

Unravelling

Citation for published version (APA):

Koretsky, Z. (2022). Unravelling: the dynamics of technological decline. [Doctoral Thesis, Maastricht University]. ProefschriftMaken. https://doi.org/10.26481/dis.20220412zc

Document status and date: Published: 01/01/2022

DOI: 10.26481/dis.20220412zc

Document Version: Publisher's PDF, also known as Version of record

Please check the document version of this publication:

 A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.

• The final author version and the galley proof are versions of the publication after peer review.

 The final published version features the final layout of the paper including the volume, issue and page numbers.

Link to publication

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these riahts.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
 You may not further distribute the material or use it for any profit-making activity or commercial gain
 You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Impact paragraph addendum

What is the main objective of the research described in the thesis and what are the most important results and conclusions?

The main objective of the research is to explore how to characterise, understand and intervene in the processes of technological decline. Existing studies tend to focus conceptually and empirically on the beginning of technologies' life cycle. This leaves the later stages largely underconceptualised. The larger scope of the present work is linked, but not limited to, the climate crisis. There is an urgency to navigate this crisis in both mitigation (phasing out unsustainable technologies) and adaptation (phasing out or transforming infrastructures that are no longer fit for a globally warmer world and one with a higher sea level). But there is also a need to ensure, if at all possible, long-lasting abandonment of phased-out technologies (such as chemical weapons), and for care and prevention of decline that is actually unwanted for ethical, environmental or other reasons (e.g. traditional crafts, traditional farming, cycling).

In the dissertation decline is explored as "unravelling", or dissociation, of entangled socio-material aspects that constitute a technology: materials, meanings and forms of competences. They "unravel" as competences become less used, materials are harder to come by, and the meanings turn outdated. Six ideal-type pathways for the outcome of unravelling are formulated, some of which result in decline, while others in its reversal.

What is the (potential) contribution of the results from this research to science, and, if applicable, to social sectors and social challenges?

The scientific contribution of the present work lies in the proposed unravelling approach which may help study future cases of decline, and in the proposition for STS and transitions studies to counteract the prevalence of studies on new and emergent technologies and focus more on technologies' 'end of life'. I also propose that STS scholars should not shy away from middle range theorisation in favour of exclusively exploring the messiness of case studies.

The presented research can offer practical usefulness for public or industrial policy. For a deliberate decline of an established technology, governance actors may need to support the unravelling processes in meanings, materials and forms of competences. The unravelling may be pursued via awareness raising, resource management, regulation and monitoring, leaving room for those with interest to continue working in a niche (in which case technology impacts could perhaps be better controlled). For this, though, governance actors would need to carefully map the given technology as a configuration of meanings, competences and objects and infrastructure, and carefully examine how entangled and diverse these are. My findings in this thesis suggest that when the 'strands' are unique to the given technology, it might be safe to support a contraction of one of these unique ones, aiming for the less diverse strand. The weakened strands may be more susceptible to substitution with more desirable (sustainable) ones, thus, avoiding the need to phase-out the technology. In fact, technological decline policy does not have to mean nor should it necessarily aim for absolute eradication. The downside is a potentially easier re-emergence.

Inversely, a technology in decline whose revival is desirable (e.g. crafts or bicycle lanes) should be supported in all three strands, or at least the weakest ones, in an attempt to increase the geography of its use and/or production. Much investment may be needed for that.

To whom are the research results interesting and/or relevant and why?

This research may be of relevance to scholars, policy-makers working on issues of sustainability, technology ethics and industry policy in general, and anyone else curious of thinking about why some technologies remain abandoned and do not return (such as an old computer line from the 1960s), while others do (such as cloud seeding for geoengineering or the vinyl record); how to prevent or slow down the decline of desirable technologies (desirable for ethical, environmental or other reasons, e.g. traditional crafts, traditional farming, cycling); and of the dynamics of decline of technologies in general. Expertise in these topics is growing in importance as we progress deeper into the climate crisis.

In what way can these target groups be involved in and informed about the research results, so that the knowledge gained can be used in the future?

During the four years leading up to this book, I have spoken about the present research (for lengths between several minutes to half an hour) to more than a dozen different audiences ranging from the Dutch national STS graduate school WTMC to international scientific conferences to a TEDx event. I have also published two academic papers included in the present book in open access in highly-ranked journals, and two more are on their way. This book itself is a way to communicate my research, as is the press release that followed it. Lastly, I always got back to my informants to share the results of the work that they have contributed to.