

The *Science Matters* Program and a Proposal

Prehistory

The story began with Thales (c. 585 BC) who proposed the first “Theory of Everything”: Everything is made of water. Subsequently and more prominently, Aristotle (384-322 BC) studied all aspects of the universe on equal footing, including astronomy, physics, biology, logic, ethics and politics. That is, he was interested in all the subjects now covered in various departments in the modern universities. This was not by accident at all (see the deep reason given below). The compartmentalization of knowledge into different disciplines occurred just a few centuries ago, more by convenience than by the intrinsic nature of the knowledge involved.

There is a material basis underlying the fundamental unity of knowledge. Knowledge about our world/universe can be divided into two categories: those not depending on humans and those that do. The former is what is called “natural sciences”; the latter, the humanities and social sciences. But this is misleading. Humans are *Homo sapiens*—a material system made up of atoms, just like those studied in “natural sciences.” And since science is to understand Nature which includes all material systems, the inescapable conclusion is that humanities and social sciences are or should be part of science. In short, *everything in Nature is a part of science*. If this point is not yet clear to everybody, it is due to the misconception or misuse of the word “science” in our daily language.

In fact, in the last 400 years or so since Galileo, modern “science” has progressed rapidly because of three factors: scientists pick the simple systems to study; they make a lot of simplifications; they use external detectors and information processors (computers). Partly due to the great successes of these studies, these days, the word “science” is inexplicitly identified with the “science of simple systems”, while the “science of complex systems” to which all human-dependent knowledge belongs is often neglected.

Science Matters

Science Matters (scimat or SciMat), the new discipline initiated by Lui Lam in 2008 [1], treats all human-dependent matters as part of science (see Appendix 1). It thus includes all the topics in the humanities and social sciences. Scimat results from two recognitions: (1) Humans are a material system (made up of atoms); (2) Science is the study of Nature which includes all material systems. The first recognition follows from Darwin’s evolution theory (1859) and Einstein’s work on Brownian motion (1905).

The viability of scimat has been demonstrated in these three areas: history, arts, and philosophy.

- Human history is shown to be a science, too (confirming the historian Collingwood, 1922). Scientific methods to do history, apart from the usual narrative approach, are pointed out with examples. A historical law is discovered in the lifetime of Chinese dynasties [2].
- The origin and nature of arts—a 2,400-years-old puzzle since Plato—is solved [3].
- The confusion and misconceptions about Science is clarified by a historical approach based on the advancements in modern science [4].

[1] L. Lam [2008] “Science Matters: A unified perspective,” in *Science Matters: Humanities as Complex Systems*, eds. Burguete, M. & Lam, L. (World Scientific, Singapore) pp. 1-38.

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- [2] Lam, L. [2008] “Human history: A Science Matter,” in *Science Matters: Humanities as Complex Systems*, eds. Burguete, M. & Lam, L. (World Scientific, Singapore) pp. 234-254.
- [3] Lam, L. [2011] “Arts: A Science Matter,” in *Arts: A Science Matter*, eds. Burguete, M. & Lam, L. (World Scientific, Singapore) pp. 1-32.
- [4] Lam, L. [2014] “All about science: Philosophy, History, Sociology and Communication,” in *All About Science: Philosophy, History, Sociology & Communication*, eds. Burguete, M. & Lam, L. (World Scientific, Singapore).

The Scimat Program

The tradition of treating everything in the universe, human and non-human systems, from a unified perspective—starting with Aristotle and continued until the Renaissance—was broken with the rise of modern science in the last 400 years. Concerted efforts to revive this tradition happened from time to time and failed with one exception: the *Enlightenment* (1688-1789 by one account). The Enlightenment succeeds in ushering in social science (by establishing Economics through the effort of Adam Smith) but fails in turning the humanities into a science. It is an effort interrupted.

Individually, the book *Consilience* (1999) by E. O. Wilson, Harvard biologist, advocates the revival of the Enlightenment spirit, based on other considerations. But not much happened.

The **Science Matters Program**, started by Maria Burguete and Lui Lam in 2007, is the latest international effort to revive the Aristotle tradition of a unified knowledge, and is the “[only game in town](#)”. It consists of six steps:

1. Establish a biennial international scimat conference series.
2. Form an international scimat committee (ISMC) to advocate, propagate and maintain the concept and activities.
3. Establish an international scimat book series.
4. Establish a number of scimat Centers around the world (which would be independent from but collaborating and reinforcing with each other).
5. Set up an international scimat society.
6. Publish an international scimat journal.

Steps 1-3 have been accomplished, since the first scimat conference in Portugal, 2007. In particular:

- Four international scimat conferences have been organized (2007, 2009, 2011, 2013, in Portugal). The fifth one (2015) could be on *Enlightenment 2: The Making of a “Science of Man” Continues*.
- The “International Science Matters Committee” (ISMC) was established in 2007 (with 17 prominent scholars from Australia, China, Europe and USA, including a [Nobel laureate](#) and the [President of the European Academy of Sciences Arts and Letters](#)); see Appendix 2 below.
- A new book series *Science Matters Series*, with Lui Lam as founder and editor, is published by World Scientific. The first two books are: *Science Matters: Humanities as Complex Systems* (2008) and *Arts: A Science Matter* (2011), both edited by M. Burguete and L. Lam. The third one, *All About Science: Philosophy, History, Sociology & Communication*, will come out early 2014.

We are now working on step 4. For more see website: www.sjsu.edu/people/lui.lam/scimat.

Why Scimat is important

What we are witnessing here is the initial stage in the birth of a new “discipline”—more accurately, a new paradigm/movement—called Science Matters. It is similar to the cases of “History of Science”

(initiated by George Sarton early last century) and “Artificial Life” (by Chris Langton in the 1970s), but not quite. Scimat is much larger and will be more influential.

- It provides a unified perspective for all the disciplines in the humanities and social sciences.
- It is a rally point to raise the scientific level of the humanities and thus making the world a more peaceful place (since all human sufferings can be traced to the underdevelopment of the humanities in the last 2,400 years since Plato).
- It is the foundation behind the synthesis of the humanities and “science” (文理交融).
- It provides a route for the General Education courses to succeed.
- It is the most interesting and important discipline in the 21st century.

A proposal: Establish a Science Matters Center

If you or your friend has money, please help setting up a **Science Matters Center** (at a university of your choice or as an independent institute in your city). The center is

1. To do fundraising to support the Center financially.
2. To organize international workshops/conferences and summer/winter schools.
3. To give out an Award every two years, in the donor's name perhaps, for an individual who contributes significantly in the advancement of scimat.
5. To host short-term visiting scholars who will give lectures/short courses, who will also collaborate with existing faculty members and students of any discipline, especially from the humanities.
6. To help match faculty members from humanities and science departments, and give them release time to create new interdisciplinary courses such as a course on “Science of History”.
7. To help create a new, ultimate general-education course on “humanities + science” for undergrads of all majors.

Note that the Center will not do research within itself, and so the maintenance fee is very minimal. With enough (outside) money, it can advance scimat by funding interdisciplinary research. The scimat center will be in a leading position academically in the most important multidiscipline of the 21st century.

Lui Lam

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Appendix 1: Scimat: Q & A

Q: What is scimat?

A: It is a new discipline that recognizes “everything in Nature is part of science”.

Q: What do you mean by Nature?

A: Nature includes all living and nonliving material systems, humans in particular.

Q: What do you mean by Science?

A: Science is humans' pursuit of knowledge about all things in Nature, which includes all human and nonhuman systems, without bringing in God or any supernatural.

Q: What is scimat's position on God and religion?

A: Scimat holds no position on whether God exists or not. Personal choice of religion is respected.

Q: What are the topics that scimat covers?

A: All topics related to humans. That is, all the topics in the humanities and social science.

Q: Why does scimat put its emphasis on the humanities?

A: Because social science has been recognized as science but not yet the humanities.

Q: Why are the humanities so important?

A: All the world tragedies (poverty, war, race cleansing, injustice, corruption, etc.) are human-dependent matters and could be traced to the underdevelopment of the humanities in the last 2,400 years since Plato and Confucius.

Q: What new method or new tool is used by scimat in its research?

A: None. Scimat advocates the use of any method or tool that is available and applicable as long as honesty and ethics are respected. Reason: Scimat is about the search for knowledge which knows no boundaries and no pre-determined routes.

Q: Anything more?

A: Well, we do point out and want to emphasize that in any discipline there are three approaches—empirical, phenomenological (i.e., without knowing the mechanism) and bottom-up; they supplement and reinforce each other, like army, navy and air force in a war situation. This is well known in nonhuman studies but less so in the humanities.

Q: Then what is new about scimat?

A: The concept that “all human-dependent matters are part of science” is new.

Q: So what?

A: Humanity advances through new concepts. Examples: “All men are born free” brings down slavery; “all men are born equal,” royalties and totalitarian regimes; “all women are born equal, too,” restrictions on women's rights in education, employment and voting.

Q: Will all the world problems be solved if enough number of people become scimatists?

A: We don't know. But, in our judgment learned from history, scimat is the best, practical way to make the world better and more peaceful since people would be more enlightened and, hopefully, act more rationally, *humbly* and kindly toward others and the environment. The next step is to educate the decision makers.

Q: What is scimat's action plan for the future?

A: To set up 100 scimat centers worldwide, to ensure the development of and sustain scimat's ideals. The first step is to set up one such center. What the center can do is spelled out in “The *Science Matters* Program and a Proposal” (see: www.sjsu.edu/people/lui.lam/scimat).

Q: How can I help?

A: Buy this book. And tell others to do so.

Q: How can I help more?

A: Buy the other two books in the Scimat Series: *Science Matters* (2008) and *Arts* (2011). Or, ask your library to do that; better, do both.

Q: How can I help much more?

A: Be a sponsor or co-sponsor of our next scimat conference. It takes 20,000 USD to run a good conference, 10,000 USD to run a conference.

Q: What if I can't wait?

A: Gather, from your friends if necessary, 50,000 USD and contact the author: lui2002lam@yahoo.com. We will help to set up a Scimat Center in the university or city of your choice (tax exempt in the US). The Center could be named after the person you prefer if more money is donated.

Q: How can I help without money involved?

A: Visit the scimat website and help spread the word.

Q: What is scimat's take home message?

A: Humanities are part of science.

Appendix 2: The International Science Matters Committee

On May 30, 2007 and in Ericeira, Portugal, at the end of the First International Conference on Science Matters, an International Science Matters Committee (ISMC) was formed; it consisted of 9 members. Since then the ISMC was expanded. After the first four scimat conferences in the biennial series, at this point, there are 17 members in the ISMC.

Members of ISMC

1. Manuel Bicho (Portugal)
2. Peter Broks (UK)
3. Maria Burguete (Portugal)
4. João Caraça (Portugal)
5. Paul Caro (France)
6. Jean-Patrick Connerade (UK)
7. Patrick Hogan (USA)
8. Brigitte Hoppe (Germany)
9. Lui Lam (USA) – *Coordinator (Email: lui2002lam@yahoo.com)*
10. Bing Liu (China)
11. Dun Liu (China)
12. John Onians (UK)
13. David Papineau (UK)
14. Nigel Sanitt (UK)
15. Ivo Schneider (Germany)
16. Michael Shermer (USA)
17. Robin Warren (Australia)

Aims of ISMC

Short term:

- Promote and propagate the idea of Science Matters.
- Help to find organizers and funding for the next international conferences on Science Matters, to be held once every two years.
- Oversee the academic quality and integrity of future international conferences on Science Matters.
- Help to establish a Science Matter Center.

Long term:

- Help to establish an International Science Matters Society.
- Help to establish an international journal on Science Matters.

Bios of ISMC members

Manuel Bicho obtained his Ph.D. in Medicine (Physiology and Biochemistry) in 1985 and M.D. in 1975, both from Lisbon Medical School, University of Lisbon. He is Director of Rocha Cabral Institute, and Director of Genetics Laboratory (since 1995) and Professor of Genetics, Faculty of Medicine of Lisbon (since 1990). His main research area is Biochemical and Molecular Genetics. He was awarded the Ernesto Roma Prize in Diabetes Research (1996) and the Bial Prize of Clinical Medicine (1994).

Peter Broks obtained his B.A. and Ph.D. from the University of Lancaster. In 1990 he was a specialist appointment at the University of the West of England, Bristol, to design, develop and teach a new undergraduate programme in “Science, Society and the Media” jointly run by the Faculty of Humanities and the Faculty of Applied Sciences. He has published extensively in the history of science especially as it relates to popular culture and is the author of *Understanding Popular Science* (2006). In August 2011 he left UWE so that he could devote more time to research and writing.

Maria Burguete got her Ph.D. in History of Science (contemporary chemistry) from Ludwig Maximilians University at Munich, Germany (2000). She is a scientist and a university lecturer with teaching and research experience in a wide variety of scientific fields. She is a scientific researcher at Scientific Research Institute Bento da Rocha Cabral in Portugal since 2007. She has published seven books in the scientific field (and five books of poetry) and over 20 scientific papers. She is a corresponding member of European Academy of Sciences, Arts & Letters since 2010.

João Caraça obtained the D. Phil. in Nuclear Physics at the University of Oxford (1973). He is the Director of Calouste Gulbenkian Foundation’s Delegation in France, and Full Professor of Science and Technology Policy at the Instituto Superior de Economia e Gestão of the Universidade Técnica de Lisboa. He is member of the Governing Board of the European Institute of Innovation and Technology (EIT). He also integrates the Steering Group of the European Forum on Philanthropy and Research Funding and is President of the Advisory Board of the Portuguese Business Association for Innovation (COTEC). Caraça was Science Adviser of the President of the Portuguese Republic (1996-2006) and has published over 150 scientific papers. His main interests are science and technology policy and prospective studies. His recent books include *Limits to Competition* (1995), *Science et Communication* (1999), *Entre a Ciência e a Consciência* (2002), *Le Printemps du Politique* (2007), and *Ideias Perigosas para Portugal* (2010).

Paul Caro is a former (retired) Director of Research at CNRS who has worked for many years in inorganic chemistry. He is a rare earths specialist. In the 80’s he became interested in science popularization through newspaper articles (in “Le Monde” and magazines), radio broadcasts (France Culture, Radio Classique, mostly), television shows (TF1), exhibitions in Museums and some books. He was until 2001 in charge of “scientific affairs” at the Cité des Sciences et de l’Industrie in Paris. He is a Corresponding Member of the French Academy of Sciences and a Member of the French Academy of Technology.

Jean-Patrick Connerade Educated Lycée Charles de Gaulle and Imperial College DSc University of London 1976. Lockyer Professor of Physics for many years, now Emeritus Professor and Distinguished Research Fellow Imperial College London, Hon Prof Physics East China University Shanghai and Permanent Visiting Prof. WIPM Chinese Academy of Sciences. [President of the European Academy of](#)

Sciences Arts and Letters, Honorary President of Euroscience. Some 250 published papers. He is also a published poet in the French language, recipient of several literary prizes (prix Jose-Maria de Heredia de l'Académie Française, prix Paul Verlaine de la Maison de Poésie de Paris, Grand Prix de Poésie de la Société des Poètes Français).

Patrick Colm Hogan received his B.A. in Philosophy from Santa Clara University, his M.A. in Philosophy from the University of Chicago, and his Ph.D. in English from the State University of New York at Buffalo. He is the author of 14 books, including *The Mind and Its Stories: Narrative Universals and Human Emotion*; *Cognitive Science, Literature, and the Arts: A Guide for Humanists*; and *Understanding Indian Movies: Culture, Cognition, and Cinematic Imagination*. He recently edited *The Cambridge Encyclopedia of the Language Sciences*.

Brigitte Hoppe obtained her state diploma in pharmaceutical and biological sciences from the University of Freiburg im Breisgau, her degree of Dr. phil. nat. from the University of Frankfurt am Main (1964), finished the habilitation in History of Science at the University of Muenchen (1972) and became Associate Professor of the Ludwig-Maximilians-University of Muenchen in 1980, where she developed a working group in the history of life sciences and chemistry. She published 7 books and more than 200 papers on the history of sciences. She was a member of the editorial board of *History and Philosophy of Life Sciences* for 10 years and is now a member of the editorial board of *Archives Internationales d'Histoire des Sciences*. She is an Effective Member of the *International Academy for History of Science* and member of several national and international Societies for History of Sciences.

Lui Lam, humanist and physicist, obtained his BS (First Class Honors) from University of Hong Kong; MS., University of British Columbia; PhD, Columbia University. He did his PhD thesis at Bell Labs. Lam invented Bowlic liquid crystals (1982), Active Walks (1992), and two new disciplines: Histophysics (2002) and Science Matters (2008). He has published 14 books and over 180 scientific papers; the books include *Introduction to Nonlinear Physics* (1997), *Arts: A Science Matter* (2011) and *All About Science* (2014). He is the founder of the International Liquid Crystal Society (1990); cofounder of the Chinese Liquid Crystal Society (1980); founder and editor of two book series, "Science Matters" (World Scientific) and "Partially Ordered Systems" (Springer). Lam is an editor of *Physics* and *Science Popularization*. His current research is in science matters (scimat) and complex systems; scimat website: www.sjsu.edu/people/lui.lam/scimat.

Bing Liu obtained his B.Sc. from Peking University (physics department) and M.Sc. from the Graduate School of Chinese Academy of Sciences. Now he is a professor of history of science at Tsinghua University, vice director of the Center for Science Communication and Popularization of CAST and Tsinghua University, and a Guest Professor at some universities in China, such as Shanghai Jiaotong University. His current research include history of physics, historiography of science, philosophy of science, and science communication. He published 17 books (and translated 7 books, edited more than 30 books), over 130 academic papers, and many notes.

Dun Liu, former Director of the Institute for the History of Natural Science, Chinese Academy of Sciences (1997-2005) and past President of the International Union of History and Philosophy of Science (2009-2013), is currently Professor Emeritus of the Institute and Professor of Tsinghua University at Beijing. His main research field is Chinese mathematics/astronomy and its interaction with the social context, especially in the Ming-Qing transitional period (c. 17th century). Also serving as editor-in-chief of the bimonthly journal, *Science & Culture Review*, he currently focuses on such historiographic and cultural topics as the "Needham question" and the "C. P. Snow thesis".

John Onians, studied Classics at Cambridge University and Art History at the Courtauld and Warburg Institutes, London University, before being appointed Lecturer, Senior Lecturer and Professor at the University of East Anglia. He was founding editor of the journal *Art History* and founding Director of

Research and Academic Programs at the Clark Art Institute, Williamstown, Mass and has been a Getty Scholar and held Fellowships at the Center for the Advanced Study of the Visual Arts, Washington, and the Wissenschaftskolleg, Berlin. He has published numerous books including, *Art and thought in the Hellenistic Age: The Greek World View 350-50BC* (1979), *Bearers of Meaning: The Classical Orders in Antiquity, the Middle Ages and the Renaissance* (1988) and *Classical Art and the Cultures of Greece and Rome* (1999), and he edited the first *Atlas of World Art* (2004). He is now writing *European Art: A Neuroarthistory*.

David Papineau, professor of Philosophy of Science in the Department of Philosophy at King's College London, has a B.Sc. in Mathematics from the University of KwaZulu-Natal, and a B.A. and a Ph.D. in Philosophy from Cambridge University. He was President of the British Society for the Philosophy of Science (1993-1995) and President of the Mind Association for 2010. He was editor of the *British Journal for the Philosophy of Science* (1993-1998), a Leverhulme Research Fellow (1999-2000), and a Mind Fellow (2007). His books include *Theory and Meaning* (1980), *Philosophical Naturalism* (1993), and *Thinking about Consciousness* (2002).

Nigel Sanitt obtained his B.Sc. from Imperial College London and Part III of the Mathematics Tripos and Ph.D. from Cambridge University. He trained as an astrophysicist at the Institute of Astronomy, Cambridge, before becoming a lecturer at University College, London University. He is founder and editor of *The Pantaneto Forum*. The journal aims to promote debate on how scientists communicate, with particular emphasis on how such communication and research skills can be improved through a better philosophical understanding of science.

Ivo Schneider is Professor emeritus for the history of science of the Universität der Bundeswehr München. He was professor and visiting professor at the universities of Munich, Princeton, Bielefeld, the university of Minnesota in Minneapolis and the technical university of Budapest. He is cofounder, editor, coeditor and reviewer of several journals and series of the history of science and the history of mathematics. Special research interests concern the history of classical probability theory, mathematical practitioners and reckoningmasters in the 16th and 17th centuries, scientific instruments in the 17th and 18th centuries, biographies of scientists, science theater and the origins of Bavarian optical industry in the first half of the 19th century. His books comprise a source book of the history of probability theory up to Kolmogorov and biographies of Archimedes, Johannes Faulhaber and Isaac Newton. He is a member of different national and international societies for the history of science and ever since 1995 membre effectif of the Académie Internationale d'Histoire des Sciences. His autobiography was published in 2004 in a volume devoted to his 65th birthday. In the same year he was honored with the degree of a Doctor honoris causa by the technical university of Budapest.

Michael Shermer is the founder and editor of *Skeptic* magazine, a contributing editor and monthly columnist for *Scientific American*, and the host of the Skeptics Distinguished Lecture Series at Caltech. He is the author of *Science Friction*, *The Science of Good and Evil*, *Why People Believe Weird Things*, *How We Believe*, *In Darwin's Shadow*, *The Borderlands of Science*, and *Denying History*. Dr. Shermer received his Ph.D. in the history of science from Claremont Graduate School.

Robin Warren was born in 1937, in Adelaide, South Australia. He graduated M.B., B.S. from the University of Adelaide in 1961. After training at the Royal Melbourne Hospital, he was admitted to the Royal College of Pathologists of Australasia in 1967. Since then, he was a senior consultant pathologist at the Royal Perth Hospital in Western Australia, becoming emeritus consultant pathologist in 1998. In 2005 he (together with Barry Marshall) was awarded the [Nobel Prize in Physiology or Medicine](#) for the "discovery of the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease."