



MACAS EU-India

Summary of Proceedings of the 2nd Project Meeting on

‘Mapping the Cultural Authority of Science across Europe and India’ (MACAS)

London, 1-12 July 2013

The project ‘Mapping the Cultural Authority of Science across Europe and India’ (MACAS) is supported by ICSSR-ANR-DFG-ESRC-NWO (2012-2015) to connect researchers from different disciplines and different countries who are involved in studies of public understanding and engagement of science, as evidenced in mass media discourses of science and the large-scale surveys of attitudes towards science and scientific issues. Thus the network mobilises and develops joint expertise not only in the UK, Germany and India (the main partners), but beyond to affiliated partners in Europe, China and Latin America for discourse analysis, computer-assisted text analysis, large scale survey research, and statistical techniques to track the cultural authority of science.

The meeting brought together researchers from different disciplines including sociology, psychology, linguistics, media studies, survey statisticians and IT professionals from UK, Germany, Italy, Turkey, China, Taiwan, Switzerland and Bulgaria, Chile and Nigeria and was distributed over two differing weeks and several key issues. Over both weeks, between 10 and 15 persons were continuously in discussion, a core group was participated in both weeks.

Module 1: mass media indicators of the culture of science

The first week focused on Module 1: Mass Media Indicators of Science culture. The opening session gave an overview of MACAS research project, its potential and its goals. This session was followed by an introduction to QDA Miner and hand-on training. The textmining software QDA Miner is a flexible tool that offers numerous possibilities on structuring and analysing comparatively text corpora both in categorical and numerical terms. It was chosen by the MACAS team as a 'common language' and a basic tool for comparable media analysis. After a first introduction all team members conducted hand-on exercises on their own text corpora, to identify specific aims and constraints for media analysis on Module 1. The introduction of basic functions was followed by several comments on more advanced functions of text sorting and feature analysis in Wordstat, the statistical component of QDA Miner.

In addition to the exercises with QDA Miner, we explored software tools (LEXICO-3) and explored more general methodologies for analysing text corpora and media discourses such as 'linguistic keyword analysis' (see detailed programme above). **Tony Mcenery** (Lancaster University, and member of the MACAS Advisory Board) lectured on 'Corpus Linguistics in Social research' and introduced the MACAS team to the characteristics and changes of everyday English language over the last decades and on the interpenetration of vocabularies of different origins in everyday language. The latter brought the MACAS team to consider practically how to compare natural language corpora with the specific science news discourse in order to construct **indicators of interpenetration** of technical and everyday language.

Module 2: mass media indicators

TASK Force I: develop a seven step procedure illustrated in a flow chart to localise global features of science news for working with QDI Miner (Ahmet Suerdem)

TASK Force II: define a basic coding frame for science new analysis; the global features, that need to be adapted in each context with specific keywords (Martin Bauer)

TASK Force III: obtain natural text corpora in each language context, that can be used a benchmark to compare the science news text corpora against, and define linguistic indicators for this purpose (each team).

Task Force IV: to develop the computerised media monitoring platform beyond Italy, Brazil and Turkey; capitalising on the Tubitak project (Ahmet Suerdem, Federico Neresini)

Module 2: comparative survey research indicators of science culture

The second week of the meeting was aimed at the 'Survey indicators of Science Culture' (module 2). After an introduction to the MACAS aims, ambitions and databases, the meeting focussed on several presentations about fundamental science attitudes in Taiwan and Iceland, about mediator and moderator variables as well as about validations and comparisons of science related age-cohorts. All based on longitudinal analysis of national and international contexts.

We considered other potential survey resources such as ISSR, ESS, WVS, EVS that will be useful to the construction of comparative indicators of science culture. The MACAS team might consider a multi-national bid for ESS on science culture in 2014.

This part was followed by presentations about the imputation of missing data in EB and furthermore from studies presented by colleagues from Taiwan and Nigeria about superstitious practices and vaccination controversy.

In addition to the studies presented by MACAS members and projects Steve Miller (UCL) gave a lecture on 'The cultural authority of science: irrigation and rainfall cultures'. This lecture started with a review of the study 'The geography of Science' (Dorn 1991) and lead into an overview over numerous considerations and drivers of the cultural authority in different cultures and different historical phases.

To complete the work on module 2 the group discussed the next steps and built several research foci which would require a task force.

Module 1: survey indicators

TASK Force V sensitivity analysis: compare basic concepts such as 'science knowledge' methodologically across different types of indicators: summative scaling, expert weighting of items, IRT, and maximisation on external criteria; compare the differences this would make on rankings and correlational analysis (sensitivity analysis of indicators)

TASK Force VI cohort analysis: explore the construction of cohorts in the longitudinal data; consider cohort definition as a dependent variable: what are the science-relevant age groups in different contexts. Maximize the differences between cohorts on a number of indicators, rather than fix the age limited globally.

TASK Force VII ESS 2015: Consider other survey sources and prepare a bid for ESS on science culture. A student should be given the task to construct a codebook of existing items in ISSR, ESS, WVS, and EVS and integrate the data as far as possible (MB, NA, FC).

TASK Force VIII imputation: to create a complete longitudinal database for EU with the help of imputation logic. Sorting out inconsistencies across attitude and interest scales, and imputation of the missing knowledge items for 2010 on the basis of other waves (NA, AC)

TASK Force IX Biotech database: integrating the various EB Biotechnology surveys 1993-2012 to construct a second longitudinal database for MACAS (Indian team)

TASK Force X Culture and authority of science: To develop the conceptualisation of science culture and authority of science for the MACAS project; Petra Pansegrau will start up collating a reading list on 'Concepts of Culture', 'Autonomy of Science in Cultures' and 'Culture of Science' by September 2013 and will prepare a short presentation on that for Istanbul, Jan 2014.

The next Milestones

To continue work on module 1 and module 2 we discussed the following milestones.

Milestone I: Ahmed Suerdem will organize a workshop for the core group and project members in Istanbul, January 2014. Each group will be finished with corpus construction by then and will provide preliminary results on the analysis based on QDA Miner.

Milestone II: The MACAS team plans to meet at '13th International Public Communication of Science and Technology Conference', PCST 5-8 May 2014, Salvador, Brazil. We will offer three sessions on a) The Culture of Science across different cultures and nations (theoretical session), b) Mass Media Indicators of Science culture (module 1) and c) Survey indicators of Science Culture (module 2). Martin Bauer will prepare the proposals.

Milestone III: Petra Pansegrau will organize a workshop in Bielefeld in June 2014. The detailed issues will be discussed in Istanbul in Jan, 2014.

The London meeting has very focused on methodological issues, which is consistent with the early phase of the project. In later meetings we will refocus on substantive issues of comparing science culture across EU-India and beyond to affiliated partners in China and Latin America.

Petra Pansegrau & Martin W Bauer

Bielefeld and London, August 2013

Appendices

The detailed proceedings: Week 1 and module 2

Monday

- 9.30 Martin W Bauer & Petra Pansegrau Welcome to colleagues
10.00 Martin W Bauer MACAS the overall project context
10.30 Ahmet Suerdem QDI Miner introduction: basic functions
14.00 QDI Miner hand-on exercise on own data

Tuesday

- 10.00 Martin W Bauer Raising the stakes on science news analysis
11.00 Ahmet Suerdem
Localising global categories: cycles of qual/quant analysis with QDI Miner
12.00 all teams Current status of corpus construction (EXCELL)
14.30 Break-up in groups: group work preliminary work on text corpora

Wednesday

- 10.00 brain storming: science news characteristics
14.00 Ahmet Suerdem QDI Miner: advanced functions & text retrieval
15.30 Nelly Courvoisier LEXICO3: basic functions and utility
17.00 Kelly Krause (NATURE); VR Talk: **Visualisation at NATURE Publishing**

Thursday

- 10.00 Tony Mcenery (Lancaster) **Corpus Linguistics in Social Research**
14.30 Discussions on text corpora comparisons
19.00 Dinner

Friday

- 10.00 F Neresini & A Lorenzet; The Italian SMM project/machine: update
11.00 Ahmet Suerdem; The Turkish media monitor project (Tubitak)
14.00 Martin Bauer & Petra Pansegrau Summary and next steps

Week 2 and Module 1

Tuesday

- 10.00 Martin Bauer (LSE)
Welcome and introduction to week 2 and Module 2: survey indicators
- 10.30 Luke Li (TW)
Fundamental attitudes in TW as moderator/mediator variables (PPP)
- 11.15 Martin Bauer (LSE)
Fundamental attitudes in Icelandic context: two format of asking the question
- 12.00 Ahmet Suerdem (TK)
Mediator and moderator variables: procedural issues (PPP)
- 14.00 Nicoletta Parise (IT)
Social indicator construction: standardisation, aggregation, validation (PPP)
- 15.30 Kristina Petkova (BG)
Cohort comparisons UK-Bulgaria: raising issues of generational analysis

Wednesday

- 10.00 Fabienne Crettaz (CH)
Other survey sources as cultural indicators of science: ISS, WVS, ESS, EVS
- 11.00 Towards a bid for an ESS module: open discussion
- 14.00 Nick Allum & Alex Cernat (Essex)
Imputation of missing data in EB 1989-2010: knowledge, attitudes, interest items
- 15.00 Bankole Falade
Structure of attitudes to science in Nigeria in the vaccination controversy
- 16.00 Iris Huang (TW) Past and future surveys in TW: towards 2015
Pat Shein (TW)
Superstitious practices and science literacy in TW 2012: surprising relations

MACAS Joint Dinner at Sofras, Covent Garden

Thursday

- 10.00 Martin W Bauer (LSE)
Conceptual pointers: PUS, authority and culture of science
- 10.30 Steve Miller (STS UCL, invited speaker)
The cultural authority of science: irrigation and rainfall cultures
- 12.00 Petra Pansegrau (D)
Reaching conclusions: Istanbul Jan 14, PCST 2014, and Bielefeld 2014

Towards a basic coding frame

Metadata

newspaper name, year, day of month, day of week, number of words, author name (if possible), images (yes/no)

Relevance

Intensity score: number of keywords scored

Focus (rating: main, medium, marginal)

Context (business, politics, art, glamour/life style/consumption, human interest, defence/military, other)

Main Topics

- Climate change
- Biotechnology
- Nuclear power
- Health
- Computing, IT
-

Dynamics

- Conflict (yes/no) Balanced (yes/no)
- Risk uncertainty (rating)
- Benefit uncertainty (rating)

Frames of science

- Progress
- Economic prospect
- Nature/Nurture
- Pandora's box
- Run-away train
- Globalisation
- National Pride
- Catastrophe

Actors

- Names (person, institution)
- Type of actors
- Role, image of scientist

Evaluation

- Positivity rating
- Negativity rating

Linguistic indicators for corpus comparisons

Indicators of scientific language

- Absence of adjective
- Lack of 1st person pronoun
- Passive voice
- Nominalisation
- No contractions of verbs
- Technical vocabulary
- % hapax
- Complexity of language: %function words / content words, sentence length, word length, loan words
- Epistemic modality: is versus maybe, could be
- Obligation modality: you must, you should (bags of modal words provided by Mcenery)
- Emotion words (bags of words to be provided by Mcenery)
- Text structure: typical beginnings, middles and ends