Chapter 3. Operationism and essentialism

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Essentialism

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- This is the idea that the only good scientific theories are those that give ultimate explanations of phenomena in terms of their underlying essences or their essential properties.

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- The unique strength of science is not that it is an error-free process, but that it provides a way of eliminating the errors that are part of our knowledge base.
- Furthermore, claims of perfect or absolute knowledge tend to choke off inquiry.
- Because a free and open pursuit of knowledge is a prerequisite for scientific activity, scientists are always skeptical of claims that the ultimate answer has been found.

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- The meaning of a concept in science is determined after extensive investigation of the phenomena the term relates to, not before such an investigation.
- The refinement of conceptual terms comes from the interplay of data and theory that is inherent in the scientific process, not from debates on language usage.
- Essentialism leads us into endless argument about words, and many scientists believe that such language games distract us from matters of substance.

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- The key to progress in all the sciences has been to abandon essentialism and to adopt operationism.

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- The operational definition removes the concept from the feelings and intuitions of a particular individual and allows it to be tested by anyone who can carry out the measurable operations.

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  - Define the concept by a number of operations such as questionnaires and physiological measurements.

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- Operational definitions force us to think carefully and empirically - in terms of observations in the real world - about how we want to define a concept.

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- An “unacceptable” level of contamination in mushrooms is five or more maggots 2 millimeters or longer per 100 grams.

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- In science, the "right" properties for a number to have are the properties of reliability and validity.

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- To be a good operational definition of a concept, the operations assessed must also be a valid measure of that concept.
- The term construct validity refers to whether a measuring instrument (operational definition) is measuring what it is supposed to be measuring.

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- As scientific concepts evolve, they often become enmeshed in several different theoretical systems and acquire alternative operational definitions.

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- The problem with all intuitively based systems of belief is that they have no mechanism for deciding among conflicting claims.

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- The public nature of science rests critically on the idea of operationism.
- By operationally defining concepts, we put them in the public realm, where they can be criticized, tested, improved, or perhaps rejected.

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- Such publicly accessible knowledge is available to solve human problems only when concepts have become grounded in operational definitions and are not the focus of essentialist arguments about the meaning of words.

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- Therefore, psychology's current explanations are temporary theoretical constructs that account for behavior better than alternative explanations.
- These constructs will certainly be superseded in the future by superior theoretical conceptualizations that are closer to the truth.

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- The presence of concepts that are not directly or indirectly grounded in observable operations is an important clue to recognizing a nonfalsifiable theory.

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- The principle of parsimony dictates that when two theories have the same explanatory power, the simpler theory (the one involving fewer concepts and conceptual relationships) is preferred.
- The reason is that the theory with fewer conceptual relationships will likely be the more falsifiable of the two in future tests.

Questions?