Excerpt from: Roth, W.-M., & Lucas, K. B. (1997). From "truth" to "invented reality": A discourse analysis of high school physics students' talk about scientific knowledge. *Journal of Research in Science Teaching, 34*, 145–179.

Interpretive Repertoires

In this study, we found it helpful to classify talk by means of nine interpretive repertoires—we use "discursive resources" synonymously—on which students drew in order to support their claims. We labeled these repertoires *intuitive, religious, rational, empiricist, historical, perceptual, representational***,** *authoritative*, and *cultural*. . . .

Descriptions and Illustrations

Intuitive. The intuitive repertoire invokes innate or instinctive knowledge, common sense, personal or shared experiences. Students frequently drew on an intuitive repertoire to support statements about nature, knowledge, and the reality of scientific laws. Thus Tony, in the following excerpt, argues that "it is obvious" that scientific laws exist in nature (2) and that "of course" there was gravity before Newton (4), and questioned how one could propose otherwise (1)?.

This is the **data**, i.e., what is used to support the claim

> 1 How could one propose that Newton's laws of motion did not exist before he discovered them? 2 It is obvious that these laws exist in nature, and scientists discover them. 3 In retort to this question, one could ask, "Was there no gravity on earth before Newton clearly defined it?" 4 Of course there was. (Tony 5Q.920123)

Awareness of instinctive knowledge is indicated by statements such as "I feel that" or "our experiences," but it may be that individuals remain unaware of such knowledge. For example, Rex claimed that "everyone *is* aware" of the laws of physics but not necessarily "consciously aware."

Authoritative. The authoritative repertoire invokes the influence of an established scientific paradigm, influence to conformity exerted by scientist peers, commonly held suppositions, or the expressed opinion of an acknowledged expert.

> It is obvious that the social environment will influence a scientist. In the words of David Suzuki, in his article entitled "The Invisible Civilization", "None of us can escape the limitations of our heredity and personal and cultural experiences. There's no such thing as objectivity." (Rex 5Q.910415)

Other acknowledged experts upon whom students relied included Einstein, Maxwell, Faraday, and their physics teacher. Major scientific paradigms such as Aristotelian and Copernican cosmologies, and particle and wave theories of the nature of light and matter were identified by students as sources of authoritative influence on scientists. When they have been "raised in certain disciplines of thinking" scientists will inevitably "combine their thoughts" in the production of scientific knowledge. Thus, among scientists there is pressure to conform to "sanctioned ways of thinking," often to the point where an individual's objectivity is compromised. In a more positive vein, authority of either a highly acclaimed scientist or a particularly successful scientific paradigm can be recognized as an important factor in shaping future science knowledge.