

For an International Decade of the Mind

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Submitted: 12 Oct 2010

Accepted: 13 Oct 2010

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Abstract

The International Decade of the Mind Project seeks to harness science across multiple disciplines to discover how human “mind” emerges from the biological activity of human brains. Given the complexity of the human brain, with approximately 10^{11} neurons each with 10^4 connections, the effort will be daunting and require resources and expertise from many nations. The Decade of the Mind Project began as a United States initiative in 2007 and expanded to Europe in 2009 and then Asia in 2010. Here we advocate for a team-based approach to the Decade of the Mind initiative, where each nation contributes to the overall scientific effort with its own indigenous scientific expertise.

Keywords: *brain research, cognition, conferences, mental processes, Asia*

The recent conclusion of the Sixth Decade of the Mind (DOM) Symposium in Singapore presents a welcome opportunity to laud the accomplishments to date and to chart the course ahead for the DOM Project, now in its third year of planning. The DOM initiative arose out of a conference convened by the Krasnow Institute for Advanced Study at George Mason University in May 2007. The meeting brought together science leaders across an array of disciplines, spanning robotics to neuroscience, with the stated goal of gaining US government support for research aimed at explaining how mind and behavior arise from the activity of human and animal brains. A further goal of the original 2007 meeting was to prepare a manifesto in support of the Project, which might be published in a high-impact journal.

The initial May conference was successful and the resultant manifesto was published in *Science* (1). The Manifesto was essentially a road map for the project that had the aim of catching the imagination of US decision-makers, scientists, and the lay public. The key message was that the science in a constellation of disciplines had matured to the point where, given sustained new US research and development support, decoding how mind emerges from brain would be practicable.

In October 2007, a second, much smaller conference was held at George Mason University. At this second conference, high-level US civil servant decision-makers were asked to respond to the Manifesto. Multiple US agencies were represented, including the National Institutes of Health, the National Science Foundation, and the Department of Defense. What emerged at the second conference was the notion of different agencies pulling off different pieces of the overall DOM project in accordance with their specific missions.

The third DOM meeting was designed to build support for the project at the grassroots level, in the American heartland, during the general election campaign of 2008. Hence, DOM III (as the meetings began to be named) was held in Des Moines, Iowa, on the campus of the Great Apes Trust, and it focused on animal mind, especially the minds of the primates, such as the orangutans and bonobos. The meeting was a great success and attracted the attention of both local and national media.

Just after the election of President Obama, DOM IV was held in Tamaya, New Mexico. This meeting was organized by Sandia National Laboratories and the US Department of Energy. In contrast to the previous DOM conferences, DOM IV focused on reverse-engineering the human brain to facilitate the development of advanced artifacts and applications, such as robots. It was at the DOM IV conference that the first beginnings

of internationalization began. Representatives of the government of Singapore attended DOM IV, and a paper was published in Europe urging that the DOM Project take place across the entire globe (2).

As a result of the international interest, DOM V was held in Berlin, Germany, in September 2009. The intellectual centerpiece of this conference was on how a DOM project might impact education. Conferees reported on studies at the intersection of neuroscience and education, with the notion that one of the key benefits of the Project might be in the area of improved educational outcomes, particularly in the areas of science, technology, engineering, and mathematics. The DOM V conference was organized by Professor Manfred Spitzer from the University of Ulm, Germany.

The most recent conference in Singapore was organized by the Singapore Ministry of Defense in collaboration with several other organizations. As with the New Mexico meeting (DOM IV), the focus was on taking what we can learn from human minds and applying that knowledge, both in machines and in augmented cognition for human beings. DOM VI was an extremely successful conference, both from the standpoint of the overall Project and from the science presented.

All of the above begs the question: where do we go from here? The answer is complex. The global economic crisis has put in jeopardy the original goal of significant new US research and development investment. As the economic storm in the US abated, the European Union is now facing serious challenges to sovereign wealth and the Euro. Only Asia has continued to show a sustained economic growth, which might support the scale of resources necessary to crack the problem of mind (3). At the same time, the nations of North America and Europe continue to have critical mass in terms of academic centers, patents, and publications, which are also necessary to make progress.

In the original idea for a DOM, one key notion was for different and diverse US agencies to pull out mission-appropriate pieces of the overall project as part of a “team” approach. Perhaps the proper evolution of this original idea is for different nations to apply their own expertise and indigenous resources towards the Problem—for an overall international “team” approach.

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