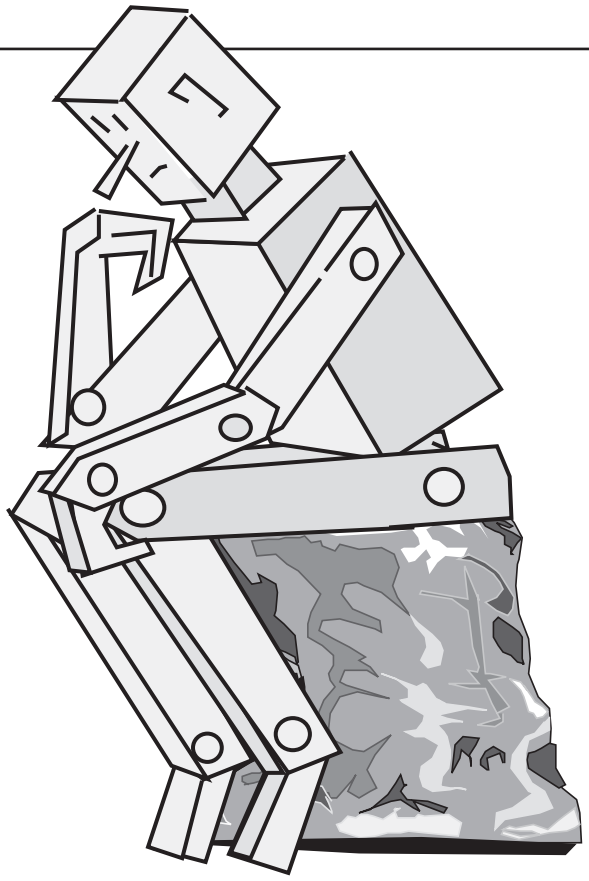
Mapping Great Debates

Can Computers Think?

An Issue Map® Publication

Handbook



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"I believe that at the end of the [twentieth] century ... one will be able to speak of machines thinking without expecting to be contradicted."
— Alan Turing, 1950

Introduction

Why does the argument about machine intelligence, which Alan Turing catalyzed, continue to fascinate and preoccupy us? Some will argue that it is because the question has not yet been definitively answered. Very likely, however, it is because artificial intelligence figures so prominently in humanity's quest for the answers to our most burning questions: Who are we? What kind of a being are we? What is our place in the universe? These central questions of identity have been answered in various ways throughout the ages. We are *Homo habilis,* the toolmaker. We are *Homo sapiens sapiens,* the sentient being. We are spiritual beings. We are artists, philosophers, scientists ... and so on. Underlying the question and its answers is a foundational subquestion: what is it about human thinking and the human mind that makes us unique? Are we unique? What is it that separates us from animals?

The emergence of artificial intelligence as a profession and a goal has honed those questions of identity to a razor-sharp point. Alan Turing's seminal article on AI in *Mind* attracted worldwide scholarly attention and galvanized research efforts in 1950. The field acts as a lightning rod for discussion about the nature of mind and human identity. Turing, of course, thought that the discussion would be over by the end of the second millenium. On the contrary: The fact that the 1990s have seen substantial advances in each of the major areas of the broad debate around computer intelligence shows that the debate is still in full swing today.

Like any other open philosophical question that reaches into multiple disciplines, the artificial intelligence debate is long, amorphous, and hotly contested. Both newcomers and long-time researchers struggle to keep up with the breadth of the arguments and with the relationship of each argument to each other. Until now, no learning or teaching tools have been available to provide any kind of comprehensive overview of the history and current status of one of the most important debates of our century. Introductory textbooks have fulfilled some of that function, but they disregard some of the more obscure important arguments, and they fail in any attempt to chart the interconnection of 50 years' worth of argumentation. Furthermore, such texts are often incomprehensible to people outside of the particular discipline, never mind to people outside the academic world.

Mapping a great debate

"At present, there does not exist a comprehensive general review of AI that discusses all the main approaches and achievements and issues. Most likely, this is not merely because the field doesn't have a first rate reviewer at present, but because the field is confused about what these approaches and achievements and issues are. The production of such a review will therefore be a major creative work and not merely a work of scholarship." — John McCarthy, 1990, p. 69

This Issue Mapping™ series was conceived as a way to provide a "road map" of the debate, a navigational guide for scholars and interested laypeople alike. The maps summarize all the major "moves" in the on-going machine intelligence debate and provide a meta-structure within which the individual arguments can be easily understood and placed in proper context. The series consists of 7 maps, each of which is organized around a large theme in the debate.

1. Can computers think?
2. Can the Turing test determine whether computers can think?
3. Can physical symbol systems think?
4. Can Chinese Rooms think?
5. Can connectionist networks think? Can computers think in images?
6. Do computers have to be conscious to think?
7. Are thinking computers mathematically possible?

On each map, the arguments that are contained within that large question are further organized into issue areas, each of which is also posed as a question, like "Can computers have emotions?" The individual boxes on each map briefly summarize the major arguments and evidence pertaining to each issue area.

What's the answer? Can computers think?

These maps do not attempt to evaluate the arguments summarized. They map the debate without taking a stand. They are, as much as possible, neutral. It is left to readers to be the jury, to evaluate the "weight" of the arguments and evidence and draw their own conclusions.

Of course, the maps are to some extent interpretive. In writing and linking arguments, we had to condense incredible amounts of information, often on the basis of highly obscure or technical literature. We also had to make decisions about placement and emphasis. The way these maps organize the debate is not necessarily the only appropriate organization, but it was carefully considered and weighed against alternatives. The argument summaries themselves, which is where the real dialogue takes place, stick closely to the words of the authors, the better to avoid interpretation.

The Benefits of Argumentation Mapping

Learning philosophy dialectically

These argumentation maps illustrate the value of learning philosophy dialectically. Individual arguments are presented in clear summary form, and are followed by chains, or threads, of dispute and support. By watching philosophers, researchers, and scholars lock horns and wrestle in an interdisciplinary arena of open debate, readers can better appreciate the subtlety and complexity of the issues.

The dialectical method has ancient roots and remains valuable today. Thousands of years ago Socrates grappled with the best minds of Athens in public debate, and Plato recorded those dialogues as a means of teaching philosophical concepts. Today, contemporary issues are battled out in televised forums and in Internet newsgroups, where everyone from big-name pundits to coffee-shop philosophers chews through issues in round after round of back-and-forth. These maps harness the full communicative and instructional power of dialectical exchange.

Watching the debate unfold

From its beginning, the artificial intelligence debate has been a truly interdisciplinary and global discussion, with philosophers, cognitive scientists, artificial intelligence researchers, and others joining in from around the world. Nevertheless, great parts of the debate have taken place in journals that are isolated by the boundaries of particular academic disciplines. As a result, it has been difficult until now to *see* the structure of the debate as it unfolds.

Argumentation maps provide a picture, more detailed than previously available, of how such a vast debate can take place across disciplinary and geographic distances. By creating an accessible map of the conceptual territory our hope is to facilitate more global interdisciplinary debate, to bring the various sources to light, and to illuminate how the pieces of the puzzle fit together. Perhaps the very existence of the maps will provide incentive and opportunity for more interdisciplinary and international discussion.

In a world of global interdisciplinary discussion, effective communication and productive dialectical exchange are key. We need to elevate the coffee-house discussions and the Usenet dialogues into cooperative and productive exchanges that push our understanding *forward.* It is all too easy to repeat an argument that has already been made in a distant or obscure location, to talk past one another in the heat of conflict, or to ignore important context. Moving a serious debate forward requires a *disciplined* interdisciplinary and international dialectic.

The Cartographic Metaphor: "Mapping" Arguments

The metaphor

We relied heavily on the metaphor of exploration and mapmaking during the research and production of the *Can Computers Think?* series. At the start, we thought a single map would suffice to chart the territory we were interested in. One map soon became two. Then four, then seven. The task we had set for ourselves grew more daunting as the boundaries of the territory grew. I kept reminding our team that, like the Lewis and Clark expedition, we could never know what was over the next hill. You cannot know the size of a continent until you reach the end of the landform. Our team experienced a similar sense of traveling through a "great unknown," which came from the existence of only a few good summaries of arguments in the field of artificial intelligence.

First expedition

These maps are the result of our first expedition into the jungles of a major academic argument. They bear all of the excitement and all of the imperfections of any such first expedition. The explorers have returned older and wiser from what is now an almost six-year adventure.

Like many explorers, we began our journey in familiar territory. Soon, we were into completely unknown (to us) areas of the debate. The difficulties of charting unknown territory were compounded by the fact that our team was making up the criteria and conventions for a new kind of cartography as we "traveled." Often, we had to stop and ask: How shall we present

this? What kind of a map are we trying to make? At other times, we found ourselves wandering over land bridges into new continents—vast unmapped areas at the frontiers of the central debate about machine intelligence. Should we cross the boundary into the mind-body problem? Should we cross over into arguments about the nature of the mind? Should we develop a map of the argument about whether animals could think? A few further thoughts about the frontiers of the maps can be found in the "How to Read Argumentation Maps" section of this booklet.

Scale and cartographic distortions

Like all map-makers, we had to choose a scale to work with, and we had to stick to it. Cities on a roadmap are little rectangles or circles; arguments on an argumentation map are short summaries in claim boxes. We chose such a small scale because of the vastness of the territory, and because we wanted to capture the arguments at a broad, overview level—a level at which a lay reader can confidently navigate and understand the issues, seeing how they fit into broader conceptual contexts and territories.

Distortions are necessitated by any cartography. Geographic maps of the three-dimensional world are necessarily distorted when pressed into the confines of a two-dimensional surface. In addition to distortions of scale, these maps also distort chronological structures and sequences of debate as they are presented in certain general surveys, and the argumentation maps sometimes present issues differently than the authors themselves do. For example, although John Searle's Chinese Room and Chinese Gym arguments are part of the same cluster of published articles, and although they are variants of the same basic thought experiment, we separated them according to our conceptual division of the territory: the Chinese Room arguments appear in the context of the physical symbol systems debate (Map 4, which grows out of Map 3), and the Chinese Gym argument is located in the context of the connectionism debate (Map 5).

Unmapped territory

A considerable number of arguments on the maps are imbedded in wider debates and discussions in philosophy, psychology, neuroscience, and other disciplines. Such imbedding illustrates how most philosophical thinking is broadly connected and interdisciplinary. In order to create a manageable and readable map, we left out extensive mapping of many such "peripheral" debates. An example of our treatment of this problem is the free will debates on Map 1, where we mapped only those arguments that specifically dwelt on Turing's question of machine intelligence, rather than on the degree to which human beings have free will, which is a longstanding philosophical question.

Unmapped areas still exist in the following territories:

Map 2
Behaviorism/operationalism

Map 3
Other approaches to AI learning
Chomsky arguments
Language of thought arguments
Non-monotonic arguments
The frame problem
Gibson AI arguments
Chess and other game-playing

Map 5
Learning
Levels
Associationism
Connectionist representations
Systematicity arguments

Map 6
Consciousness
Functionalism
The mind-body problem
Epi-phenomenalism

Mapping jungles

We discovered some pretty thick jungles of prose during our exploration. Each of our team members ran into them, often got bogged down in the swamps, and frankly we sometimes had to detour around impassable areas. This is by way of saying that there exists a considerable amount of academic prose that is impenetrable, even to the most indomitable mappers. We may have missed some good arguments, and our summaries of others may be plainly wrong. We hope that these are not too many. But he or she who grows a jungle is likely to have it mapped as such.

Landmarks

If the reader is the traveler, and the links, or arrows, are the road, then the icons and illustrations that appear throughout the maps are landmarks and navigational aids. Their inclusion goes against the general tradition of refraining from using any kind of illustration or diagram in philosophical argument. As one early reader remarked, our project may have produced more visual accompaniment to philosophical discussion than existed in the entire previous history of philosophy. The benefits of including graphical landmarks are many. Illustrations serve as mnemonic devices for a reader who wants to return to a specific argument or region, for example. The graphics also sometimes aid quick comprehension of a complicated idea by providing a concrete clarification of an argument, in the form of an example. In addition, the illustrations add an element of levity to debates that can otherwise be quite obscure and abstract.

Notes on the *Can Computers Think?* Debate

Organizing the debate

Each of the seven maps charts a different aspect of the debate around machine thinking. Each map thus charts a different kind of debate. One way among many to think about the maps and the hundreds of arguments they contain is that each map addresses the question of machine intelligence by focusing on specific kinds of machines and on specific aspects of thinking. In different ways throughout the maps the questions are asked: "What is essential to thinking; and can machines do it?" "Here is something machines can do; can it be considered thought?"

For example, different maps chart debates around whether different types of machines can adequately represent the mind. Map 3 addresses physical symbol systems, and most of its issue areas deal with specific features of physical symbols systems: rule following, symbolic data, heuristic search, knowledge bases, and so forth. Map 4, an extension of Map 3, deals with a popular argument against the idea that physical symbol systems can think: the Chinese Room argument. Map 5 deals with another kind of machine, connectionist networks, and its issue areas are organized around specific properties of connectionist networks. Map 7 maps the debates around mathematical properties of machines or of automata in general. Interestingly, Maps 3 and 5 include mostly arguments about *which kind* of machine (a physical symbol system or a connectionist network) is best at modeling the mind, more than about *whether* machines can think at all.

Other maps and issue areas diagram specific aspects of thought. Map 6, for example, addresses conscious thinking, and its issue areas are organized around specific ways of dealing with machine consciousness. Much of Map 7 deals with the human ability to recognize the truth of mathematical Gödel sentences, something that machines—it is alleged—cannot do. Many of the issue areas on Map 1 cover human abilities that machines are thought to lack: free will, emotions, personhood, and creativity, for example. Half of Map 5 deals with the human capacity to use visual imagery, and asks whether machines can do the same, or indeed whether humans really use imagery in the first place. Map 2 charts debates around a specific intelligence test—the Turing test of natural conversation—and whether the test is a legitimate means of testing for machine or human intelligence.

The word "computer"

Readers will notice that the terms *computer* and *machine* are used somewhat interchangeably throughout the seven maps. In doing so, the authors are following the conventions commonly used by scholars in the field, although there are some participants in the debate who make fine distinctions between the two terms. (See, especially, sidebar, "What Is A Machine?" on Map 7.) *Machine* is a term that came into use much earlier, and it carries connotations of mechanism. The term *computer,* of course, has a more modern flavor.

Postulates and other sidebars

The protagonists in the debate do not all start with the same set of assumptions about philosophy and the world. Yet the arguments and rebuttals do not often reflect the different assumptions of their authors. We have tried to correct this potentially distorting aspect of the maps as much as possible by developing sets of postulates. The postualtes characterize a variety of philosophical positions, in order to identify the points of view of different protagonists. In writing the postulates we tried to be fair as well as informative. Nonetheless, not every participant listed as a protagonist of a particular school may subscribe to each one of the postulates.

Index of postulates

Index of other sidebars

Map 4
Syntax and semantics
Necessary and sufficient conditions
Denying the antecedent

Map 5
Learning in connectionist networks
History of connectionism
Tensor product representations
Constituent structure of mental representations
Systematicity and related phenomena
Connectionist representations
Spectrum of positions (on connectionism)
Connectionism and the brain
History of the contemporary image debate

Map 6
Physicalism
Turing machines
Three premises of computationalism
Mind-body problem: historical background

Map 7
The background of Gödel's proof
The steps of Gödel's proof
Self-referential paradoxes
Alternative versions of Gödel's theorem
Formal systems: an overview
Mathematical claims related to Gödel's theorem
Lucas arithmetic
Important properties of formal systems
Turing machines
What Is a machine?

Defined terms

New terms are defined when they are introduced, in order to aid the reader's understanding of the debate. Defined terms in *Mapping Great Debates: Can Computers Think?* are:

Map 1
counterfactual
determinism
free will

Map 2
autonomy
behavioral capacity
behavioral disposition
behaviorism
control
operationalism

Map 3
commonsense knowledge
ethnomethodology
heuristic search
laws of behavior
rules of conduct

Map 4
fallacy of composition
homunculus
intentionality
straw man
strong AI
virtual person
weak AI

Map 5
cognitively impenetrable
cognitively penetrable
concatenative compositionality
constitutive bases
functional compositionality
operational definition

Map 6
a priori
access consciousness
aspectual shape
blind sight
causal reduction
counterfactual
ontological reduction
phenomenal consciousness
qualia
solipism

Map 7
closed proof system
open proof system
proximate causation
red herring
strong mechanism
the constructivity problem
transfinite counting
transfinite numbers
weak mechanism

Note to the protagonists

The team made every effort to faithfully represent your ideas and arguments as published. It is nonetheless well known that summaries can always be criticized for missing some nuance or qualification. Doubtless, there will be some protagonists represented on the maps who will feel that their ideas have been somewhat misrepresented or slightly distorted. We hope that this will not be an undue source of embarrassment to you, or to us. If you find a flagrant error, please contact us. And of course, if you have new arguments or know of other arguments relevant to points made on the maps, please let us know using the form in the back of this booklet.

Criteria for Inclusion of Arguments

1. Use published arguments.
Only those arguments were included that have been published in an established print or electronic medium: journals (including reputable electronic journals and white papers), magazines, and books. Arguments made in Usenet newsgroups, electronic forums, e-mail exchanges, or in interpersonal debate were excluded as too ephemeral and as representing positions still in development. Such arguments will be excluded until they appear in a more established medium.

2. Use arguments that lie within the scope of the map.
The major claim—that machines can or will be able to think—determines the scope of these maps. Many threads of argument drift away from the central issue into such related territories as the mind–body problem, functionalism, and the philosophy of science. Such claims were set aside until a chance arises to map neighboring territories with maps of their own.

3. Seek out the historically earliest or best-known version of an argument.
When different authors made similar arguments, we chose the version which was either historically earliest, or the best-known version of the argument. When the best-known version is used, the historically earliest version is usually mentioned in a note. In the few cases in which differing versions of an argument are sufficiently unique or separately disputed, each is summarized separately.

4. Avoid loosely drawn arguments.
Sometimes an author makes an argument loosely, at the end of a paragraph, as an aside, or in a footnote. In general, such arguments are not included unless they are developed further in follow-up articles or are the focus of further debate.

5. Avoid repetitive, nitpicking, or duplicative arguments.
One goal of the maps is facilitation of *productive* debate. Ad hominem arguments, redundant rounds of back-and-forth, and tediously nitpicky arguments were left out.

6. Avoid forbiddingly technical discussion.
Highly technical arguments, which are based on extensive symbolic notation and formalisms, could not be represented with the cartographic conventions we developed, or at the scale we chose to work at. However, *summaries* of many technical and symbolic discussions were included. Only the most forbidding had to be excluded.

7. Summarize the author's published claim.
Many authors hold views today that are different from those they expressed at the time they entered into the debate. We include authors' claims *as published.* If an author later changed his or her position, and published the change, the new claim was included and the change of position was noted. But if no new contribution has been made, then the original published view stands.

8. Include some historical arguments.
In order to properly situate the debate in its historical context, we included a sampling of notable historical supports of contemporary arguments.

9. Include some experimental results.
To situate the debate in a context of concrete experimental and computational results, we included some implemented systems AND empirical results. Again, we only included a small sample of such results, sticking to famous and notable computer models and experiments.

10. Include a small sample of outrageous and humorous arguments.
Some of the stronger and stranger claims were worth including just to liven things up and have some fun. Such claims also provide “targets” for what we anticipate will be lively threads of response.

Frequently Asked Questions

How do I read an argumentation map?

Start in the upper left corner, with Alan Turing's major claim. Following the arrows from box to box draws you into the dialectical back-and-forth. As you read, notice the basic components: argument summaries, links, and issue areas. Those elements allowed the cartographers to structure the jungle of debate into a readable map. The various components of an argumentation map are designed to facilitate understanding and navigation in complex conceptual domains.

Each issue area grows out of a specific focus box. Every argument in an issue area addresses the focus box, which thus determines the scope of an issue area.

Growing out of a focus box are threads of dialogue. Claims are asserted, supported, and countered in rounds of dialectical exchange. Where a long thread juts out from a focus box, an argument has stimulated a long chain of back-and-forths. The further out from the focus box you track threads of debate, the more subtle the issue becomes.

Argument summaries condense original arguments into manageable units. Summaries are not necessarily abstracts of entire articles or chapters or books, however. Instead, each box summarizes an individual argument, more than one of which may be contained in an individual article.

The spread of an issue area conveys the range of response to a given argument. Issue areas with wide “fans” are interesting for their sheer breadth of debate.

Is the debate really as linear as the maps make it look?

A given argument can be supported by or disputed by many other arguments, but a given argument never (with one exception) supports or disputes more than one other argument. In other words, threads of argument branch outward, but never converge in one place. This forced simplicity is meant to aid the reader: many-to-one linkages inevitably cross over each other and turn to “spaghetti,” which is visually confusing. Of course, such cross-linkages among arguments do exist in the actual debate. On the maps, they are listed in the notes at the bottoms of argument summaries.

Do the support and dispute icons carry a standard meaning?

"Support" and “dispute” are used in an argumentative sense rather than in a strict logical or epistemic sense. They structure the map into chains of agreement and disagreement where claimants respond to one another in a variety of affirmative and negative ways. As such, the relations of support and dispute cover a wide range of cases, which fall into fuzzy categories, or families, of supportive and disputative responses.

Are the arrows bidirectional?

The directionality of a link, represented by an arrow, represents the direction in which you should read the claims for maximal effectiveness. The arrows direct the eye. A philosophically trained reader might think that the arrows would point in the opposite direction, from the disputing or supporting claim to the disputed or supported claim, given that that is the direction of dispute or support in everyday language. But such organization is backwards from a readability standpoint; it's not the direction that real arguments or conversations take. We understand arguments in a chronological order, from earlier claim to later counterclaim. As such, claims are disputed by and are supported by other claims.

How do I interpret the last box in a thread?

Each thread of argumentation on these maps eventually reaches an end, a final argument, the frontier of that particular debate. Sometimes those final arguments really are the ends past which no one has further argued a particular point. Such spots serve as entry points for new contributors, where the next generation of argument will play out. If you have a published contribution, send it in! (See “Participation Form,” at end of booklet.) However, many existing arguments had to be excluded, for the simple reason that it was necessary to stop somewhere. Our reasons for excluding many claims are discussed in “Criteria” and in “The Cartographic Metaphor, Unmapped Territory.”

Why do some argument summaries not list authors?

A position that is disputed or supported by various authors without necessarily having been articulated by any one person is listed without an author.

How were the maps made?

Almost 7,000 hours of work went into making these maps. References, many of them obscure, had to be unearthed in the libraries. Each article had to be read, and often reread. In all, approximately 800 argument summaries were written, and rewritten when they were fitted into specific issue areas. Each link between arguments had to be identified and verified.

The threads of debate were identified in a few different ways, some more straightforward than others. The easiest threads to develop were those for which a good summary existed, which the authors could use to track the lines of debate from author to author. In other cases, authors cited the particular argument against (or for) which they were arguing. In those cases, the threads could be developed backwards, following links from

article to article. Finally, there were some authors who never identified the authors of the arguments they were debating, using phrases instead like “there are some who believe ...” In such cases, the authors either left the claim summary nameless, if it is a commonly held position, or else attributed the argument to the secondary source, using the tag “as articulated by.”

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Project Director's Notes and Acknowledgments

I am often asked what possessed me to take on a project of this magnitude. I can mark three major catalysts. The first is one of the major themes in my career, which has been to understand the underlying structure of information. Thirty-three years ago, while I was at Columbia University, I developed the Information Mapping® method of structured writing and analysis. I developed Information Mapping to enable writers to more efficiently and accurately analyze relatively stable subject matters, that is, subject matter for which broad agreement exists about its boundaries, contents, and so forth.

Stephen Toulmin's work on argumentation analysis was a second influence. When I encountered his work, I realized that argumentation analysis was another tool with which to structure information, namely, to structure disputed subject matter—that which is by no means stable.

The third thread is my current endeavor, which began in 1983, to understand how words and visual elements come together in what I call in my book *Visual Language: Global Communication for the 21st Century*, the tight integration of words, images, and shapes. The book and my business communication courses are the result of my 15-year attempt to identify why and how words and visual elements can communicate better when they are used together than when they are used separately, especially when the subject matter is as complex as a debate like *Can Computers Think?*

Out of those three threads, combined with a lifelong interest in the great philosophical questions, came my interest in mapping the structure of great debates.

I made an earlier attempt to map Toulmin's analysis, and reported on that attempt in my 1989 book *Mapping Hypertext: Analysis, Linkage, and Display of Information for the Next Generation of On-Line Text and Graphics.* But somehow I felt that the graphic mapping approach that I had developed at that time was not adequate to the task of mapping a vast, interdisciplinary debate with both a long history and an active current status. I was truly looking for a challenge.

I began to address the problem again four and a half years ago, when I came to Stanford University as a visiting scholar. I chose the Turing argument about machine intelligence as the test case, specifically because of its long history, current activity, and interdisciplinary nature. The results are before you. Geographical maps go back more than 4,000 years, and improvements are still being made. Argumentation mapping is certainly still in its infancy. We all have much to learn about how to improve the methodology.

The project, including both the mapping of this particular debate and the development of the methodology, has benefited greatly from the ideas of all of the project staff, but most especially from the thoughtful contributions of Jeffrey Yoshimi, who has been with the project since the Turing debate was chosen as subject matter. Many people have read all or part of the manuscript. I would like to acknowledge major suggestions and assistance from Hubert Dreyfus, John Searle, George Lakoff, Terry Winograd, Patrick Hayes, Burt Voorhees, and especially Terry Winograd, who has hosted this project as a part of his Program on People, Computers, and Design at the Center for the Study of Language and Information (CSLI) at Stanford University. I also want to thank John Perry, Director of CSLI, for his hosting of the project. I would like to thank dear friends who kept encouraging me throughout the project: Rebecca Salome, Bob Weber, John Garret, and David Sibbet. They at times functioned also as wonderful reviewers and critics. And thanks to Valeria Chow and Vincent Chen for providing the Chinese characters on Map 4.

Robert E. Horn
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Complete Bibliography

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Index of Protagonists

Protagonists' appearances on the maps are listed here by map number and box number.

How Can You Participate In This Ongoing Debate?

It is clear from several angles that this debate is far from decided. Frontiers exist everywhere. The mapmakers, in fact, refrained from adding their own claims and arguments even in obvious areas, thus leaving the opportunity for you. We expect to release a second edition of *Mapping Great Debates: Can Computers Think?* some years hence. The opportunities for you to participate, therefore, are several, and your involvement is not only appreciated—it is critical.

Two Ways To Participate

1. If we missed an argument: Please send a copy of the article or chapter that you believe deserves mention along with a completed copy of the New Claim/Rebuttal Participation Form.

2. If you are the author of a new, or newly published, argument: Send us your claim using the New Claim/Rebuttal Participation Form. A book of new arguments will be issued along with future editions of the maps.

Writers' Guidelines

- Focus on stating your conclusion, in as straightforward and direct a manner as possible, using an example if possible. A conclusion and an example are often sufficient. Remember, the arguments are above all *summaries* and *placeholders* that refer the reader to your more detailed published texts.
- It is not necessary to include all the details of your argument in the summary. However, if you can briefly state your argument using a bulleted or numbered list, please do so.
- Write your argument with context in mind. Decide where on the maps (in which region, attached to which previous argument) it will be placed, and then write the summary with that context in mind. Pretend you are a reader, moving from one claim to the next along a thread, and fine-tune your claim accordingly.
- If a similar argument exists earlier in the thread or elsewhere in a region, focus on what is new or unique about your argument. Don't be redundant. Push the conversation forward.
- Too many qualifications dampen an argument. Take as strong a stance as possible.
- If your argument involves a dilemma, a straw man, a red herring, a vicious circle, or any other common argumentative device, we probably have graphic conventions which can help you condense and visually represent your argument.

New Claim/Rebuttal Participation Form

Name: _____ **Title:** _____

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I am submitting: ◊ **a previously published argument that you missed (attach a copy of the published article).**
◊ **a new argument (attach a 3–4 page paper, double-spaced, setting forth the reasoning behind your argument).**

Optional: ◊ **I have attached a sketch of an icon or illustration to accompany the argument.**

Argument Title: _____

Argument Summary (3–4 sentences): _____

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