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Understanding digital futures as “wicked problems”

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Wicked ways with RDM project
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About the Wicked Ways project

• The purpose of the project
  • Evaluate the “wicked problem” concept and methodologies for dealing with them – in the context of RDM and more widely
  • Co-produce a design for an Open Educational Resource about RDM as a “wicked problem”
  • Think about how to open up sustainable channels for cross boundary knowledge sharing

• OER: https://www.sheffield.ac.uk/is/research/projects/wickedways
Wicked problems
So what is a wicked problem?

- Term coined by Rittel and Webber (1973)
- Alternatives: Snowden’s Cynefin model
- “Tame problems” and “wicked problems”
- Wicked problems and crises and disaster
Activity

- Take a bit of time to think if you have any wicked problems in your professional life…
“Wicked problem” / “social mess”: the short list

- The problem is unique;
- There are different (perhaps incommensurable) views of the problem and contradictory solutions;
- The problem is linked to other problems;
- There is a lack of information about current state of affairs;
- There are cultural, economic and other constraints on any solution;
- There are numerous possible intervention points;
- Considerable uncertainty, ambiguity and risk;
- The problem is not “solvable” (eg there is no technical solution or no one person or group who can solve it).
Characteristics of wicked problems: The long list

1. There is no definitive formulation of a wicked problem.
2. There is a “no stopping rule”.
3. Solutions are not true or false, rather they are good or bad.
4. There is no test of whether a solution will work or has worked.
5. Every solution is a “one-shot operation”. There can be no gradual learning by trial and error, because each intervention changes the problem in an irreversible way.
6. There is no comprehensive list of possible solutions.
7. Each wicked problem is unique, so that it is hard to learn from previous problems because they were different in significant ways.
8. A wicked problem is itself a symptom of other problems. Incremental solutions run the risk of not really addressing the underlying problem.
9. There is a choice about how to see the problem, but how we see the problem determines which type of solution we will try and apply.
10. Wicked societal problems have effects on real people, so one cannot conduct experiments to see what works without having tangible effects on people’s lives.
11. As well as there being no single definition of the problem, there are multiple value conflicts wrapped up in it.
12. There are also multiple ideological, political or economic constraints on possible solutions.
13. There is great resistance to change.
14. With social messes, in addition to the complexity of the problem itself, data to describe the problem are often uncertain or missing. It may be difficult actually to collect information. There is no one expert with the answer.
15. Because the problems are complex, there are multiple possible intervention points.
16. The consequences of any particular intervention are difficult to imagine.
Wicked problems and RDM
Why RDM might be wicked – at the institutional level

- National policies have become stronger, clearer and more consistent, but
  
  - The scale and reach of the challenge is great: to change the research practices of every researcher;
  - The diversity of research. The large number of disciplinary and sub-disciplinary research cultures among researchers, each with their own notion of what data is. Thus there is a lack of a common language or common practice;
  - The complexity of the research process and the fluid character of what data are;
  - The symbolic status of research within institutions, meaning that change is fraught with issues of power and identity;
  - Lack of consistent funding for RDS;
  - The lack of clarity about which existing support services would be the natural lead for RDS.
Narrative 1

“In our institution a small group of individuals from [Computing], the library, senior management, research support and records management met several times to discuss RDM and each time we struggled with the concept of RDM. It was very difficult to agree on how and where to start to tackle the problem. Each meeting seemed to take one step forwards and half a step back!”
Narrative 2

“• Some researchers don’t see themselves as producing data: so what’s the problem?
• Some researchers already “look after” their data: so what’s the problem?
• Surely we just need to give researchers more storage: so what’s the problem?
• We have an RDM policy in place now: so what’s the problem?”
Narrative 3

“[...] consider the story of a typical academic, who has career aspirations (which are often judged via high quality research and publications) and no free time. When spoken to this academic about the research data that is produced, multiple issues arise immediately. These vary from not knowing what data is, where to deposit it, what to deposit, why to deposit it, how to link it with publications, what to do when data changes, and what is active data or archival data, etc. When spoken to them about Data Management Plans (DMP), they consider it the least important part of the funding bid process. Each of these issues then raise further questions which illustrate the wicked nature of RDM.”
“Creating DOIs for data is apparently simple. Pay your fee to DataCite, submit a bit of XML with at least the core metadata fields. Make sure you have a landing page. Job done.

These are some of the issues this ‘simple’ proposition has thrown up:

• What granularity should DOIs be created at? which is in turn related to how you structure the data, which is in turn related to your philosophical approach to the data and how closely you want to link it with specific publications – or not

• There is some overlap between [an institution’s data repository] content and data centre content – what do we do if a dataset already has a DOI?

• What about data that is managed by the institution but not necessarily in a central repository? How can we be sure the landing pages will be maintained? What happens if the data moves and is hosted elsewhere?

• Researchers want to include DOIs in their publications; do we allocate DOIs before we have received the data or insist on a deposit prior to allocating the DOI?
Wicked problems and leadership
Leadership for wicked problems

1. Relationships not structures
2. Reflection not reaction
3. Positive deviance not negative acquiescence
4. Negative capability
5. Constructive dissent not destructive consent
6. Collective intelligence not individual genius
7. Community of fate not a fatalist community
8. Empathy not egotism

Grint (2008)
What do you think of this advice?

• Profound
• Obvious

• Resists simplistic progressive narratives and goal directed activity;
• Creates space for reflection, building relationships, information gathering
RDM has some wicked features

“...I think that the features I have chosen here reflect what I view is our current institutional development around RDM service planning and maturity. I think this list may be very different if we had an established and mature RDM infrastructure (technical, socio-technical, and human).”
Simple side too

• “RDM is an area of enormous complexity, and capable of generated hours of circular discussions and documentation. This tends to be the result of conversations with academics with large volumes of complex data, especially when those conversations involve different areas of research activity. Yet some aspects of RDM are simple.”
Too negative?

• “Playing devil’s advocate, it could be argued that the use of the word ‘problem’ is unhelpfully negative. The wicked problem approach looks at RDM holistically, in its messy and complex context, but in doing so risks making RDM seem impenetrable and intractable.”
Digital futures as wicked problems
Digital futures are wicked problems

- Technologies create new connections between systems and communities
- Technologies are socio-technical complexes
- Continuous change, unexpected uses and ironies

- Social media’s impact on the meaning of “collection,” “use,” “user”
Case and Huisman (2014)

- Access and massification;
- The public and/or private nature of higher education;
- Appropriate mechanisms for improvement and accountability;
- Curriculum design;
- Sustaining academic identities;
- The role of higher education in society and the economy;
- Conditions for effective student learning; the inequalities between higher education systems;
- The research-teaching nexus;
- The use or abuse of technology in higher education;
- The impact of globalisation and internationalisation;
- The broader student experience;
- The success and failure of higher education policy;
- Challenges of management and leadership in higher education;
- And the challenges of equality (race, gender and ethnicity)
The problem with the term “wicked problems” is the word problem

• Digital opportunity

• We already:
  • Work within and across professional communities
  • “Get” open standards and interoperability
  • Anticipate the next big thing

• Creativity
• Flexibility
• Enterprise
• Collaborative skills

• … Implies new ways of learning
Find out more

• Wicked ways web site: https://www.sheffield.ac.uk/is/research/projects/wickedways

• Paper forthcoming in Library Review

• RDM Insight blog – run with RLUK, https://rdminsight.wordpress.com/
References

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