Hume and Kahneman's dual systems

Daniel Kahneman, in his book *Thinking, Fast and Slow*, describes two kinds of mental process, "the automatic operations of System 1 and the controlled operations of System 2" (13). He continues:

> *System 1* operates automatically and quickly, with little or no effort and no sense of voluntary control.
>
> *System 2* allocates attention to the effortful mental activities that demand it. (20–1).

Kahneman's distinction mirrors Hume's distinction between habit or custom (System 1) and abstract or demonstrative reasoning (System 2).[1] Hume's distinction also prominently features speed: "custom … operates immediately, without allowing any time for reflection" whereas reason is said to be "slow in its operation".[2] Nowadays psychologists commonly use processing speed ("mental chronometry") as a marker of significant features, but the earliest reference to this approach mentioned on Wikipedia dates to 1869 (Franciscus Donders), more than a century after Hume used speed as a marker of the operation of custom.

For Kahneman, the operations of System 1 are effortless and involuntary. Hume likewise speaks of the ease with which habitual or customary transitions occur, and of our lack of control of them.[2] Kahneman finds System 1 at work in infants and non-humans; similarly Hume says

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[1] When Hume uses the word "reason" with no accompanying adjective, context is required in order to tell whether he is talking about probable reasoning (a function of custom) or abstract or demonstrative reasoning (logical reasoning apriori). For example the phrase "reason of animals") (T 1.3.16, E 9) refers to probable reasoning, whereas "skepticism with regard to reason" refers to demonstrative reasoning (T 1.4.1). A critical interpretive point relates to his use of "reason" in the "fork" argument, for example when he says that "'tis impossible to satisfy ourselves by reason, why we should extend experience beyond those particular instances, which have fallen under our observation" (T 1.3.6.11). Since the operation of custom is characterized as probable reasoning, and so as extrapolative, "reason" in this context has to refer to demonstrative reasoning. In this note, I use "reason", in describing Hume's view, to refer only to abstract or demonstrative reasoning.

[2] Textual references and a sampling of supporting quotations will be found in Appendix 2.

that the same mechanism (custom) is at work when a child learns to fear the fire and a bird learns to build a nest, and he explains that since infants learn from experience before the age of reason, the learning must be ascribed to custom. Hume calls custom a "mechanical tendency" and Kahneman refers to the operations of System 1 as automatic and involuntary. As for the main source of causal knowledge, Hume says it is custom and Kahneman that it is System 1. Finally the authors have matching views about the "guide to life": it is System 1 for Kahneman, custom for Hume.

Kahneman is an experimental psychologist, but could one say the same of Hume? The centuries that separate them make for large differences in presuppositions and methodologies. Despite Hume's description of the *Treatise* as "an attempt to introduce the experimental method of reasoning into moral subjects", his idea of experimenting was introspecting or providing hypothetical examples, rather than running surveys or brain scans. But in some ways their procedures are similar. Hume frequently appeals to "common sense", the opinion of the "generality of mankind", and to what he finds when he turns his attention to how his "own mind" works[3]. Many of Kahneman's ideas originated in similar ways: he drew on his own reflections, imagined how he would respond to questions, and thought about curious anecdotes, exploring these on walks with his collaborator Amos Tversky. Surveys and other experimental data often played a merely confirmatory role.

Rereading Hume while aware of his anticipation of Kahneman's distinction supports a non-skeptical interpretation of his discussion of induction, and gives an empirical flavor to his distrust of Cartesian appeals to reason, in knowledge, morals and action.

The first Appendix details some of the similarities, and the second provides samples of supporting texts. There are many interpretive issues to resolve, but my aim here is merely to make an initial case that Hume's views on custom and reason were hundreds of years ahead of their time.

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[3] Paragraphs on davidhume.org: "common sense": 59; "generality of mankind": 20; "own mind": 14.

Appendix 1.

	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	babes and beasts	✓	✓	x	x
8	guide to life	✓	✓	x	x

Appendix 2

1. Fast

custom	"custom … operates immediately, without allowing any time for reflection"	T 1.3.12.7[4]
reason	reason is "slow in its operations"	E5.22
system 1	"System 1 and System 2 … respectively produce fast and slow thinking"	13
system 2	as above.	13

2. Automatic

custom	custom makes "the transition without any reflection" "custom depends not upon any deliberation" custom is "an instinct or mechanical tendency"	T 1.3.12.7 T 1.3.12.7 E 5.22
reason	reason is characterized as "the labored deductions of the understanding".	E5.22
system 1	"*System 1* operates automatically and quickly …"	20
system 2	"The operations of System 2 are often associated with the subjective experience of agency, choice and concentration."	21

[4] The "T" prefix refers to the *Treatise*, by book, part, section and paragraph; "E" to the first *Enquiry*, by chapter and paragraph; CP to "The coalition of Parties" by paragraph number. Without any prefix, the reference is to pages in D. Kahneman *Thinking, Fast and Slow* New York: Farrar, Straus and Giroux 2011.

3.Voluntary

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 is able, either to produce, or to prevent."	E 5.8
reason	"reason" often used as a verb denoting an activity (passim). E.g. "you reason too hastily, when from the mere consideration of the ideas, you conclude that 'tis impossible motion can ever produce thought."	T 1.4.5.30
system 1	"System 1 operates … with no sense of voluntary control"	20
	"Several of the mental actions in the list [of System 1 activities] are completely involuntary."	22
	"You cannot prevent System 1 from doing its thing."	27
system 2	"System 2 [is] the conscious, reasoning self that has beliefs, makes choices, and decides what to think about and what to do."	21
	"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."	31

4. Easy

custom	"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 …."	T 1.3.8.2
	"we must from custom make an easy transition to the idea of that object, which usually attends it …."	T 1.3.9.16
	"Belief, being a lively conception, can never be entire, where it is not founded on something natural and easy".	T 1.4.1.11
reason	"labored deductions of the understanding" (see under "Automatic")	E 5.22
system 1	"System 1 operates … with little or no effort …"	20
system 2	"The defining feature of System 2 … is that its operations are effortful … ."	31

5. Causation

custom	"the mind is determin'd by custom to pass from any cause to its effect … ."	T 1.3.11.11
system 1	"Finding such causal connections is part of understanding a story and is an automatic operation of System 1."	75
	"System 1 is highly adept in one form of thinking—it automatically and effortlessly identifies causal connections between events …."	110

6. Correction

Hume	"We shall afterwards take notice of some general rules, by which we ought to regulate our judgment concerning causes and effects… ." "we must correct their [the senses'] evidence by reason … ."	T 1.3.13.11 E 12.6
Kahneman	"Self-criticism is one of the functions of System 2."	103

7. Babes and beasts

custom	"'Tis therefore by means of custom alone, that experience operates upon them [beasts]." "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."	T 1.3.16.8 E 9.6
system 1	"The capabilities of System 1 include innate skills that we share with other animals." "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."	21 76

8. A guide of life

custom	"'Tis not, therefore, reason, which is the guide of life, but custom." "Custom, then, is the great guide of human life."	A 16 E 5.6
reason	"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." "Reason is so uncertain a guide that it will always be exposed to doubt and controversy … ."	E 9.5 CP 5
system 1	"all of us live much of our life guided by the impressions of System 1 …." "System 1 is … the origin of most of what we do right—which is most of what we do."	64 416
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."	415