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Author/Contributor:

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Publication details:

American Psychologist

v. 35

Chapter No. 12

pp. 1081-1083

Publication Date:

1980

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Laws of Behavior

Fact or Artifact?

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ABSTRACT: *The transcript of an excerpt of a conversation¹ between God and an Earthling² is presented. The discussion centers around an appropriate status for laws of behavior—are they human artifacts or cosmic dictates?*

EARTHLING: But weren't you the one who said "Seek and you shall find"?

GOD: Oh, but the media are forever prostituting the import of one's pronouncements! What I said was that your species indeed has a habit of finding what it seeks—instead of seeking what it finds.

EARTHLING: Implying what?

GOD: Implying that faith carries one over vast chasms—chasms impossible to bridge by reason alone.

EARTHLING: What are you getting at?

GOD: Well, for example, psychologists currently make the act of faith that laws of the behavior of organisms exist and proceed to seek these laws.

EARTHLING: Just as physicists before them have sought the laws of the behavior of matter?

GOD: Exactly.

EARTHLING: Surely the pursuit of the laws of nature is a sound and legitimate exercise. Using just such a paradigm, physics has arrived at a very advanced level.

GOD: That may well be so, but the utility of the laws of physics does not reflect on their etiology. Newton's laws of motion, for example, are just what the name implies—Newton's laws. They are a product of his ingenuity and are quite correctly attributed to him rather than Myself. You will remember - that Newton's laws were of the form $y = f(x_1, x_2, \dots, x_n)$, where at least one of the x_i was a continuous variable (e.g., mass or distance). As such, all observations that "generate" or "test" the laws can only be approximate—since the limitations of the measuring instruments prevent the incorporated continuous variables from being dissociated from errors of measurement.

EARTHLING: You are criticizing Newton's method?

GOD: Not at all! I am saying that if Newton's laws stem from empirical studies, then the available evidence for Newton was of the type approx. $y = f(x_1, x_2, \dots, \text{approx. } x_i, \dots, x_n)$, and that any precise law proposed from such data must be considered as an artifact of the scientist rather than the data.

EARTHLING: Einstein has declared, for example, that Newton's inverse square law (force of attraction between 2 masses is inversely proportional to the square of the distance)

“has neither empirical nor theoretical foundation. We can imagine innumerable laws which would serve the same purpose without our being able to state a reason why one of them is to be preferred to others” (Einstein, 1916/1952, p. 107).

¹ Translated from the Latin by Father Fonquette de la Voltaire. The original manuscript is in the Vatican Library (No. 427S92).

² Name and address withheld by request.

But you must remember that Newton's laws are history, and the short comings have been corrected by Einstein.

GOD: It is true that a fourth dimension has been incorporated into the equations—yet how inconsequential is this with an infinity of dimensions available! The fundamental problem of generating exact laws from inexact observations remains.

EARTHLING: It appears that there is an emphasis in some current literature suggesting that science proceeds from a mass of observational data (a "data bank") to the generation of theories and laws (in the form of mathematical relationships between variables). However, if we again take physics as our scientific model, perhaps we should consider that a prominent physicist asserts that "it is more important to have beauty in one's equations than to have them fit experiment—if one has really a sound insight, one is on a sure line of progress" (Dirac, 1963, p.47).

GOD: The problem remains: How does an earthling recognize a "sound insight"?

EARTHLING: Well, according to Descartes it would be a matter of getting in tune with one's inner self. He has written that

"You have laid down these laws in nature just as a king lays down laws in his kingdom. There is no single one that we cannot understand if our mind turns to consider it. They are all inborn in our minds, just as a king would imprint his laws on the hearts of all his subjects if he had enough power to do so" (cited by Frankfurt, 1977, p. 36).

GOD: Descartes misses the point. Any laws that I might impose on the universe would not attempt to prescribe behavior (as do the laws of kings). Any laws I might impose would describe behavior—with no possibility of suspension or contravention. As such, I would have no need to give humans access to them, inscribe them on hearts, or any such similar activity. Behavior in the system cannot be other than described by any laws of Mine—any inscription, penalties for transgression, and so on would be quite superfluous.

EARTHLING: Yet, certain scientists have indeed proceeded from so-called "insight" or inspiration to a test of the insight —without intervention of the beloved data bank.

GOD: They proceed at their peril! The problem remains that the theory is stated exactly, while the observations are subjected to inexactness of measurement (so long as a continuous variable is involved).

EARTHLING; So, you are arguing that all laws involving continuous variables are human artifacts, since one can move logically and unambiguously from the exact to the inexact but not vice versa.

GOD: Yes, laws generated by this procedure of moving from the inexact to the exact are inventions of humankind. If the natural laws attributed to Me exist, then these natural laws and laws invented by humans may fortuitously coincide —such an event would not detract in any measure from the status of your laws as inventions. Furthermore, there would be no way of humankind's ever discovering the fact that a particular law coincides with a law of Nature (if such things do indeed exist).

EARTHLING: I follow that, but I notice that your argument lacks generality. Will you admit then that laws involving only discrete variables are discoverable?

GOD: If you wish to claim that any law is discovered, you need to establish that it existed prior to the observations from which it was generated. Your proposed laws are actually post hoc generalizations about historical events, or at least a perception of such events. To establish their existence prior to an event is not possible.

EARTHLING: Surely this can be done by subjecting predictions to test.

GOD: If a "law" is sustained by its predictive power—that is, generates correct predictions—then the "law" has some utility. If it generates incorrect predictions it merely lacks utility. In neither case is its preexistence or its existence independent of its human proposer established.

EARTHLING: But if behavior of animate or inanimate objects is lawlike, then surely laws exist.

GOD: If, as you allege, behavior is lawlike, then perhaps you should pursue lawlikes. This regularity, or illusion of regularity, that you perceive is no comment on the preexistence of underlying laws. For example, a sequence of die throws may result in the sequence 6,6,6,6,6,6,6,6,6,6. What would you conclude?

EARTHLING: The process is clearly not random.

GOD: And what does a random string of the digits from 1 to 6 look like?

EARTHLING: Well, 1,4,3,6,2,1,6,4,5,2, for example.

GOD: Mmph. Regularity does not imply the influence of laws. In the two sequences of 10 throws of a die, for example, both sequences have exactly the same probability of occurrence—namely, $1/60466176$. From the first sequence you might generate a simple law, while in the second, perhaps no law or some sophisticated law. In neither case can the law be known to reflect the underlying process, random or otherwise.

EARTHLING: If such laws succeeded in predicting further entries in the sequence, surely the preexistence of the law would then be established.

GOD: In such a case the law has continuing utility. However, unless one makes the initial act of faith that laws exist, then any proposed laws must be constantly subject to test, and hence available for disestablishment, at any time. In the event of a prediction failing, Nature is surely not to be repudiated for a transgression of law. Rather, the law is amended or abandoned. Since your access to the time dimension is severely restricted in both directions, this process of evolution of laws to fit historical events is a continuous process.

EARTHLING: But surely your very existence implies the existence of laws. I cannot conceive of a God without laws.

GOD: You mistake the limitations of your imagination for limitation of the universe.

EARTHLING: You mean you have not imposed laws on the universe?

GOD: That is for Me alone to know. For yourself, the existence of natural laws cannot be established empirically owing to (a) the lack of precision in measuring instruments, and (b) your lack of free access to the time dimension. What pass for laws in the sciences are inventions—human artifacts.

EARTHLING: Anyway, perhaps that is just as well for science—since according to your friend Saint Augustine, the existence of a law implies the lawmaker. And currently science is disinclined to admit of a lawmaker.

GOD: A nice fellow that Augustine, but I never did quite follow his reasoning. Now, if x implies an x -maker, then an x -maker must imply an x -maker-maker, ad infinitum. Would that be right?

EARTHLING: Hmmm.

GOD: Never mind. The world is created so that My laws and hence Myself cannot be accessed through reason. As Augustine has championed—I am perfectly just. It would not be equitable for Me to be knowable through reason—since under that circumstance those with superior reasoning ability would be advantaged. Now on the other hand, any imbecile can have faith!

EARTHLING: Madam! !! How equitable can you get?

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