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### Law of Nature: Regularity Approach versus the Necessitarian Approach

Causality characterizes the relationship between causes and their subsequent effects.

General laws like the statement ‘all metals conduct electricity’ are described as ‘laws of nature’ (Okasha 41-42). Laws are inviolable and indicate the existence of a lawgiver, therefore implying that entities ‘obey’ certain laws. Positing the causal relation of laws was an important question dealt by the philosophers of science in the twentieth century. The two main approaches to resolve this complicated issue were known as the necessitarian and the regularity approach. While David Hume criticized the necessitarian approach, A.J. Ayer offered an alternative in the form of the regularity approach while preserving the distinction between the generalization of law and the generalization of fact.

The necessitarian approach states that laws of nature necessarily cause certain effects that can be deduced. Theoretically, if an event, A, causes another circumstance, B, then there is a necessary relation between A and B such that given the first event, the second event will always occur. Necessitarianism states that causes are sufficient enough to precipitate their effects. Although this is a widely held belief, it has received some criticism as well. David Hume denounces the necessitarian approach by exclaiming that causal laws do not necessitate effects. He concluded that “causality is a figment of our imagination” (Okasha 51). One cannot deduce effects *a priori*, or without experience. If it were the case that A implies B, then one should already know the effect of an event just by analyzing the cause. For example, one cannot deduce

that thunder will follow a lightning bolt unless he or she has experienced it before. Similarly, scenarios like smoke following fire and the movement of billiard balls after the cue ball hits cannot be determined *a priori*. It can only be determined *a posteriori*, or on the basis of experience. Hume summarized this idea as a “constant conjunction,” where causes do not necessarily imply effects. Instead of effects being necessarily implied based on rational or empirical grounds, Hume states that individuals predict these effects on custom or repeated experience. Since necessitarianism only includes de facto constancies in nature and not exceptions, Hume rejects the ‘A implies B’ ideology, or the existence of universal implications, and therefore, the necessitarian approach as a whole.

While Hume criticizes the necessitarian approach, Ayer offers an alternative known as the “regularity approach.” Ayer criticized the proponents of the necessitarian perspective by alleging that they reached a “strange conclusion that the laws of nature can” be “established independently of experience: for if they are purely logical truths, they must be discoverable by reason alone” (Ayer 810). Ayer disputes this ideology. The regularity approach identifies the problem of the necessitarian approach as the proliferation of laws due to false antecedents which cause the creation of vacuous laws. This objection can be rectified if it is made sure that the antecedent in the implication is true. Ayer states that laws of nature are idealization abstract since they refer to entities that do not necessarily exist. While necessitarianism necessarily concludes a connection between causes and effects, causality is defined is nothing more than relations of constant conjunctions by the regularity approach.

One of the most important objections to the regularity thesis is that it does not account for the generalization of facts and laws. There are several regularities that are not nomological or law-like. Every generalization of law is a generalization of fact, but generalization of fact does

not imply generalization of the law. Generalization of laws requires de-facto constant conjunctions, but not all de-facto constant conjunctions are generalization of laws. Ayer proclaims that sometimes the generalization of fact is referred to as “accidental generalizations” such that “they are not themselves the expression of natural laws” (819). He concludes that there is no objective distinction between the generalization of fact and law. The difference does not lie in reality but in the attitudes of people. A law is not a generalization of fact not because of a mind-independent reality but rather due to the unwillingness of individuals to relinquish the generalization of fact even with disconfirming evidence.

Fred Dretske’s epistemic regularity thesis claims that the fulfillment of the characteristic of a law consists of a “universal truth + X”, where X is the willingness to utilize generalization to make predictions or accepting the generalizations as well-confirmed (829). Ayer states that it is not easy to relinquish counterexamples. For example, although all American presidents are male does not confirm the result of future elections, in case a female is elected, this generalization is disconfirmed. There is a disinclination to disconfirm a generalization in light of a counterexample, which confirms that the generalization of fact is not a generalization of law. According to Ayer, one should hold on to the generalization of fact even if disconfirming evidence is provided. He clarifies by stating that in this instance, “a generalization of law may be weaker than a generalization of fact, since it may admit exceptions to generalization as it is stated. This does not mean, however, that the law allows for exceptions: if the exception is acknowledged to be genuine, the law is held to be refuted” (823). Altogether, the regularity and the necessitarian approach portray distinct ways to posit causal relations, while Ayer preserves the distinction between the generalization of fact and law by admitting individual reluctance to abandon belief in a certain fact.

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