STS and Innovation: Building and Jumping Fences

ALAN IRWIN
COPENHAGEN BUSINESS SCHOOL
DENMARK

Abstract

In this short contribution, I reflect upon the thematic collection as a whole, returning in particular to the three original questions posed in the collection's introduction. In conclusion, I argue that STS has a substantial heritage in researching and engaging with innovation. However, drawing inspiration from the contributions in this collection, now is the time to take the STS-innovation relationship even further forward.

Keywords

innovation; STS; innovation studies; boundary work

Epilogue

Reading through this collection of essays and critical reflections, I have a powerful sense that silence would be my best response. This is not because I regret my role in orchestrating the discussion of STS and innovation. And it is certainly not because I am in any way disappointed by what has followed. On the contrary, I am inspired and stimulated by all the contributions.

The wish for silence instead derives from my strong recommendation to STS scholars and others that they dive into the contributions themselves: appreciating as I do their nuance and variety, and the range of contexts and perspectives they reveal. I hope you enjoy them. More than that, I hope they encourage you to take this discussion further and in fresh directions.

Having said this, I must admit that silence is not my preferred way of engaging with the world. And I do indeed want to keep the discussion alive. So, if you are still with me, let me offer some brief reflections.

It has been a while since I wrote the Introduction to this thematic collection (Irwin 2023). Every contribution suggests ways in which it could have been better formulated. From the start, I was aware that the relationship between STS and innovation could (and should) be viewed in many ways and also that many excellent scholars had previously been down this track. Hence the wish to develop this as a thematic collection. And also, the wish to draw upon a diversity of views and not to claim a 'definitive' account.

In the spirit of Sally Wyatt's auto-biographical account (2023), I should acknowledge too that I have carried what we can call 'critical questions of innovation' around with me for a long time. My most academically formative years were spent in the Manchester department anachronistically, even then, named 'Liberal Studies in Science'. In that time and place – I am talking about the 1970s – it seemed just obvious that students of what was then called 'the structure and organization of science and technology' (the Master's programme I took) should draw on a range of social science disciplines. In those early years, I was as curious to hear a lecture by Christopher Freeman (1974) or Keith Pavitt (1984) as I was to read the work of Harry Collins (1974), Dorothy Nelkin (1977) or John Ziman (1968). I notice that the name of Christopher Freeman appears positively in more than one commentary in this collection. He left a deep impression on many of us as a boundary-spanning intellectual who contributed to both innovation studies (IS) and, I would argue, to STS. In this, he represents an enduring symbol of how economics-based and more sociological and political accounts can combine and complement one another.

Given this personal and intellectual background, it is perhaps inevitable that I should place myself (like others, including Sally Wyatt (2023) and Judith Sutz (2023)) between IS and STS – even if STS has long been my academic home. I think that sense of 'in-betweenness' was a prime motivation for this thematic collection. And I am pleased to see that I am not the only one. More importantly, in-betweenness seems to be a stimulus to some creative thinking about our central topic. Many of the contributions seek to bridge IS and STS in a problem-oriented fashion: including those by Maja Horst (2023), Shobita Parthasarathy (2023), and Sebastian Pfotenhauer (2023). As Lilly Irani (2023) observes: STS and IS 'have shared people over decades'.

I referred above to excellent scholars who have been down this track before us. Many of their names appear within this collection and I apologize to those who have been omitted (but certainly not forgotten). In this regard, I could not be happier that Tiago Brandão and Carolina Bagattolli (2023) have chosen to pay tribute to the work of one such scholar, Benoît Godin. Benoît died in 2021. Before his too-early death, I invited him to participate in this collection.

I wrote to Benoît Godin hesitantly since I don't think we ever met. He replied within a day: 'Hi Alan, Many thanks for this invitation, which I accept with pleasure'. The following day, he came back with a suggested title for his article: 'Reflections of a Heretic on the Orthodoxy of the Time'. Not a bad summary of a lifetime's scholarship. He gently challenged my assertion that IS began in the 1960s (he dated this from the 1950s). As a further gift, he provided a scheme for his intended contribution, including a section on 'avenues for the future'. Among these avenues he poignantly included 'leaving the field to young scholars'. In Benoît Godin's forward-looking spirit, this collection is not dedicated to nostalgia but rather to a new generation of scholars and scholarship. To that end, in addition to the main commentaries, a number of contributors have also created accompanying pedagogical materials that readers can find in STS Infrastructures.

So, what then of the three questions posed in my introductory essay? The first asks whether innovation is part of the solution or of the problem when it comes to engaging with and acting upon socio-technical

change. Many of the authors reflect upon this key question. Lucas Becerra and Hernán Thomas (2023) address it directly, making the general case that 'innovation doesn't work'. A new framework is needed. Innovation in traditional Schumpeterian terms is just one form of socio-technical change. Instead, they offer a new model and a new approach. Lilly Irani (2023) adds further weight to this critical perspective. In one of her three illustrations she makes the case that innovation can function as an ideology that 'devalues or erases the creativity and knowledge already manifest among residents'. Looked at from the perspective of those suffering the consequences, innovation can never be neutral but inevitably reflects political power, class relations and entrenched hierarchies.

Other contributors take a contrasting approach to this first question. Sebastian Pfotenhauer (2023) identifies a trend from 'more innovation' to 'better innovation'. Maja Horst (2023) advocates an interventionist STS which does not hold back from engaging in policy processes. Pankaj Sekhsaria (2023) asks, 'what is innovation in the non-English languages?' His discussion takes us to the Hindi concept of 'jugaad' and, more broadly, to the argument that 'innovation' in English serves as a constraint on our view of 'multiple empirical realities'. Of course, and as Tiago Brandão and Carolina Bagattolli (2023) emphasize, this discussion was also central to Benoît Godin's work and remains so to the larger project of critical innovation studies.

I note in my introductory essay that the three questions are inter-linked. This is obviously true when we move to the second: how should we view the relationship between STS approaches to innovation and neighbouring fields, especially IS? One worry I have about my introductory essay is that I spend some time summarizing main contributions from STS but say rather less about IS.

My justification for this imbalance is that I was specifically trying to facilitate a debate among STS scholars and not to open up a larger cross-disciplinary dialogue from, as it were, both sides of the fence. Perhaps that is one for the future. There is undoubtedly a risk that as we celebrate the diversity of STS we simultaneously reduce IS to a one-dimensional framework. Alongside this challenge there is also the important point that the borders around IS and STS are not fixed but can be decidedly fluid, even overlapping. There is a long tradition within STS of studying 'boundary work', much of which points to the shifting and contextual construction of such boundaries.

Fortunately, many contributors help me out in this regard. Sebastian Pfotenhauer's 'pragmatic and cautiously optimistic take' stresses ways in which IS has developed a 'new appetite for critique and reflexivity'. Judith Sutz (2023) makes the legitimate point that many scholars belong to both communities. Like other contributors, she makes a strong case for alliance-building between IS and STS: wisely noting that not all scholars in these fields will necessarily wish to engage in this 'productive dialogue'. Lucas Becerra and Hernán Thomas (2023) offer a framework which builds upon both IS and STS. Tiago Brandão and Carolina Bagattolli (2023) call for critical innovation studies to address the 'pro-innovation bias' shared, they claim, by IS and STS. Lilly Irani (2023) points to ways in which both IS and STS must engage with matters of ideology and power. Maja Horst's reflections on working with and across policy-making are also

a call to build a 'mutually beneficial, respectful and collegial relationship with IS' (2023). Sally Wyatt (2023) goes so far as to suggest (with substantial irony) 'I love them both'.

Nevertheless, several contributors point to significant divides between IS and STS. In particular, Shobita Parthasarathy (2023) emphasizes substantial differences. As she puts it, 'not all is well in the world of innovation policy'. The implication of Pankaj Sekhsaria's account is that IS suffers from a decidedly restricted conception of innovation.

Looking back over the thematic collection as a whole, my impression is that all the contributors have concerns about the prevailing definition of innovation and therefore also of innovation studies. This sense of ambivalence seems characteristic of STS scholarship in this field, and may serve to distinguish STS from some of the more self-confident assertions of IS.

Where the authors vary is in the degree of criticism they offer and, relatedly, in their level of optimism about future bridge-building. Personally, I have had both good and bad experiences in that regard. My attempts to draw attention to the contextuality and contingency of specific forms of innovation have certainly led to the old suggestion that one is simply adding colour to the 'bigger picture' presented by macro studies in an IS tradition. However, and as Shobita Parthasarathy (2023) suggests, this may also be a matter of STS moving 'beyond critique' and offering instead 'constructive frameworks'. Judith Sutz (2023) sharply reminds us too that the 'sin of hubris is present in both communities'.

What about the third question concerning new conceptual and empirical resources – including, as I grandly added, 'possible redefinition and reframing of the 'innovation' term itself'? My promised silence would be especially appropriate here: not least due to the fact that every contributor has something to offer in this regard. The authors do a very good job of both pointing to what is already there – histories of mutual engagement, hybridisation and boundary-spanning – but also to what Benoît Godin called 'avenues for the future'. Lucas Becerra and Hernán Thomas (2023) offer us a way of 'enhancing the scope, deepening the explanations'. Judith Sutz (2023) asks us to find common ground by focusing on problems of innovation – not least inequality. Lilly Irani (2023) raises the fundamental question of 'what counts as desirable forms of newness'. As already noted, Pankaj Sekhsaria (2023) calls on us to be alive to 'multiple empirical realities' that will take us by surprise.

Sekhsaria's phrase for me works rather well as a description of this thematic collection. It is also an invitation to challenge, to bring new perspectives to, and to expand, the 'innovation' word. One key contribution here could be to argue (and keep arguing) that 'innovation' should not only be about technological change and that it should not only be judged from one societal viewpoint. Here, Lilly Irani's argument for widening the set of actors that STS (and IS) might learn from seems essential (2023).

Metaphors of fences, boundaries and borderlands abound within these essays. Some argue that these divides could be made even stronger. The task of STS should be to offer a more distanced and more critical account

of what passes as 'innovation' and perhaps to offer a similar critique of IS. Certainly, critique is an important scholarly responsibility and all the contributors would agree that simply calling for 'more innovation' is not the answer. With regard to STS, it seems important too that it should be able to maintain its own identity and sense of purpose. Some borders are necessary if it is to do this – and 'bridging' or 'fence' metaphors only work if one accepts the existence of two sides. It seems that STS needs a sense of its intellectual borders even as we also make calls to bridge or jump across them. And, thankfully, there will always be researchers who make the borderlands their home.

The relationship between STS and innovation could appear to be a niche or special interest: made all the more complicated by STS's ambivalent relationship with innovation as a topic and the existence of a neighbouring field with the name of IS. For me, the contributions in this thematic collection suggest something different. Innovation is a major focus within contemporary imaginations and enactments of socio-technical change. STS has contributed substantially – and over many years – to its analysis, including the discussion of how in practice such a global framework (or ideology) is promulgated, reconstructed and performed. Taken together, the contributions to this thematic collection offer a strong indication of that scholarly heritage – even if there is much more that could be said. Looking to the future, STS investigations will necessitate a continued willingness to engage with economic logics, competing ideologies, multiple organizations, power and democracy in an age of innovation.

On the evidence of this thematic collection, STS has much to offer our understanding and practice with regard to innovation: both fundamentally, in terms of the concept itself, and more specifically with regard to the contexts of its development and application. Of course, and as more than one contributor notes, STS researchers also have much to learn. In my opinion, STS researchers should approach innovation in a spirit not of hubris but of intellectual self-belief based on this considerable heritage and a commitment to tackling new challenges. Although STS's contribution to critical debates over innovation never went away, now is a crucial time to bring that contribution to the fore. Like Benoît Godin, I hope that a new generation of students and scholars will take on this crucial task.

Acknowledgements

Author Biography

Alan Irwin is a professor in the Department of Organization at Copenhagen Business School.

Data Availability

Data published in this issue can be accessed in STS Infrastructures at: https://n2t.net/ark:/81416/p4ds3n.

References

Becerra, Lucas, and Hernán Thomas. 2023. "Innovation Doesn't Work: The Explanatory Power of a Socio-Technical Approach." *Engaging Science, Technology, and Society* 9(2): 66–74. https://doi.org/10.17351/ests2023.1395.

Brandão, Tiago, and Carolina Bagattolli. 2023. "Bringing Fences Down." *Engaging Science, Technology, and Society* 9(2): 57–65. https://doi.org/10.17351/ests2023.1373.

Collins, Harry M. 1974. "The TEA Set: Tacit Knowledge and Scientific Networks." *Science Studies* 4(2): 165-186.

Freeman, Christopher. 1974. *The Economics of Technical Change*. Harmondsworth, Penguin.

Horst, Maja. 2023. "Dissolving Boundaries in the Policy System." *Engaging Science, Technology, and Society* 9(2): 112–117. https://doi.org/10.17351/ests2023.1371.

Irani, Lilly. 2023. "Encountering Innovation, Countering Innovation." *Engaging Science, Technology, and Society* 9(2): 118–130. https://doi.org/10.17351/ests2023.2303.

Irwin, Alan. 2023a. "STS and Innovation: Borderlands, Regenerations and Critical Engagements." *Engaging Science, Technology, and Society* 9(2): 41–56. https://doi.org/10.17351/ests2023.1363.

Nelkin, Dorothy. 1977. "Scientists and Professional Responsibility: The Experience of American Ecologists." *Social Studies of Science* 7(1): 75-95.

Parthasarathy, Shobita. 2023. "A Tale of Two Perspectives on Innovation and Global Equity." *Engaging Science, Technology, and Society* 9(2): 87–96. https://doi.org/10.17351/ests2023.1369.

Pavitt, Keith. 1984. "Sectoral Patterns of Technical Change: Towards a Taxonomy and a Theory." *Research Policy* 13(6): 343-373.

Pfotenhauer, Sebastian. 2023. "From "More Innovation" to "Better Innovation"? Shifting Conversations in the Borderlands of STS and Innovation Policy." *Engaging Science, Technology, and Society* 9(2): 97–106. https://doi.org/10.17351/ests2023.1365.

Sekhsaria, Pankaj. 2023. "What is Innovation in the Non-English Languages?" *Engaging Science, Technology, and Society* 9(2): 75–81. https://doi.org/10.17351/ests2023.1375.

Sutz, Judith. 2023. "Frugal Ground for STS and IS: Problems of Innovation and their Commonalities." *Engaging Science, Technology, and Society* 9(2): 82–86. https://doi.org/10.17351/ests2023.1401.

Wyatt, Sally. 2023. "A Journey through STS and Innovation Studies." *Engaging Science, Technology, and Society* 9(2): 107–111. https://doi.org/10.17351/ests2023.1367.

Ziman, John. 1968. *Public Knowledge*. Cambridge: Cambridge University Press.