Taxonomy at a Crossroads:

Science, Publics and Policy in Biodiversity

Introducing the Project

"TAXONOMY AT A CROSSROADS: SCIENCE, PUBLICS AND POLICY IN BIODIVERSITY"

Lancaster University and the Natural History Museum, London. July 2006 - June 2009

Contemporary innovatory research in the science of taxonomy, has recently caught the attention of a team of sociologists and anthropologists of science and technology from Lancaster University. Innovation, uncertainty and debate are hardly recent introductions to the world's taxonomic community. Indeed, since the 18th century, this scientific discipline has been fuelled by discussion about the scope and limitations of new methods, new technologies and new applications of research findings. At the same time, sociologists, anthropologists, historians and philosophers of science have, for centuries, been perplexed and fascinated by human practices of classifying the world. Classification, it has been argued is a quintessentially human activity and thus encapsulates elements of human culture. Social scientists in particular, explore ways in which the methods and products of different classificatory practices, tell us as much about human culture and society as they do about the natural world.

Two, arguably interconnected influences are however, currently transforming both the methods and the role of taxonomic science as we know it and are thus posing new questions to both natural and social scientists. Firstly, since the 1980s, the experimentation with a range of molecular techniques for both investigating phylogenetic relationships and species identification has intensified. Many scientists now argue that these provide, if not an improved, a complementary range of methods to the morphological approaches more traditionally used. The latest in a long string of molecular developments is the use of DNA barcoding techniques for species identification. Secondly, since the signing by over 150 countries of the Global Convention of Biodiversity in Rio in 1992, both taxonomy and biodiversity have been placed firmly and clearly on the (public) policy map. A growing public, scientific and policy awareness of biodiversity loss and the urgent need to reliably and rapidly inventorize biodiversity presence as a prerequisite for its protection, have forced a rethinking of the methods for producing and sharing taxonomic knowledge.

One result of this focus has been the joining of forces of the taxonomic and bioinformatics communities to find new digital ways to ensure global access to the results of taxonomic and biodiversity research. These developments are gradually taking shape and are being laid out on a global playing field and as such not only is access to information a burning issue, but so is access to innovatory power and technological know-how. At present, the how and where of resource distribution on a global scale remains to establish itself. The stakes are high of course, as new research agendas are set, human, technological and financial resources allocated and sometimes new and unanticipated applications of taxonomic techniques and information burgeon. Indeed, Dr. Paul Hebert, one of today's leading champions of DNA barcoding for species identification has characterised contemporary research in taxonomy as *'an enterprise that promises to remake our relationship with life'*. The expectations could hardly be greater and not surprisingly new questions and reflections about taxonomic and biodiversity futures are already circulating around scientific, policy and public communities.

TAXONOMY AT A CROSSROADS: INTRODUCING THE PROJECT

The 3 year research project "*Taxonomy at a Crossroads: science, publics and policy in biodiversity*" is funded by the **Economic and Social Research Council** (ESRC) and begins in July 2006.

The ESRC are strongly committed to funding social scientific research which explores the roles contemporary science and technologies can have in society today. Their 'Science in Society Programme', for example, prioritises projects which feed into an already productive dialogue between social and natural scientists about issues of democratic accountability of scientific research. When social scientists work together with natural scientists, one constructive route for exploration might include thinking through different forms of societal engagement as a central dimension of scientific innovation. Our project 'Taxonomy at a Crossroads' is a good example of this kind of research. It will explore contemporary innovations in taxonomy through a sociological and anthropological lens and in so doing, will focus in particular upon the scientific, social and political implications of these innovations.

Of course many of the issues we will raise will already be familiar to the scientific and policy communities. What we are interested in doing during this project is to ensure that many of the bigger questions around the 'why?' and 'who for?' of scientific research developments are brought to the fore and acknowledged by all as playing a crucial role in innovation itself. Indeed, our experience and a growing body of literature in science and technology studies suggest that such accompaniment can contribute to the making of a more robust and publicly accountable science.

GENERAL AIMS OF THE RESEARCH

The project has 2 general interrelated themes and will explore these using a range of social scientific research methods:

A. TO UNDERSTAND THE NATURAL SCIENCE FROM A SOCIAL SCIENTIFIC PERSPECTIVE

We aim firstly to gain an in-depth understanding (using a social scientific perspective) of scientific practice and knowledge making in selected locations, identifying in particular the elements of these which have social, political, public and policy implications. We will do this by interviewing taxonomists and observing scientific practices and debates at the following selected sites

1. Natural History Museum, London: Department of Botany
2. Guelph University, Canada: Barcode of Life Initiative
3. American Museum of Natural History, Smithsonian Institution, Washington DC, USA
4. British Phycological Society (BPS)
5. Butterfly Conservation UK **(**BC**)**

Each site has been selected as playing a key role in and highlighting different aspects of the scientific debates. The NHM, Guelph and the Smithsonian, for example, are all global leaders in the use of both morphological

and molecular data in taxonomic practice (as custodians and innovators). The BPS and BC are 2 prominent UK voluntary naturalist organisations making important contributions to taxonomic and biodiversity knowledge. Interviews and observations will subsequently be transcribed, discussed and analysed by the team of social scientists

Important initial questions of the project will be:

- What different taxonomic practices take place at different research sites?
- How has the relationship between morphological and molecular systematics developed so far and how will it develop in the future?
- What will be the global distribution of technologies and skills enabling molecular systematics and barcoding?
- What will be the implications of these technological developments for society and specifically for satisfying calls to render science publicly accountable and democratic?

B. TO FEED BACK SOME OF OUR UNDERSTANDINGS AND IDEAS TO THE SCIENTIFIC AND POLICY COMMUNITIES

Our second aim is to ensure that the research will be participatory and will forge a relationship of feedback, reflection and understanding between the researchers and all the project stakeholder communities.

To accomplish this aim, the researchers will seek permission to attend selected Barcode of Life meetings and Convention on Biological diversity pre-COP and COP meetings where special Consortium building seminars will be arranged to ensure effective discussion.

The following issues will be raised:

- In the realm of biodiversity science and policy, what kind of science is supported and in what ways can different forms of taxonomy best contribute to national and global biodiversity policy?
- How will molecular taxonomic knowledge be owned and exchanged and its benefits globally distributed?
- What does the molecurisation of our understanding of life mean socially and politically at local, national and global scales?

PROJECT OUTCOMES

- Project specific website
- Academic publications in both social scientific and natural scientific journals
- Publication of a research briefing pamphlet presenting the project's rationale, findings and reflections. This will be aimed towards government departments sponsoring the main global taxonomic institutions and some of the major scientific bodies involved in these shifts.
- Final project conference at which research findings and reflections will be shared and discussed with all individuals and institutions who have participated in the research.

CONTACTS AND LINKS

Inspiration for the project grew out of an interdisciplinary research relationship already established between Lancastrian social scientists (CSEC and CESAGEN) and a team of natural scientists headed by Dr. Johannes Vogel, head of Botany at the Natural History Museum.
http://www.lancs.ac.uk/fss/projects/ieppp/**amateurs**/

Aside from spearheading the 'Barcoding British Flora' project, the Botany Department together with the UK Biodiversity Programme is also known for pioneering innovative public participation initiatives which ensure the Natural History Museum's activities are not only accessible to the public but involve the contributions of varying public communities.
http://www.nhm.ac.uk/research-curation/**department**s/**botany**/
http://www.nhm.ac.uk/research-curation/departments/botany/news-events/barcoding-conference-2006/index.html
http://www.nhm.ac.uk/research-curation/biodiversity-museum/uk-biodiv-programme/index.html

CSEC, founded in 1991, has established an international reputation for a distinctive form of 'public sociology' in the area of environment and technology. The centre is particularly renowned for combining independent empirical and theoretical research with close interactions with non-academic (user) organisations and novel policy interventions.
http://csec.lancs.ac.uk/

CESAGEN's research focuses specifically upon bringing together natural and social scientists to explore the economic**,** social and ethical consequences of genomic and genetic science.
http://www.cesagen.lancs.ac.uk/

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"Taxonomy at a Crossroads" Project Website: http://www.lancs.ac.uk/fass/projects/taxonomy