Why facts neither speak for themselves nor resolve the psi controversy: The view from the rational epistemology.

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Theoretically advanced sciences such as physics and biology have developed two complementary and field-embracing epistemologies or frameworks for the pursuit of scientific understanding. One, the *empirical epistemology*, aims to test theories and develop a reliable body of facts and real-world applications, whereas the other, the *rational epistemology*, aims to create and develop theories for explaining available facts, facilitating practical applications, and predicting new facts for future testing. Both epistemologies are relevant to the recent psi controversy, which represents much more than a personality difference between "theory-trusting" versus "data-trusting" scientists (Child 1987; see also Rao & Palmer 1987; henceforth R & P). Both sides of the psi debate, however, have implicitly adopted the *empirical epistemology*, without spelling out or systematically applying the rational epistemology. As a result, many dimensions of the pro-psi argument remain unchallenged, and the two sides often fail to make contact, attaching fundamentally different implications to seemingly straightforward terms such as psi, theory, facts, reliability, and practical applications (see below). I will argue that developing the rational epistemology in both psychology and parapsychology represents another prerequisite for admitting psi into mainstream science.

Facts under the two epistemologies. Under the empirical epistemology, observations speak for themselves, whereas under the rational epistemology, observations only become really secure and unimpeachable when explained by a theory, and often do not count as scientific facts until a plausible theoretical mechanism for explaining them is proposed. An example is mid-nineteenth century biology, which refused to accept the large body of well-known and reliable observations on selective breeding as scientific fact until Darwin proposed a plausible theory for explaining these observations. Psi likewise falls outside the realm of psychological fact under the rational epistemology because no plausible theoretical mechanism for explaining psi data has been proposed, and not because these data are unreliable or fraudulent (empirical epistemology arguments).

Unreliability under the rational epistemology. Experimental details that may be relevant to a particular result are unlimited in number. Faced with the task of communicating such details, together with indefinitely many other potentially relevant aspects of prior studies, investigators often omit seemingly minor factors (e.g., personality characteristics of the experimenter; see Rosenthal & Rabin: "Interpersonal Expectancy Effects" *BBS* 3:377–86) that may completely change the outcome of an experiment and make replication difficult. Under the rational epistemology, failure to know, understand, or communicate the conditions essential to replicating a result often reflects the absence of viable theory needed for summarizing available information.

The origins of theory under the two epistemologies. A common assumption in the *empirical epistemology* is that theories emerge out of data and that theorizing is premature until large and reliable bodies of data have been accumulated. R & P not only accept this assumption but add a new twist: that discussion of *metatheoretical frameworks* such as dualism is currently premature because "whether or not the outcome of psi research ever *suggests* dualism will depend on the nature of the particular omegic theory (if any) that is eventually validated" (original emphasis, sect. 3.1, p. 624). Because metatheoretical frameworks are needed for specifying the goals of theory development, this new twist altogether precludes developing a theory. Moreover, data are unnecessary and insufficient for creating both metatheories and theories *under the rational epistemology*. In fact, many successful theoretical constructs (e.g., sound waves) were invented hundreds of years prior to any data whatsoever. Finally, experimental data often play less of a role in developing rationalist theories than factors such as elegance, consistency, and "making sense" (see MacKay 1988).

Psi: A theoretical or an empirical term? Alcock (p. 562) uses the term "psi" as a (poorly developed) *theoretical* construct that can "transcend temporal boundaries," and can be used with "no effort, no training, and no particular knowledge." However, R &

P (p. 539) use psi as an *empirical* term referring to, for example, alleged observations that "subjects can acquire information that is shielded from the senses." R & P present no mechanism and no theory; they remain noncommittal on metatheoretical frameworks such as dualism and materialism, in which a theory could conceivably be developed, and they ignore theoretical suggestions such as psi waves as well as detailed theoretical challenges for unborn theories of psi noted by Beyerstein (1987) and others.

Under the rational epistemology, empirical terms are fundamentally different from theoretical terms such as nodes (MacKay, 1982; 1987) and hidden units (McClelland et al. 1986), which originate as inventions. Hypothetical interactions (e.g., altered linkage strength) between such inventions purport to describe how things (e.g., minds) universally and inevitably work *for all time, space, and hypothetical or Gedanken examples*, and the behavior of these presumptive constructs must be compatible in principle with all prior and future knowledge (theoretical laws) within this hypothetical domain. Such theories are applied to *empirical phenomena* only later and only indirectly through rules of correspondence and through the logic of how their theoretical constructs interact (see MacKay 1988).

Like empirical epistemologists in general, R & P "are not oblivious to the importance of theory testing" (p. 624). However, they clearly underestimate how difficult it is to create and modify theories *of the rationalist type*. It is not enough to imagine that a demonstration of psi would entail unspecified revisions or restrictions of the applicability of already established theories. Nor is it enough to hope for the epistemologically impossible and the historically unprecedented, that some predictive and internally consistent psi theory might be developed that is incommensurable with established theories and somehow applies to nonoverlapping therapeutical and observational domains (p. 625). Nor is it enough to imagine that someday a larger theory capable of explaining parapsychological as well as conventional data might subsume current theories, much as relativity subsumed Newtonian mechanics. What is required for complete acceptance of psi under the rational epistemology is to create in (para)psychology the equivalent of both Newtonian mechanics *and relativity*.

Much more is required than speculative thinking, something that in parapsychology "has been rampant, even wild, on occasions" (Rao 1977, p. 295). More also is required than "tentative and exploratory hypotheses, often no more than descriptions" (Rao 1977, p. 344), or vague metaphors such as Rao's (p. 346), "we are habitually and constitutionally given to respond to and interact with our environment rather than probe within to discover hidden knowledge." This last point is relevant to R & P's commendable desire for rapprochement between cognitive psychology and parapsychology. It is not enough simply to point to the unsolved problem of selective attention underlying the hypothetical reception of a "signal" among indefinitely many other signals from indefinitely many past, present, or future "sources" from indefinitely near or far. Nor is it enough to suggest that an ESP signal "may compete for the information-processing resources of the organism" and "fits well with concepts that are widely accepted in cognitive psychology and information-processing theory". Although perhaps widely accepted a decade ago, the concept of fixed-processing resources is no longer widely accepted (see e.g., the empirical criticisms of Neumann 1984, and theoretical criticisms of Allport 1980. Note also the advent of much more detailed theories of attention that operate on different principles, e.g., Neumann 1987; and MacKay 1987). A dilettante interest in theory is not enough. Only by participating fully in the ongoing theoretical struggles of cognitive psychology can parapsychologists make reliable *theoretical* decisions about how psi can fit in (if it can). And the same is true for hundreds of detailed and better established theoretical laws in other fields, such as physics and biophysics, that also require integration with the psi hypothesis.

Observations and theoretical conservatism. Under the rational epistemology, conservatism with regard to established theory is highly desirable and applicable in the case of psi. Even *replicable* data that fail to fit established theory do not and should not necessarily call for theoretical modifications (see MacKay 1988).

Practical applications. The expectation of a direct relationship between experiments and practical applications is a recurrent assumption in both the psi controversy and the empirical epistemology: If only psi could be reliably demonstrated, it would have nontrivial applications, according to R & P and others. However, no such direct relationship exists between experimental findings and sophisticated applications *under the rational epistemology*. The very fact that laboratory observations originate in rigidly controlled and (one hopes) well-understood situations restricts the applicability of these observations to real-world problems where this control is by definition unavailable. Sophisticated applications derive from theories rather than from experiments per se, which are "fragile" and lack characteristics such as flexibility, simplicity, hypotheticality, and generality that enable application to unknown or uncontrolled conditions.

Price (1949, p. 20) presented an early summary of the status of psi that still rings true in the rational epistemology:

> The theoretical side of psychical research has lagged far behind the evidential side. . . . And that I believe is one of the reasons why the evidence is still ignored by so many. . . . highly educated people. It is because these queer facts apparently "make no sense" . . . that they tend to make no impression on the mind. . . . If we could devise some theoretical explanation in terms of which the facts did make sense . . . it would be a great gain. Such an explanation is needed for its own sake; and it is also needed to get the evidence attended to and considered. (excerpts as per Mundle 1976)

Contrary to R & P's suggestion (p. 624), neither Mundle (1976) nor others have successfully contested Price's point. Mundle actually echoes Price's concern over the absence in parapsychology not just of viable theories, but of *metatheoretical frameworks* for discussing the "queer facts" of parapsychology. However, Mundle adopts the empirical epistemology in suggesting that these strange but firmly established facts should "be allowed to speak for themselves" (p. 97), and Mundle's recommendation for the field (p. 96) only makes sense in the empirical epistemology: that parapsychology should avoid theories altogether because any conceivable theory that could explain parapsychological data would be so absurd as to alienate scientists whose expertise is essential for conducting further parapsychological experiments. (See also Edge 1976, p. 8). This recommendation is a counterproductive non sequitur under the rational epistemology where the goal is to create theories and where facts do not speak for themselves.

Like Mundle and Price, the two sides of the psi debate have resembled epistemological ships passing in the empirical night. Things as big as field-embracing epistemologies can pass without contact because both sides use the same terms with different implications. The night is empirical because neither side has stepped completely outside the empirical epistemology. Developing the rational epistemology along with the empirical epistemology is essential for both psychology and parapsychology alike. If confined to the empirical epistemology, the psi controversy and the empirical night will continue indefinitely.