fideist, and sceptical positions—or into the determinist position—and at the same time were to notice these implications—one might well conclude, through apparent reason and logic, that reason and logic are to be rejected as guides to life. Using argument, and presupposing argumentation, we destroy argumentation.

I am not a determinist, and I believe determinism has been refuted.[24] Moreover, I believe that the argument of this book defeats the only powerful argument on behalf of scepticism, fideism, and relativism. Yet I want to hold myself open to the despair of reason, in case the argument should lead somewhere different tomorrow. Thus the pancritical rationalist may hold his practice of reasoning and obeying logic—just like everything else—open to comprehensive criticism and rejection.

The fact that argument presupposes a minimal logic as unrevisable in no way identifies a *commitment* on the part of a pancritical rationalist. To be sure, the practice of critical argument and logic are bound up together. One can no more argue without a minimal logic than one can live without breathing or speak without language. None of these three—living, speaking, arguing—require irrational commitment to a dogma. Nor for that matter are logic and arguing even peculiar to or identificatory of a pancritical rationalist—any more than breathing or speaking is. To the extent to which he wishes to employ arguments, *any ir*rationalist must use a minimal logic too. The strength of the irrationalist's *tu quoque* was indeed that it defeated the rationalist *logically and rationally,* on the rationalist's own terms: it defeated the rationalist with an *internal* criticism. If one wanted to argue that anyone who *uses* logic is *committed* to logic, then one would have to claim that the irrationalist, too, is committed to logic![25] In which case the *tu quoque* would, once again, vanish.

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[24]See *The Open Universe.*

[25]Of course any good irrationalist recognizes, rightly, that use of logic and commitment to logic are separate matters. All these matters are confused in Anthony O'Hear's *Karl Popper* (London: Routledge and Kegan Paul, 1980), a book whose presentation and interpretation often show little understanding of the issues. As one example, O'Hear writes (p. 150): "the irrationalist who is logically superior to the rationalist cannot, without self-contradiction, engage in argument, even so far as to point out the logical superiority of his position." This statement is misconceived from beginning to end, and a few of the errors may be noted: (1) Self-contradiction—even if it were present here, and it is not—would not, in itself, worry an irrationalist who acknowledges no allegiance to logic. (2) The irrationalist's logical superiority to justificationist rationalists has been to note that the rationalist, *from his own point of view,* cannot do what he claims to do—i.e., that the rationalist has failed to acknowledge the limitations of reason and argumentation. (3) The irrationalist can, of course, use these, and other arguments, against the rationalist. *Use of* argument needs to be carefully distinguished from *belief in* argument. The irrationalist can use these arguments, not because he himself takes argument seriously, but because he knows that the rationalist does. The irrationalist uses argument because he knows that argument is effective against rationalists. The *rationalist* may be impressed by arguments showing the logical superiority of irrationalism; and the irrationalist may find it amusing to see the rationalist defeated on his own terms even if he himself does not take those terms seriously. The irrationalist may, of course, also take argument seriously—and may even do so consistently—in any area which, in his opinion, does not run up against the alleged limits of reason. The irrationalist, with no need to be consistent, may invoke reason frequently or not at all. One must remember that, for him, *reason is a whore.*

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# APPENDIX 6. THE TRANSMISSIBILITY ASSUMPTION

In chapter 5 of this book, I asked why an authoritarian structure has been retained—had even gone unnoticed—in modern philosophies that were intentionally anti-authoritarian and critical in spirit. I found an answer to this question in the fact that in almost all traditional and modern philosophies—those that called themselves critical as well as those that did not—the idea of criticism was fused with the idea of justification.[1]

It is time now to ask a somewhat deeper question, whose answer will be a little more technical. What I have in mind is: *Why are justification and criticism fused in the ways we have described?*

Consider again what occurs during justificational criticism. In justificational criticism, the view to be criticized or evaluated is examined with regard to the question whether it can be *derived from* (justified by) the authority. Thus it is supposed to inherit logically whatever merit it possesses from the justifying authority whence it is derived. Thus if the justifying authority is true, the view being examined, if derivable from it, is true; if the justifying authority is probable, it is at least as probable; if the justifying authority is empirical, it is empirical. And so on. Without all this, there would be no justification.

This whole procedure is held in place by yet another hidden philosophical dogma: *Most philosophical views take for granted that all properties, measures, and tokens of intellectual value or merit are transmitted from premises to conclusion, in the same manner as truth, through the relationship of logical derivability or deducibility.*[2] I call this the "transmissibili-

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[1]The insight that the Western philosophical tradition is authoritarian in structure is due to Popper (1960), as is the critique of the transmissibility assumption in its application to empirical science (1934). The explicit unfusing of justification and criticism is due to me (1960), as is the application of the transmissibility assumption to the problem of rationality (1960). See Popper, "On the Sources of Knowledge and of Ignorance", 1960, reprinted in *Conjectures and Refutations*; and *The Logic of Scientific Discovery*, secs. 36 and 83. See also my "Limits of Rationality", 1962, and "Rationality versus the Theory of Rationality", 1964, both cited above; and my "A Note on Barker's Discussion of Popper's Theory of Corroboration", *Philosophical Studies*, January-February 1961, pp. 5–10.

[2]Several philosophers of science, including Carnap, Hempel, and Goodman, have argued the place of a similar assumption in theories of confirmation in the natural sciences, referring to this assumption by names

ty assumption". It is also called the "content condition", the "consequence condition", and other names as well.

Thus theories about the evaluation and criticism of competing views include (1) some more or less well-defined notion about the character of whatever property (e.g., truth, probability, empirical character) is to be used in evaluating and criticizing; and (2) the assumption that this property, whatever its character, must be fully transmissible logically—like truth and unlike falsity (which is retransmitted). Thus logical derivates inherit the quality and degree of merit of the premises whence they are derived. This "common feature", writes Adolf Grünbaum, "should be an ingredient of any theory of corroboration or rational credibility".[3]

This assumption is held with ferocious, if usually unexamined, tenacity—a tenacity which can only be explained historically. The earliest attempted criteria of evaluation were criteria of truth, demarcating good ideas from bad ones coincident with the demarcation between the true and the false. (See appendix 2.) But criteria of truth proved to be either unattainable or practically inapplicable to the issues for which they were needed; and the search for criteria of truth was displaced by a search for weaker but more attainable measures. Probability (in the sense of the probability calculus) is most often used for this purpose. (Prior to the development of modern probability theory several different senses of "probability" were used in this connection; but probability in the sense of the probability calculus is now almost invariably meant in such connections.)

*Truth* and *probability* do happen to be transmissible from premises to conclusion through the deducibility relationship: the derivates of a statement are true if the statement is true; and they are *at least as probable* as the statement whence they are derived. But most other evaluational properties are not like this. And various other properties of statements which have little if anything to do with evaluation are also not transmissible. One example of the latter would be the property of "being written in English". Truth and probability are indeed two of the *very few* characteristics which are transmissible.

My historical conjecture is that these two concepts exerted such a determining influence over early developments within the justificationist

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like "consequence condition", "entailment condition", and "content condition". My remarks here are not intended to apply only to scientific matters. For an example of the misunderstandings created by misapplying the transmissibility assumption or consequence condition, see my "A Note on Barker's Criticism of Popper's Theory of Corroboration".

[3]Adolf Grünbaum; "Falsifiability and Rationality", mimeographed. Read at the International Colloquium on Issues in Contemporary Physics and Philosophy of Science, September 2, 1971; See also Grünbaum's "Is Falsifiability the Touchstone of Scientific Rationality? Karl Popper versus Inductivism", in R. S. Cohen, P. K. Feyerabend, and M. W. Wartofsky, *Essays in Memory of Imre Lakatos* (Dordrecht: D. Reidel, 1976), pp. 213–52; and "Is the Method of Bold Conjectures and Attempted Refutations *Justifiably* the Method of Science?", *British Journal for the Philosophy of Science*, June 1976, pp. 105–36.

metacontext that it is now unquestioningly assumed that other putative properties, however they might differ from truth and probability, nevertheless automatically share their logical transmissibility. Indeed, the demand for justification makes undesirable any property unable to justify its derivates by lending them its own respectability.

If the ability of truth and probability to be transmitted led, historically, to the general assumption that *any* indicator of merit or intellectual respectability is transmissible, the situation is now ironically also reversed: some measures, such as probability, are retained *because* they are logically transmissible. The transmissibility requirement itself is taken for granted. The self-reinforcing structure of the Western justificationist metacontext so protects this assumption that today, when criteria of truth remain unavailable, and when probability measures are unable to arbitrate rationally among competing scientific hypotheses, not to mention less precise ideas, logical transmissibility is still expected of other evaluatory properties and tokens without regard to their real logical capabilities; and it is also demanded that evaluations be made in terms of probability without regard to *its* evaluational capabilities. Hence the heroic yet futile attempts to retain probability as a positive evaluational property.

Take contemporary empiricist philosophy of science as an example. To comprehend it and its quandaries, it is important to notice that most theories relying on probability as an evaluatory measure also include "empirical character" as a further requirement for any acceptable theory. Legitimate statements must be reducible to something like individual "basic statements" reporting sense experience; and the logical derivates of a legitimate statement inherit not only its degree of probability but also its empirical character. Empirical character, however, is *not* transmissible. From every basic empirical statement both nonempirical metaphysical statements and all tautologies follow logically—not to mention the problem of induction: that legitimate universal scientific hypotheses cannot be reduced to truth functions of a finite class of basic observation statements. Out of this conflict (between the transmissibility of probability and the nontransmissibility of empirical character) are produced several of the well-known "paradoxes" of induction and confirmation. When transmissible probability is mixed with the nontransmissible property of "empirical character", the results are indeed bizarre. Nonempirical consequences of empirical statements inherit the probability of the original empirical statement, consequently becoming respectable from the point of view of the probability standard. Yet, lacking empirical character, they remain disreputable from *that* standpoint. If meaning criteria are added as still further criteria of respectability, still more anomalies can appear.

*Yet it is simply not necessary to be bound by this transmissibility assumption.* Alternative approaches to evaluation and criticism are possible

which not only do not contain the transmissibility assumption but which are incompatible with it. One example is the theory of testability or corroborability. It provides an example of nonjustificational evaluation and criticism in broad terms.

Testability or corroborability assesses not the degree to which a theory is probabilified or confirmed or justified, but the degree to which it is *testable* or *corroborable*. This provides an indication of progress, expressing *relative potential satisfactoriness* of a theory, applicable in evaluating a theory even before that theory has been tested empirically.

The measure of degree of testability, unlike truth and probability, is, however, not logically transmissible. Quite the contrary.

The difference between this theory and those referred to above can be defined thus. Whereas evaluational measures like probability and (Carnapian) degree of confirmation are transmitted in the same direction as truth, degree of testability, which is a measure of content, is, like falsity, *retransmitted* from conclusion to premises. The difference between testability theory and various probabilistic theories of confirmation may be defined by reference to this irreducible difference in the ways the two properties are logically transmitted.[4] (Other evaluational measures and properties—such as explanatory power—are also not transmitted.)

The point may be explained as follows. If the theory of testability did share the transmissibility assumption, then any consequence of a hypothesis would have to be as highly testable as the original. But no such thing happens: since a hypothesis is testable (in the syntactical sense) by its consequents, the hypothesis must possess at least as high a degree of testability (and thus corroborability) as any of its consequents. But it *may* (and if logically stronger almost invariably *will*) possess a higher degree of testability. If a hypothesis can possess a higher degree of testability than its consequents, then a consequent does not *inherit* this particular property through the deducibility relationship. A theory does not bequeath its degree of testability to those theories it entails, its necessary conditions, which traditional accounts would represent it as justifying.

This point might be illustrated trivially by examining the testability relations of these three hypotheses:

(1) All who dwell in London are English.
(2) All who dwell in Hampstead are English.
(3) All who dwell in Bloomsbury are English.

Assuming, correctly, that Bloomsbury and Hampstead are both in London, and that both the second and the third statements follow from the first, let us suppose that the second statement is falsified. By *modus tollens,* the rule of retransmission of falsity, the first statement is falsified too.

But suppose that the second statement has not been falsified, and that another of the first statement's consequents, the third statement, has never been tested. Clearly, the first statement will be falsified by the third just in case the third is subsequently tested and found false. But the second statement will not be falsified thereby, since it is logically unrelated to the third. Thus the first statement is more testable or falsifiable than the second, since the first is falsifiable by something that does not falsify the second. And the second cannot be more falsifiable than the first, since anything that falsifies the second falsifies the first.

This example, and similar ones, bring into relief not only the absence of any assumption that a measure of intellectual respectability or rationality (in this case "degree of testability") is logically transmissible from premises to conclusion, but also the nonjustificational character of the theory of criticism involved.

(To avoid confusion, the reader should refer again to appendix 3, where it is shown that in the theory of testability the falsity of a view is not *established* in a refutation thereof. Rather, the view is provisionally rejected because it conflicts with some other better tested, less problematic view. But the view that occasions the refutation is itself open to criticism by the testing of its own consequences. And these in turn are criticizable; and so on forever. This *process* of testing is, of course, in principle infinite; but there is no infinite *regress,* because the aim of justifying or establishing has been abandoned.)

If all measures of intellectual respectability resembled truth and probability in being transmissible, all criticism would perforce be justificational. Since degree of corroborability and testability are not transmissible, not all criticism need be justificational. Hence a nonjustificational, nonauthoritarian theory of knowledge and rationality is indeed possible.

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[4]That there should be any doubt about the transmissibility of degree of testability is odd. For the idea of logically deriving one statement from another not identical to it involves the notion that various statements differ in logical strength. Yet the statement which is stronger is *ipso facto* more testable—which means that its degree of testability is no more transmissible to its implicates than is its logical strength.