

On the Reality of Chance

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0. Cause and Chance.

In this paper I consider the question of the reality of chance. This is not what divides contemporary probabilists into the objective and subjective schools. That division is accomplished by the question whether there are objective grounds for the correctness of probability judgments. The subjectivists say that there need not be such grounds, and that probability judgments thus need not be empirically meaningful in the verificationist sense, or perhaps that they are not judgments at all, but rather expressions of attitude. (See [11], pp. 156-198). The objectivists say that the truth conditions for probability judgments are such as the frequencies of traits in populations or the existence of propensities. Objectivists and subjectivists are, however, agreed that there are no objective chances. (See [2], pp. 141, 142; and [12], §16).

There is a Humean argument against the reality of chance which depends mainly upon the premise that we have no experience of it. For the precisely analogous reason there are no real causes. We experience regularity and succession, but we experience no sources for these, such as cause and chance would be. There is a Kantian criticism of this argument with respect to cause, which shows that real causality is a condition for our experience of regularity, which condition is not, however, itself a part of our experience. I have tried to consider the application of this argument to chance; the analogous conclusion being that real chance is a condition for our experience of irregularity.

The sort of experience in question is judgment--probabilistic hypotheticals in particular--and transcendental preconditions are understood as transformations under which belief is invariant. I have tried in [16] to develop a general account of partial belief along these lines. In another paper ([17]), exchangeability, (see [2], [13] §3.7) is considered as such a condition, and there are a few remarks on

this in section 3 below. Exchangeability is also provocative here because it is defined by contradicting the principle of Kant's second analogy of experience: In the second analogy causality and succession in time are related. Causality is taken to be constitutive of real succession. Exchangeable events, on the other hand, are those which are apprehended successively, but for which the particular order of occurrence is inessential. They are thus, in Kantian terms, defined as objectively successive but not causally related. And if there are exchangeable events, then there are chances.

1. Hume and Kant on Regularity.

Hume and Kant are agreed that we have no experience of causality, beyond the experience of regularity of succession. It is quite plausible that Kant took Hume's account of the phenomenology or psychology of causal judgment to be correct, and that his major criticism of Hume in this regard took the form of denying the Humean maxim that experience is our only guide to reasoning concerning matters of fact. To deny this maxim is to affirm the possibility of transcendental conditions for causal judgment; conditions for those judgments which are not themselves objects of the judgments. From this point of view Hume was quite right to insist that causal judgments are not judgments about causes--they do not involve the concept of cause. The critical question then is what are the conditions which are necessary in order that such judgments should be possible. Posing this question raises another, perhaps prior, and methodological question: How are such conditions to be discovered and investigated, since they are, by supposition, not experienced? Kant's responses to these questions depend upon the form of argument or deduction which he calls transcendental: ([8], p. B 151; [18], p. 53). The main force of transcendental argument, generally conceived, is to go from experience to a description of its preconditions and structures. These preconditions and structures are necessary: Some of them apply to the experience of any discursive intelligence--that is, any intelligence which judges--and others to human discursive intelligence--for which experience is spatially and temporally ordered, imagination is possible, and so on. In both cases the argument yields a necessary conclusion, for if it were contingent that we find order in experience, objective knowledge would be impossible. This necessity is founded upon the origin of the structures and preconditions of experience in the workings of the experiencing mind.

Thus the order and regularity in the appearances, which we entitle nature, we ourselves introduce. We could never find them in appearances, had we not ourselves, or the nature of our mind, originally set them there. For this unity of nature has to be a necessary one, that is, has to be an a priori certain unity of the connection of appearances; and such synthetic unity could not be established a priori if there were not subjective grounds of such unity contained a priori in the original cognitive powers of our mind, and if these subjective conditions, inasmuch as they are the

grounds of the possibility of knowing any object whatsoever in experience, were not at the same time objectively valid. ([8], pp. A 125-126).

The foundation of the structures and preconditions of experience in the cognitive powers of the knowing mind also makes it possible for us to discover them, so long as the right techniques are employed: "[R]eason has insight only into that which it produces after a plan of its own, and...it must not allow itself to be kept, as it were, in nature's leading strings, but must itself show the way with the principle of judgment based upon fixed laws." ([8], p. B xiii).

All discursive thought depends upon categories. These are concepts which are not found in experience, but which are necessary for the ordering of experience. Kant's program for discovering or deducing the categories may be crudely described as follows: First certain features of experience are taken as 'clues' to the workings of the understanding; the proper taxonomy of these workings leads us to the categories by means of the principle "What must there be in order that experience should have these features?" The features in question are the various forms of judgment. These forms are organized in a table of judgments. The transcendental principle, applied to this table, then leads to the table of the categories. There is then a transcendental deduction of these categories, a justification of their categorical status as regards human thought. This deduction shows that the categorial organization is also categorical--that it is a necessary precondition for human knowledge. Judgment plays a central role in this deduction. (See [18], §§12, 25). The importance of judgment for these purposes lies in its impersonal and non-subjective nature. There is an internal tie between judgment and the presumption of an objective order.

2. Hume on the Psychology of Cause and Chance.

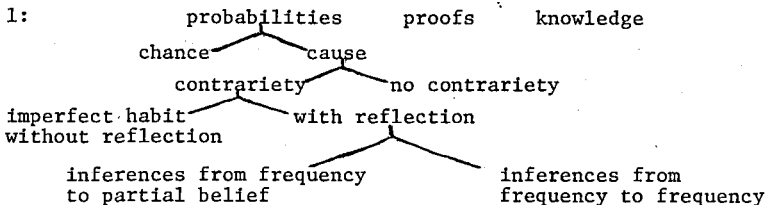
Kant took Hume seriously on the descriptive psychology of causal judgment. This psychology is complex, but a part of it may be simply outlined. (The text in question here is [6], Book I, Part 3, §§11, 12). There is first the tri-partite distinction of probable judgment, proofs and knowledge. ([6], p. 124). Uncertainty is always present in probable judgment; proofs are causal judgments; and knowledge is of the relations of ideas. These correspond to degrees of certainty: Roughly put; uncertainty, empirical certainty, eidetic certainty. The distinction of probable judgments from proofs is, in at least some important cases, one of degree.

There is next the distinction among probable judgments, between those based on chance and those based on causes. Chance judgments are those made in accordance with the principle of indifference; they are illustrated by Hume's famous example of the die. ([6], p. 128). Probable judgments based on cause, or experience, are then distinguished according to whether the experience includes contrariety or not: ([6], pp. 130 f). So, if you have drawn a few balls, all of which are black,

you may be led to a 'hesitating' or partial belief that the next ball will be black. That would be a case of a probable judgment based on cause--or experience--without contrariety. And this sort of judgment, says Hume, is distinguished from proofs, or full strength causal judgments, only in degree. Proofs are a special or limit case of a certain sort of probabilistic judgment.

Causal probabilistic judgments based on contrariety may be made with or without reflection ([6], p. 133). In the latter case the mind may do its calculation without the awareness of the subject. So, one could reach a probabilistic conclusion without knowing how he had done so. This is possible, says Hume, but it is rare. Probabilistic reasoning is usually conscious and explicit. "[W]e commonly take knowingly into consideration the contrariety of past events; we compare the different sides of the contrariety, and carefully weigh the experiments, which we have on each side." Here again there is a division into two sorts of reasoning: ([6], pp. 134 ff.). Both proceed from premises about frequencies. In one case the conclusion is also about a frequency, in the other it is a partial or probabilistic belief. Inferences from frequencies to frequencies, says Hume, offer no problem. They are ordinary causal inferences, the property in question being a frequency. The inference about boats is an example. The premises include repeated observations of twenty boats departing and nineteen returning, and a recent observation of twenty boats departing. The conclusion is that nineteen will return. The structure of this inference has nothing uniquely probabilistic about it. Inferences from frequencies to partial beliefs, on the other hand, are structurally quite different. So, for example, if the premises include repeated observations of twenty boats departing and nineteen returning, and a recent observation of one boat departing, the conclusion will be a belief of a strength 19/20 that the departing boat will return safely. Here the cognitive force is divided over the twenty possible outcomes and summed over the nineteen in which the boat returns safely. Hume characterizes the case with two important remarks: First; the division and addition of the cognitive force constitute a real structural difference from all the other sorts of inference previously discussed. In the case at hand, the act of believing is essentially probabilistic. The "first form of our ideas" is changed, says Hume. ([6], p. 134). Second, as different as is this form of judgment from other cases of causal judgment, the "operation of the mind" involved is structurally the same as that involved in the case of chance reasoning. ([6], p. 135). "Every past experiment may be considered as a kind of chance," he says. So, the structure of the judgment is the same as that in the case of the die.

Figure 1:



Hume's account of the probability of causes makes it clear that probabilistic judgment and inference is not to be subsumed under ordinary or non-partial causal judgment. It is in fact not implausible to count proofs--ordinary causal reasoning--as a sort of probabilistic causal reasoning without contrariety; that is to say, to count probabilistic hypotheticals as the general case, and ordinary causal hypotheticals as a special sort of them without contrariety and in which the force of judgment is as great as possible. Thus if we go about drawing up a table of the forms of judgment according to Hume, we should certainly include probabilistic or partial hypotheticals as a kind of judgment. Kant apparently took Hume seriously on the descriptive psychology of judgment, yet there is no place for probabilistic judgment in the table of judgments, and, indeed, there is no serious discussion of partial or probabilistic judgment in the first Critique. Why not?

Before turning to the discussion of this question, two difficulties in Hume's account of judgment should at least be mentioned: (See [15], §3). The first of these is that he has no good account of the phenomenology of generality. (See [7], Investigation II, Ch. 5). There is a certain logic of generality which reveals, for example, how instantiation is valid. Hume's theory cannot give the phenomenological structure of such inferences. Of course the development of quantifier logic is over a century in the future, so he could not have taken account of that, but neither could he give the phenomenology to go with even so much of the theory of generality as was available to him. The second problem is structural. The contents or objects of belief do not in his theory have a propositional or sentential structure--they are always particulars. Hence beliefs and judgments are not easily related by logic.

These two difficulties have a common source: It is that what is before the mind is always, for Hume, a particular. It is thus neither general nor predicative in structure. And he must always try to account for generality and predication noetically, in terms of the way in which these particulars are regarded. As important and interesting as these difficulties are, they will not be discussed here.

In fact, Hume himself does not always take these difficulties seriously. He is clear that generality is essential to our thought, and he considers it in some detail under the aegis of general rules. ([6], pp. 146 ff.). He usually formulates these with a modality and the indefinite article: "An Irishman cannot have wit." These are not to be understood as universally quantified conditionals, not only because that would be anachronistic, but also because what they assert is not so much a truth about individuals in some well defined domain, but is rather a relation between properties.

It is important to Hume's theory of hypothetical judgment that hypotheticals be partial or probabilistic--that is clear from the text. It is also important that hypotheticals be essentially general. Hume himself did not put these two features of judgment (generality and partiality) together--except in some sketchy remarks at the end of the

section on unphilosophical probabilities. But, as these remarks make clear, he could well have done so, and the theory moves naturally in this direction. We may fill his theory out in this way, writing

$$P_F(G) = p$$

where F and G are open sentences, propositional functions, or properties. The proper account of judgment seems to require such expressions, and Hume's theory seems to allow them. Nothing more will be said here about the definition of such conditional probabilities.

3. Probabilistic Judgment and Chance.

We return now to the question why probabilistic hypotheticals do not occur in the table of judgments. The answer to this question is, in outline, as follows. If probabilistic judgment had a place in the table of judgments, on a par with or in the place of non-probabilistic hypotheticals, then an argument paralleling the metaphysical deduction would lead to the transcendental reality of chances. Just as causal hypotheticals presuppose a causal order, so probabilistic hypotheticals would presuppose chances. But it is a cornerstone of Kant's philosophy that understanding the world requires its constitution as completely and objectively determined. This presupposition is incompatible with real chances. Thus probabilistic hypotheticals cannot appear in the table of judgments, and they must be counted as only apparent judgments.

That is the outline in answer. There are here three important points:

- (i) The distinction between apparent and genuine judgment.
- (ii) The argument that understanding requires or presupposes determinism.
- (iii) The argument from probabilistic hypotheticals to objective chances.

The question of the genuineness of a putative form of judgment leads to the issue of the adequacy of the table of judgments. That table is supposed to give all the genuine forms of judgment, and any judgment which appears not to be of one of its forms must in this respect be deceptive. It is generally agreed that Kant is on shakier ground here than he seems to have thought. He says just before giving the table of judgments:

By 'analytic of concepts' I do not understand their analysis, or the procedure used in philosophical investigations, that of dissecting the content of such concepts as may present themselves, and so of rendering them more distinct; but the hitherto rarely attempted dissection of the faculty of the understanding itself, in order to investigate the possibility of concepts by looking for them in the

understanding alone, as their birthplace, and by analysing the pure use of this faculty. ([8], pp. A 65 f. = pp. B 90 f.).

There is also a brief remark on the need to justify the use of concepts:

Jurists, when speaking of rights and claims, distinguish in a legal action the question of right (quid juris) from the question of fact (quid facti) and they demand that both be proved. Proof of the former, which has to state the right or legal claim, they entitle the deduction. Many empirical concepts are employed without question from anyone. Since experience is always available for the proof of their objective reality, we believe ourselves, even without a deduction, to be justified in appropriating them a meaning, an ascribed significance. But there are also usurpatory concepts (*usurpierte Begriffe*), such as fortune (*Gluck*), fate (*Schicksal*), which, though allowed to circulate by almost universal indulgence, are yet from time to time challenged by the question quid juris. This demand for a deduction involves us in considerable perplexity, no clear legal title, sufficient to justify their employment, being obtainable either from experience or from reason. ([8], pp. A 84 f. = pp. B 116 f.).

It is clear from this that no genuine judgment could essentially involve usurpatory concepts. It is also plausible, if one takes account as well of the brief remarks on probability in the Logik ([10], Ch. X), that Kant would count chance as a usurpatory concept. What is not clear is how he could support this, and, in fact, some attempts are made below to give chance the sort of "legal title" which will justify its employment in the way required by Kant. There is not much more to be said for the moment, except that the heart of the argument to the conclusion that the probabilistic hypothetical is not a (genuine) form of judgment does not depend upon a clear understanding of the distinction between genuine and apparent judgment. That distinction will have its main use in response to the demand for an explanation how it is that certain judgments seem to be of probabilistic hypothetical form. This issue is discussed briefly below.

The second of the above points--on the way in which understanding the world requires or presupposes determinism--cannot be so easily sidestepped. This is the argument of the second analogy of experience. The central point of all the analogies is the establishment of what must be true of the experienced world if we are to make objective temporal judgments within a single temporal order. The first analogy has to do with permanence, the second with causal succession, and the third with coexistence. I shall ignore the first and third analogies, and shall not try to develop the argument of the second in any detail. It is briefly discussed in section 4.

Let us now turn to the deduction from the nature of partial hypothetical judgment to the existence of objective chances. It will be simple to formulate it just analogously to the deduction of objective causes from the nature of hypothetical judgment.

The relation of regularity and causality is just this: We do not experience causality, and it is thus not an object in the world or an empirical relation. We do, however, experience regularity, and it is a condition for such experience that there should be causal relations--though no particular causal condition or judgment follows from this. These causal relations are thus objectified in our experience and judgment without themselves being objects of that experience or judgment.

The analogue of this argument as applied to chance may be put as follows: We have no experience of chance and it is thus not an object in the world. It is, however, a condition for our experience of the absence of regularity that there should be chances--though no particular probabilistic hypothetical follows from this. These chances are thus objectified in our experience and judgment without themselves being objects of that experience or judgment.

The most interesting part of this argument is that the objectivity of chance is a precondition for our experience of the absence of regularity. It is to begin with clear that we do experience considerable absence of regularity. Views which deny the reality of chance do not deny this, but they seek to account for such experience in terms, for example, of ignorance. How is it then that our judgment and experience of the absence of regularity depend upon the existence of objective, but itself not experienced, chance? Since the argument (or deduction) goes from experience to its preconditions, it will not suffice to consider the contrapositive. That is to say, we cannot presume determinism and conclude that--under this presumption--we should have no experience of the absence of regularity. That is because experience and the forms of judgment are taken here as 'clues' rather than as stated premises.

A full and general form of this deduction would be a grand project; quite beyond the scope of the present paper. One sort of judgment and one sort of condition may however be profitably considered by a return to Hume's text and to its phenomenology of judgment.

The important preconditions of judgment in Hume's theory of judgment are always instances of indifference before the mind. Certain objects are equivalent as far as cognitive force is concerned. Thus, to return to the examples of the text ([6], p. 134), a series of observations in which twenty ships go to sea and nineteen return become indifferent objects before the mind; which ship did not return becomes inessential. And when I see twenty ships depart, I'm led to anticipate the return of nineteen of them. But the twenty different ways in which this may come about are indifferent objects before the mind. Hence if I attend to a certain particular ship now departing, and ask what are its chances of returning (this is an inference from frequency to partial belief, in which the "first form" of the ideas is changed) the cognitive force will divide equally among these twenty possibilities, and the law of additivity will lead to a judgment of strength 19/20 that the given ship will return.

The same mechanism is at work in judgments based on the probability of chances, the only difference being that in the chance case the basis of the inference is not an observed frequency but an application of the principle of indifference to the six possible outcomes of throwing the die.

Principles which give the specific form and structure of indifference before the mind are now called principles or conditions of symmetry. They can be represented in standard probabilistic terms as follows: Let \mathcal{B} be a finite Boolean algebra with atoms $Q = \{A_0, \dots, A_n\}$.

And let $\mathcal{P} = \{Q_1, \dots, Q_k\}$ be a partition of Q into the k cells Q_1, \dots, Q_k . Each atom is in some one Q_i , and the Q_i are all

non-null. Then a probability \mathcal{P} on \mathcal{B} is said to be \mathcal{P} -symmetric if \mathcal{P} is invariant within each cell Q_i of \mathcal{P} . Such a probability makes no distinction among members of the same cell. Now what is the role of symmetry principles in Hume's account? Notice first that they are not premises of the inferences in question. Further, an explanation of probabilistic reasoning in which symmetry principles were formulated as propositions to serve as premises would be not only implausible, but also ineffective: The problem is that the premises of the argument, the conclusion of which is a partial belief, will include such propositions as 'My belief is symmetric for such and such propositions.' Probabilistic argument would thus take on a complexity of structure quite absent from ordinary causal argument. Causal argument is not about causality; one of the most important features of Hume's psychology of causal judgment, from a Kantian or critical point of view, is just that it takes this principle seriously. A man need not have the concept of cause in order to make causal inferences. And further, the function of causality in reasoning cannot be explained in terms of such a concept. Similar remarks apply to probability:

We are next to consider what effect a superior combination of chances can have upon the mind, and after what manner it influences our judgment and opinion. Here we may repeat all the same arguments we employ'd in examining that belief, which arises from causes; and may prove after the same manner, that a superior number of chances produces our assent neither by demonstration nor probability. 'Tis indeed evident, that we can never by the comparison of mere ideas make any discovery, which can be of consequence in this affair, and that 'tis impossible to prove with certainty, that any event must fall on that side where there is a superior number of chances. ([6], p. 126).

The question is, by what means a superior number of equal chances operates upon the mind, and produces belief or assent; since it appears, that 'tis neither by arguments deriv'd from demonstration, nor from probability. ([6], p. 127).

The Kantian account of causal reasoning makes transcendental conditions of causal laws. These laws are conditions for thought which are

not among the objects of thought. Of course one may formulate a causal law as a proposition, but the function of the law in thought is not to be understood as assertion of such a proposition. Similarly, and for quite analogous reasons, a critical account of probabilistic reasoning should make transcendental conditions of symmetry principles. The function of symmetry principles in probabilistic reasoning is not to be understood in terms of judgments about symmetry.

Exchangeability is an important kind of symmetry. (See [2], [13], §3.7, [17]). Belief about a series of trials, each of which will have one of the outcomes 'success' or 'failure', is exchangeable if it is invariant for the order of successes and failures, and is affected only by their frequencies. So, if the Boolean algebra \mathcal{B}_n has as atoms all n -termed sequences of zeros and ones, the exchangeable partition of these atoms will partition them into $n + 1$ cells, $\mathcal{A}_0, \dots, \mathcal{A}_n$, where for each i , \mathcal{A}_i includes all and only those atoms with exactly i ones.

Exchangeability may function to relate judgments without itself becoming judgmental content. It cannot in these cases be a merely subjective condition. It is in this respect to be distinguished from judgments about the absence of regularity, as when one judges that there is no regularity connecting throws and outcomes. That is a judgment of experience. Its objects (throws, outcomes, and empirical regularities connecting them) are all objects of experience. But we look in vain among the contents of experience to find the conditions of exchangeability by which certain of these contents are related. Whatever is not among the contents of experience cannot be merely subjective. We should thus conclude that there are in fact non-subjective conditions of exchangeability. And conditions of exchangeability constitute one sort of non-subjective chance.

This deduction is important here for two reasons. First, it provides a response to Kant's demand for a legal title for the concept of chance. Second, it is a part of the conceptual response to the question why probabilistic judgment has been ignored in the critical tradition. That answer is as follows: If probabilistic judgment is taken seriously, then we shall be led to affirm the non-subjectivity of chance. That has just been argued for in a special case. But understanding the world requires that it be constituted as determined non-subjectively, that is to say, that the world must be objectively determined. Thus probabilistic judgment must not be taken seriously; it is merely an apparent and not a genuine form of judgment.

4. Understanding and Determinism.

"All appearances are, as regards their existence, subject a priori to rules determining their relations to one another in time." ([8], p. A 177).

"Experience is possible only through the representation of a necessary connection of perceptions." ([8], P. B 218).

Coherent experience in a unified time requires that events be conceived in a completely determined causal network. Each event has a unique position in the network, and events cannot be consistently permuted within it.

Without trying for an analysis or explication of Kant's difficult argument to this conclusion, some of its features may nevertheless be recalled.

First, when we say that events cannot consistently be permuted in time or causal order, the consistency in question is not logical or analytic consistency. There are two stronger notions of consistency and necessity at work in Kant; real and empirical consistency and necessity. It is not clear that in these latter cases consistency and necessity are related with negation (by the law that negation of necessity is possibility of negation) in the standard way. The logically possible is what is thinkable in the broadest sense without contradiction. Real possibilities are those which are in accord with the transcendently necessary and formal conditions of experience—that is to say with intuition and the scheme of the categories. Empirical possibility is what is in accord with scientific law. Logic defines logical possibility, transcendental philosophy characterizes and studies real possibility, and science reveals empirical possibility. Kant remarks explicitly on the subordination of empirical or scientific necessity to transcendental necessity in the Critique of Judgment. ([9], p. 21).

The sorts of necessity seem to have an ordering from weak to strong; logical, real, empirical, so that whatever is empirically possible is really possible, and whatever is really possible is logically possible. It is not clear, however, that they can be thought of as increasing grades of Leibnizean or Carnapian possible-worlds possibility. First, the notion of world seems to involve that of real or transcendental possibility—that is to say, not every logically possible set of conditions seems to determine a world, for a world (though Kant himself does not employ the notion in such a technical way, as far as I know) will be the source and environment of the experience of a discursive intelligence. Thus we cannot simply take the worlds to be given by state descriptions. (As attempted, for example, in [5], Ch. I, §6).

Hence the applicability of the modal logic of propositions here seems at best tricky (though it is an interesting and revealing experiment to look at Kant's work in necessity in this light). There are some technical details in the way of this too: For example, reductio seems a permissible method for establishing logical necessity, but is explicitly not permitted in transcendental proofs. ([8], p. B 820).

The two formulations of the general principle quoted above are necessary in the real or transcendental sense. The permutation of

events in the causal network seems to be impossible in the empirical sense; this sort of necessity governs the conditions of human experience, but may not apply to discursive intelligence in general. This empirical necessity is thus the necessity of determination in the conclusion of the argument from understanding to determinism. The argument itself is nevertheless transcendental--the force with which understanding implies determinism is transcendental necessity; the sort of necessity which would connect the experience of any discursive intelligence with its conditions.

Second remark. The unity of time plays an essential role in the argument. Succession in time is completely connected. Our system of time judgments presuppose this.

What is important for present purposes is the concept of knowledge which this argument requires. If knowledge of this sort is to be possible, then the world must admit in principle of being perfectly known. There is a whole class of points of view here according to which probabilistic belief cannot be knowledge, since--except in the limit case of probability measures which assign only the values zero and one--probabilistic belief can never be true. Whatever is known must be true, and judgment of the form $P(A) = p$ is in general and as it stands neither true nor false. In some cases probabilistic or partial judgment is reduced or translated to non-probabilistic form, and the latter may then be known. Thus, just to mention famous examples, the distribution of a character in a population, real or imagined, may in many cases be given in terms of its governing parameters. There is then frequentist knowledge, of the sort discussed by Hume in the case of nineteen out of twenty ships returning. What looks, however, to be both probabilistic and knowledge is the hypothetical which leads from repeated observations of nineteen out of twenty ships returning to a partial belief (in which "the first form" of the judgment is changed) of strength 19/20 that a given ship will return.

5. Post-Kantian Transcendental Argument.

There are two main points to the present paper. One is to answer the question why Kant's table of judgments did not include the probabilistic hypothetical as a genuine form of judgment. The other is to see what the transcendental and metaphysical deductions would have looked like had the table included such a form of judgment. The second point provides a part of the answer to the first question. The consequences of the thus modified deductions are incompatible with certain important Kantian principles.

Critical techniques and transcendental argument are no longer what they were in the hands of their creator. Something should be said about the ways in which they have changed, or, at least, about some of those ways which are important here.

It is pretty clear that Kant thought of the distinction between human experience and its preconditions as fixed. He did not think of

the conditions for experience as being themselves experiential in any sense. It was Husserl who generalized the notion of experience in such a way that the conditions for experience could themselves become objects in an experience. A simplified but harmless way to envision this is to take the second experience to be reflection--with suitable bracketing--on the transcendental conditions and their operation in the original naive experience. Then this second order experience--this reflection--has also its preconditions which may in turn become objects for a third level experience, and so on. In this way a hierarchy of levels of experience is generated; at each step the next level is reached by transcendental investigation.

Husserl thought of this in terms of experience, and particularly in terms of perception and perceptual judgment. But it is obvious that other hierarchies share these structural features. A sequence of languages, each of which is an adequate metalanguage for the preceding, is a good example. (See [1], pp. 130 f.). Here the analogue of the transcendental preconditions for thought or experience is the truth definition for the object language. Under certain conditions, as is well known, this transcendental linguistic investigation may be continued in terms of a continuing hierarchy of truth definitions.

The psychological distinction of conscious from unconscious is another example. The unconscious beliefs and desires in terms of which mental life is to be understood may themselves be brought to consciousness. Freud himself seems to have held an absolutist view of this, according to which psychoanalytic thought could itself be freed of unconscious conditions, but the current view (of Lacan, for example) is rather that all thought has unconscious conditions. As these conditions are brought to consciousness, new unconscious conditions come to play. [4] .

Hierarchies of this sort in which structure is enriched and ramified at each level are prominent and important in contemporary thought. I shall not try to say anything comprehensive or conclusive about them. My main interest here is the generalization of Kant's original distinction of experience from its conditions. There is, however, an interesting feature which the examples mentioned above share.

In each case when the construction or investigation progresses by a step, the conditions constructed or uncovered undergo a loss of transformation of force, with no change in content or essence. This is most marked in the psychiatric case. Once the unconscious structures are brought to consciousness they lose their power to direct conscious thought. Their objective or intentional signification is, however, preserved; an unconscious desire to kill one's father when brought to consciousness continues to signify killing one's father, but as conscious it loses its conative force--it is no longer a desire--and as it occurs in consciousness it no longer has the power, for example, to direct repressive mechanisms. (See [4], for example).

A similar transformation occurs in the transformation and bracketing of a transcendental condition for experience into an object of reflective experience. Thus "Every event has a cause" as a condition of experience is a rule which directs the naive understanding without itself being understood. It is not a proposition. Transcendental investigation may reveal it to be such a rule. The rule can then be grasped in propositional form. It is then an object of a certain reflective experience, and--as a proposition--has no longer any regulative force. Indeed, this new and amplified experience depends now upon richer conditions. In this way an infinite hierarchy is generated by the rule: Every experience has transcendental conditions.

It is in the relation of language and metalanguage that this transformation or loss of force can be seen most clearly. An object language sentence will be represented in an adequate metalanguage in two ways. It will be named in some effective or transparent way (the name must enable the construction and understanding of the sentence). And it will have a translation in the metalanguage. The original assertive force of the sentence is lost in naming it. The name of a sentence makes no assertion. And the translation of the sentence transforms its meaning, since the metalanguage has a different truth definition than does the object language.

6. Conclusion.

There are several ways in which the present use of critical technique differs from that historically associated with Kant.

There is first the relativization of the distinction of experience from its conditions along roughly Husserlian lines. This may also be seen as spelling out and generalizing Suppes's view that claims of causality--in which he includes probability--must be relativized to a conceptual framework.

Second, the conditions for human experience are not unique as Kant took them to be. One of the main principles of Kantian humanism is that all human experience and thought is essentially similar in its categories and preconditions. That is also an important principle of much recent philosophy. Once detected it should at least be mistrusted.

Third, the metaphysical and transcendental deductions are here freed from Kant's determinism. Kant was right that a certain kind of understanding must constitute the world as determined. We may deny that there is such understanding.

Notes

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