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The Pull of the Newtonian Paradigm

The term *paradigm* is used to describe the lens that orders, yet also limits one's perception and thinking. A paradigm consists of all those deeply held beliefs and ideas that shape the collective grasp of reality—a compelling frame of reference that has a life of its own. The term *paradigm shift*, then, refers to the process whereby persons are able and willing to change their viewing lens. Changing one's frame of reference is an internal process initiated by the individual when the rules and theories about his or her world can no longer account for the information being perceived.

The dominant view of reality for the past several hundred years has been decidedly Newtonian. The industrial era was marked by a mechanistic worldview grounded in ideas espoused by Sir Isaac Newton during the last part of the 17th century. One of the main aspects of the Newtonian paradigm was that almost everything in the world could be conceived of as machinelike. (Even the concept of solving a problem by “fixing it” is a mechanistic notion.) The goal of “fixing” human beings emerged as a corollary to Newton's theories and continues to influence ideas about instruction and education because it combines an explanation of reality with the supposed power to take charge of that reality. Under the mechanistic framework, problems are divided into distinct sections that are then “solved” in isolation. Behaviourism, a branch of psychology closely associated with education, is organised along such a framework and is characterised by the applications of rewards, deprivations, and/or punishments to control behaviour mechanically. Gold stars, marks, training, detention, promotion, awards, incentive schemes, and penalties are the tools used to modify (fix) student behaviour to conform (fit in) to society. The Newtonian paradigm served the world well during the Industrial Era when factories were the social and organisational models for schools. Today, however, the traditional organisational underpinnings of schools are being eroded, in part, because many of the larger systems that had formerly sustained education are now themselves changing or crumbling. Technological advances, scientific discoveries, and social change, call into question traditional ways of thinking about schooling and the bureaucratic structure that supports it. Even in the face of profound upheaval, most persons cling to a traditional set of beliefs in which only experts create knowledge, where the teacher's job is the delivery of this knowledge, and where students should be marked on how much of the information they are able to store and recall on tests (Caine and Caine 1997). Such beliefs continue to permeate all aspects of education,