

IM349-15 Data Visualisation in Science, Culture and Public Policy

25/26

Department

Centre for Interdisciplinary Methodologies

Level

Undergraduate Level 3

Module leader

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Credit value

15

Module duration

10 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

In this module students will learn about the opportunities and challenges opened up by the growing role of data visualisation in contemporary science, culture and public policy. It will introduce key concepts for understanding the importance of data visualisation as a form of knowledge, communication, persuasion and engagement as well as state-of-the-art approaches to using data visualisation as a way of knowing and intervening in the world and in society - such as ethnography, design research and inventive methods. Student learning will be supported through exploration of real-world examples: by reviewing paradigmatic cases, such as the Blue Marble (images of planet earth as seen from space), topographic maps of disputed territories, and visualisations of air pollution, students will learn to reflect on the wider impact of data visualisation on public understanding, cultural awareness, policy and decision-making and societal change.

The module consists of two parts, with the first part offering lectures and seminars introducing guiding ideas from social, cultural and political theory, science and technology studies, as well as digital and environmental humanities on the key importance of visualisation in science, culture and democracy. The second part will focus on the introduction of specific methodological approaches to the use of data visualisation in social, creative, participatory and policy research. Throughout the module, and linking the two parts, students will be engaging with cultural, social and public

issues through real-world examples of data visualisation. The module then combines lectures, seminars and assignment-based work, which together will equip students to recognise, analyse and appreciate the wider affordances of data visualisation for knowledge, intervention and change.

The module, then, will introduce concepts, methods and empirical cases key to understanding the affordances, power and limitations of data visualisation in science, culture, and public policy, with student engagement with the empirical cases providing continuity throughout the module: supported by group assignments, students will be exploring both concepts and methods by applying and thinking these through in relation to the cases. This will form the basis of the group presentations in the last week.

Module aims

The overarching objective of this module is to enable students to develop a conceptual, methodological and empirical understanding of the affordances and limitations of data visualisation as an instrument for citizen engagement in research, advocacy and policy-making and social, cultural and environmental change.

The module is designed to help contextualize the scientific, creative, and technical knowledge of data visualisation that students gain throughout the Visualisation degree in relation to wider cultural, political and societal contexts, by introducing students to approaches from social and political theory, humanities, science and technology studies, and design and arts research.

The module furthermore introduces students to methodological approaches developed across the social sciences and humanities, such as ethnography, participatory methods, and design and arts-based research, which purposefully deploy data visualisation as a device for collective enquiry, engagement, societal and cultural change.

To support the development of conceptual and methodological understanding, the module will familiarize students with exemplary empirical cases of the use of data visualisation in 19th and 20th science, culture, activism and public policy.

The aim, then, is to enable students to evaluate and appreciate data visualisation from an interdisciplinary perspective, and to understand and test its potential as an instrument of enquiry, communication and engagement at the intersections of science, culture and democracy.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module will start with an overview of key issues raised by data visualisation in contemporary science, culture and public policy:

The next 4 weeks (Part 1) will review key concepts and guiding ideas developed in recent social, cultural and political theory, science studies, environmental humanities, digital humanities and artistic practice to understand the privileged role of visualisation in contemporary society and culture: the primacy of vision in contemporary science, art and democracy; visualisation as *modus operandi* in technoscience; the rise of visual culture in the recent Century; visualisation as device

for public communication, activism and engagement with science, nature, society and culture.

After reading week, sessions will introduce state-of-the-art approaches to using data visualisation in research, intervention and engagement: visualisation as ethnography, data visualisation as participatory method, and visual methods in public policy, decision-making and advocacy.

This will be supported by group work on a small project, in which students will review and explore empirical cases of the use of data visualisation in science, culture and public policy in the light of key concepts and approaches introduced throughout the module. Case studies will include several of the following: Snow's Cholera Map, the Blue Marble (Earth seen from space), Maps of disputed territories, Visualisations of Air Pollution, Tufte's Challenger Disaster Critique, the Hockey stick visualisation of global temperatures, and Covid Maps.

Week 1: Introduction: Data, Visualisation & Culture Now

Week 2: Vision as Knowledge, Culture and Democracy

Week 3: Social Studies of Visualisation: Science, Power, Intervention

Week 4: Visualisation across Culture/Nature

Week 5: Data Visualisation's Publics and Counter-Publics

Week 6: READING WEEK

Week 7: Data Visualisation and Ethnography

Week 8: Data Visualisation as Engagement

Week 9: Data Visualisation in Public Policy, Decision-making and Advocacy

Week 10: Module Review and Final Presentations

Learning outcomes

By the end of the module, students should be able to:

- Demonstrate a conceptual understanding of the importance of data visualisation as an instrument of inquiry, advocacy, decision-making, and engagement in contemporary science, culture and public policy.
- Evaluate the usefulness of different methodologies for using data visualisation in the creation of knowledge, facilitate participation, decision-making and social and cultural change.
- Demonstrate an empirical understanding of how data visualisation has enabled new knowledge, engagement, awareness and change through the discussion of real-world examples.
- Provide an account of the role of data visualisation in the development of innovative forms of inquiry, policymaking, intervention and engagement, and of the potential of data visualisation to transform the relationship between science, culture and democracy.

Indicative reading list

Interdisciplinary

Approaches visualisation from an interdisciplinary perspective through state-of-the-art approaches to using data visualisation as a way of knowing and intervening in the world - such as visual sociology, inventive methods and design research.

Subject specific skills

- Ability to discuss the role of visualisations in science, culture and public policy
- Ability to apply abstract concepts to historical and contemporary uses of data visualisation
- Ability to extend from historical case studies of data visualisation to contemporary challenges
- Knowledge of state-of-the-art applications of the use of data visualisation in research and engagement

Transferable skills

- Think critically, creatively and independently in relation to a topic provided each week;
- Make productive links between theoretical ideas, methods and practical phenomena;
- Demonstrate written and oral communication skills
- Participate in class discussions and collaborative group work

Study

Study time

Type	Required
Lectures	13 sessions of 1 hour (9%)
Seminars	9 sessions of 1 hour (6%)
Practical classes	5 sessions of 1 hour (3%)
Private study	87 hours (58%)
Assessment	36 hours (24%)
Total	150 hours

Private study description

Prescribed reading and self-directed study for assessments.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A

Assessment component	Weighting	Study time	Eligible for self-certification
ESSAY	60%	12 hours	Yes (extension)
In the essay, students are asked to discuss an empirical example of the use of data visualisation in science, culture and/or public policy in the light of key concepts from social, cultural or political theory, STS and related literatures in the humanities. The essay must include an empirical introduction to the historical or contemporary case, and a reflection on this case in the light of appropriate literature. The essay as a whole is expected to demonstrate an understanding of defining features, challenges and opportunities opened up by data visualisation for enquiry, communication and engagement across science, culture and public policy.			

Reassessment component is the same

Assessment component			
PROJECT PRESENTATION REPORT	40%	24 hours	Yes (extension)
In the final presentation, students present the results of group assignments conducted over the course of the module, in which they apply concepts and use approaches introduced throughout the module – ethnography, participatory methods and design research – to investigate the role and use of data visualisation in science, culture and public policy. The final presentations are non-assessed, but students are asked to write a project report in which they reflect on the group work and project findings.			

Reassessment component is the same

Feedback on assessment

Essay:

a) Written feedback provided to each student online via Tabula

Presentation report:

a) Written feedback provided to each student online via Tabula; b) Aggregate/general verbal feedback on group presentations provided in class.

Availability

There is currently no information about the courses for which this module is core or optional.