *An Enquiry Concerning Human Understanding. 1748*
- Hume, David (CP). “Of the Coalition of Parties”. In his *Essays, Moral, Literary and Political. 1758.*
- Kahneman, Daniel (2011). *Thinking, Fast and Slow* New York: Farrar, Straus and Giroux.
- Stove, D (1965). “Hume, probability and induction”. *Philosophical Review* 74: 160–77.

Appendix

	feature	Hume: custom	Kahneman: system 1	Hume: reason	Kahneman: system 2
1	fast	✓	✓	x	x
2	automatic	✓	✓	x	x
3	voluntary	x	x	✓	✓
4	easy	✓	✓	x	x
5	primary source of causal beliefs	✓	✓	x	x
6	may serve as a corrective	x	x	✓	✓
7	possessed by babes and beasts	✓	✓	x	x
8	guide to life	✓	✓	x	x