

Exploring historically how intelligence has been defined, and why people have attempted to define it

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Most of the history of the study of intelligence is dominated by psychologists. From Francis Galton to Alfred Binet to Cyril L. Burt to Howard Gardner. Most of the history we explore of intelligence testing, definitions of intelligence, or the measurement of intelligence has been attributed to psychologists. When solely studying it from a perspective of a psychologist, it provides limited exposure to aims and methodology that researchers in other fields have done to study intelligence. This paper explores how intelligence has been defined, measured, and the aim of defining intelligence from the perspective of individuals in different fields.

Charles Darwin's evolutionary theories are central to a lot of arguments presented in intelligence theories. Darwin's and Wallace's theories provided an argument to begin the nurture vs nature debate. Barlow, in her additions to 'The Autobiography of Charles Darwin', quotes Darwin as saying "I do not think that I owe much to him intellectually-nor to my four sisters... I am inclined to agree with Francis Galton in believing that education and environment produce only a small effect on the mind of any one, and that most of our qualities are innate" (Barlow, 43). Darwin was a naturalist.

Alfred Binet

"It seems to us that in intelligence there is a fundamental faculty, the alteration or the lack of which, is of the utmost importance for practical life. This faculty is judgment, otherwise called good sense, practical sense, initiative, the faculty of adapting one's self to circumstances" (Binet, 42).

Charles Spearman

Vernon Mountcastle

His work was not directly in the field of intelligence research, but in cognition and in the cerebral cortex.

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Howard Gardner, in his book 'Frames of Mind: The Theory of Multiple Intelligences', formulates eight particular behavior that must be observed in order to be considered intelligent.

Jeff Hawkins, a well known technologist, develops his theory, from the background of a Electrical Engineer turned Biophysicist turned self-taught Neuroscientist, in his book 'On Intelligence'. Hawkins' aim to measure and quantify intelligence is to be able to re-build it in the form of an Artificially Intelligent agent. This is fundamentally different from the aims of many other researcher seeking to define and measure intelligence. The distinction is important since one seeks to explore or quantify intelligence for philosophical or experimentation purposes, and one seeks to go a step further and make attempts to build it. In addition, the theoretical framework or worldview of being able to build an intelligent machine only became possible after the formation of the fields of Artificial Intelligence and Computer Science.

Hawkins' theory is solidified on the idea that intelligence is just learning to see repetitions in patterns, and does not constitute of the ability to do any specific tasks. Hawkins writes "the intelligent machine must learn via observation of its world, including input from an instructor when necessary. Once our intelligent machine has created a model of its world, it can then see analogies to past experiences, make predictions of future events, propose solutions to new problems, and make this knowledge available to us" (Hawkins, 209). In addition, Hawkins is also highly influenced in his work by Mountcastle's research, and some of his theories are grounded in the correctness of Mountcastle's theories.

"Intelligence is measured by the predictive ability of a hierarchical memory, not by humanlike behavior" (Hawkins 210). "Intelligent machines will have the equivalent of a cortex and a set of senses, but the rest is optional" (Hawkins, 208).

Works Cited

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