

# **A Collectively Generated Model of the World**

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The world, for some reason, is not random. All non-random information can be compressed into a simplified description called a model. The purpose of a model is to capture the essential characteristics, or patterns, of the original system. Every living organism makes use of some model of the world. Sometimes a world model is encoded solely in the genetic structure of the organism and other times, the model is simultaneously represented neurologically in the organism's plastic, neural network. For example, the human skeletal structure is equipped to expect a particular amount of gravity pulling it downward towards Earth and the human eye expects a certain amount of sunlight for it to function. Gravity on Earth, through the ages, has remained constant. Likewise, the sun burns in a relatively stable manner. The human genetic code accounts for these consistent, non-random properties of the world and uses them to create a well-adapted organism capable of reproducing. Neurologically, the human brain builds a model of the world. Over time, it learns the grammars of language, expects particular culturally driven behaviors from others, and more generally, realizes an enormous amount of social and environmental patterns. This neural-encoded model represents those worldly variations that enable the human to make utility-driven, non-random decisions. A good mental model of the world yields a well-adapted, successful individual. At the level of the collective, a good collectively generated world model yields a well-adapted, successful society.

There are many definitions of intelligence. For the purpose of this short essay, let intelligence be defined as the ability to identify patterns in the world, encode these patterns in some medium, and utilize this patterned medium to

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make useful, non-random decisions. For example, through experience, a human will learn to categorize a collection of unique, yet related set of experiences as  $x$  (e.g. a red traffic light). The human will also realize that every time generalized pattern  $x$  occurs, generalized pattern  $y$  occurs some constant amount of time later (e.g. cars will come to a stop at the traffic light). There are various mechanisms in the human cortex that support the encoding of this simple realization. Once encoded, the human can then make decisions to act on  $y$  only moments after  $x$  has been perceived and before  $y$  has occurred (e.g. begin to walk across the street). For humans, the world is not a constant, unfolding novelty and they themselves are not constrained to a constant process of trial and error. Instead, the world is a set of categorized abstractions that have consistent relationships to one another and can be used to make well-informed decisions. The human mind suppresses world novelty for the purpose of utility-driven decision-making.

At the collective level, many individuals work in parallel to discover the patterns of the world. The various mechanisms of communication ensure that these patterns are shared between individuals. For example, human  $a$  can tell human  $b$  that pattern  $y$  always follows pattern  $x$ . Human  $b$  thanks human  $a$  and goes about his or her merry way knowing not through trial and error, but through communication that when  $x$  occurs, expect  $y$ . The moment that organisms communicate worldly patterns is the moment that collective intelligence emerges. If intelligence is defined as the ability to find abstract patterns in the world, encode them into a medium, and utilize that patterned medium to make well-informed decisions, then collective intelligence is defined as the ability for a collection of individuals to find abstract patterns in the world, encode them into a shared medium, and utilize that shared medium to make both well-informed individual and collective decisions. In its earliest stages, human collective intelligence was made possible through auditory language. Later, the written word provided a way to efficiently store models through time and distribute them more easily across space. In recent years, with the development of the World Wide Web, there currently exists a universal shared medium by which individuals are able to encode their world models for others to use. For example, during a decision-making process, an individual may read any number of web pages on a particular topic in order to learn more about the issues surrounding the decision they need to make. The many encoded world models contained in this collectively shared medium has greatly

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advanced the human's ability to understand the patterns of the world and make informed decisions in various aspects of their life.

The advancement of collective intelligence is the advancement of the means by which patterns are encoded and utilized to support decision-making at both the individual and collective level. The current instantiation of the World Wide Web is just a step along the path that humans are taking towards modeling their world. Further modifications will include mechanisms that automatically detect patterns in the world, represent those patterns, and utilize those patterns. In other words, the senses, the data model, and the algorithms of our collectively shared medium will continue to increase. A collectively shared medium that can analyze the deluge of information signals coming into it to locate patterns will provide the means by which this medium learns. A flexible data model that is able to represent any knowledge form in a computationally efficient manner will greatly increase the utility of the world model. Finally, fundamental general-purpose algorithms that are able to exploit the world model in useful ways will greatly aid humans in both their individual and collective decision-making processes. As advances in these respective areas are made, the means by which human's think will change. What cognitive effort the human expends on today's decision-making tasks will be moved to a more efficient medium. No longer is the individual required to actively search for information to solve a particular problem or make a particular decision. Instead, this search process can be executed for the individual automatically and thus, greatly increase the efficiency and accuracy of the individual's decision-making processes.

Suppose a city with no sidewalks where people can drive their cars anywhere they please. If two friends were to take a walk in the city they would not be able to share an uninterrupted stress-free conversation as some of their cognitive effort would be focused on detecting and avoiding cars driving in their path. Now suppose the introduction of sidewalks and the typical road rules associated with them. Due to sidewalks, these two friends need not worry about the state of traffic and instead can discuss and analyze the world at a higher-level of abstraction. The problem solving effort of vehicle detection is made negligible though a medium whose meaning is reciprocally agreed upon by drivers and pedestrians. As stresses of the modern world are further reduced, the human mind will be left to explore and exploit different worldly abstractions. If human daily choices are made explicit and solved by a more

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astute medium, then such tasks as which place to spend one's time, skills and efforts will require less and less cognitive effort on behalf of the individual. The human will be left with a new problem set—a new view of the world.

As technology advances, humans will continue to contribute to the creation of a shared world model. This world model will become richer, more accurate, and over time, better than humans at understanding the patterns of the world. Such a universal model will help drive decision-making at both the individual and collective level. Ultimately, this collectively generated world model will allow the human to explore other areas of the experiential landscape without being burdened by the problems that the man of today's society must expend cognitive and social effort dealing with.