**Conclusion**

To conclude we briefly review some of the insights emerging from the genealogical approach to STS engagement with imaginaries offered in this chapter. We then return to the broader questions we began with: What is at stake in the investigations of imaginaries in STS? Why this turn in STS research?

The first two sections of this chapter (etymology and genealogy) have offered explorations of the rich hinterland of the concept of imaginaries. As such they should help both those using it and those observing its deployment in STS to have a better sense of the framing and parameters of these investigations. More specifically, our genealogical mapping highlights the plurality of trajectories and the diversity in the resourcing of this STS work. It also demonstrates that, with the exception of some feminist research, STS has been much more open to the traditions of socio-political theory than to psychoanalysis and science fiction as resources for the investigation of scientific imaginaries. Given this, our extended mapping is a reminder that there have been and there continues to be other ways into imaginaries. As such, our exploration constitutes something of an invitation to STS scholars to sample the breadth of this field.

Our identification and examination of key clusters of research both celebrates and ponders the recent flourishing in the pursuit of imaginaries within STS. The designation of clusters derived from the identification of common features, as well as diversifications, in key STS publications on imaginaries. While we struggled to find appropriate labels, we felt justified in proposing this cartography which foregrounds groupings characterized by their terrains of investigation (scientists, clinics, scientific communities/ national and institutional policies/ popular culture, technoscientific imagery), their research methods (ethnography; textual, comparative historical analysis; visual and cultural studies), and their registers (scientific communities, scientific practice; national, institutional and global identities; corporeality, visions of life, subjectivity and subject formation). By no means rigid and fixed, these could perhaps be thought of as fluid research assemblages.

One thread in the foregoing review was the foregrounding of methods employed in various STS imaginaries of technoscience. Jasanoff and Kim have emphasized the importance of comparative methods (latterly, particularly historically based comparisons) (Jasanoff and Kim 2009; Jasanoff 2015a) in STS research on imaginaries. However, Prasad (2014: 6) has warned that some comparative STS research reproduces, rather than challenges, ‘the West versus non-West technocultural divide’. As noted previously, he opts instead for a focus on ‘hierarchically entangled histories of technoscientific practices’ and advocates the use of deconstructive methods to avoid such binarisms.

More generally, new ways of exploring the performativity of imaginaries may be required. In this regard there are signs of methodological experimentation and adaptation including the use of focus-groups and memory work in Felt et al.’s (2015) study of the evolution of a distinctive socio-technical imaginary in Austria from the 1970s to the present. Moreover, given that imaginaries are far-reaching social phenomena, it may take something other than the conventional techniques of exposition and argument to conjure their features. Thus, it is not surprising that Haraway experiments with the form of her texts: dabbling with humour, shock, as well as playing with SF.

The review of these clusters and examination of exemplar research initiatives has shown that the pursuit of imaginaries is often presented as a vehicle for re-orientating STS. For example, Marcus (1995a, 3) regarded the notion of imaginaries as a tool for moving towards a ‘distinctly cultural study of science’—encouraging explorations of the tensions between scientific discourses and practices. Jasanoff and Kim (2009) called for STS to cast its investigative gaze beyond professional scientific actors and communities to analyze national cultures of technoscience, facilitated by their notion of *sociotechnical imaginaries*. More recently, Jasanoff (2015a, 5) has contended that such imaginaries are ‘not limited to nation states but can [also] be articulated by other organized groups, such as corporations, social movements, and professional societies’. The concept has also sometimes become the lynchpin for researchers’ ambitions for STS. Hence, Fujimura (2003) advocated the use of ‘imaginaries’ in forging ‘sociologies of the future’. Invoking imaginaries, Fortun and Fortun (2005) had aspirations for a new ‘civic science’ of toxicology and an STS ‘ethics and friendship with the sciences’.

Recent research on imaginaries has also been part of a more general shift within the field. STS’s earlier preoccupations with logic and epistemology have been supplemented, or, indeed, replaced with a much broader agenda which includes research on aesthetics, values, and emotions. So, for example, the sociology of expectations (Borup, Brown, Konrad, and van Lente 2006; van Lente 2003) and concern with hope, promise and hype (Michael 2000; Wyatt 2000; Brown 2003; Hedgecoe and Martin 2003; Hedgecoe and Martin 2008; Pollock and Williams 2010) have opened STS to the study of social and psychological investments and future visions linked to specific technoscientific developments.[[1]](#endnote-2) Moreover, whereas science and technology were formerly generally regarded as the domains of facts and artifacts, they are now as likely to be associated with [[2]](#footnote-2)storytelling, imaging, and imagining and, even, hyping.

Beyond strategic, ethical and methodological reorientations of the field, imaginaries are identified with normative aspects of technoscience. While interest in normative aspects of science and technology is not new, feminist and postcolonial scholarship has intensified this concern. In demonstrating how modern Western science has been implicated in gendered and post-colonial power relations, these movements have opened the field to studies of imaginaries (see esp. Prasad 2014). Imaginaries research also seems to bring a new humanist inflection to STS – concerned as it is with human vision, values, aesthetics, and power. Indeed, Jasanoff characterizes imaginaries research as ‘a profoundly humanistic inquiry’ (Jasanoff 2015b, 3), as a reaction against ‘the flatness of networks’ (Jasanoff 2015a, 21). More generally, engagement with imaginaries may also constitute a critical response to some exclusively materialist dispositions within STS, opening the field to psycho-social perspectives on science and technology and/or to investigations of the interplay between the imaginary and the material.

The flourishing of the concept of imaginaries also registers a more specific theoretical shift. Until recently, discussions of values within technoscience were generally handled through notions of ‘interests’ and/or ‘ideologies’. These have proven to be limited theoretical tools for pursuing the normative dimensions of science. These terms operate primarily in a cognitive register – neglecting affective dimensions (which have been a prime concern of social research in recent years). Moreover, both concepts are linked to distortion, misrepresentation, and manipulation, whereas invoking the imaginary allows for consideration of the productive-- of expectations, hopes, and dreams, as well as fears. It is these dimensions of technoscience and medicine which are increasingly attracting attention.

From this perspective, the circulation of the concept of imaginaries marks the relative decline in the deployment of the notion of ideology in STS research.[[3]](#endnote-3) Taylor (2004, 183) has noted that, while the concept of social imaginary could designate elements traditionally associated with ‘distorted or false consciousness’– which he associates with ideology, it may also entail ‘what we imagine can be something new, constructive, opening new possibilities.’ Haraway (2000, 77-78) has also cautioned that there is a need for precision in the use of the term ‘ideology’: ‘And we must remember the mythological and the ideological are not the same thing. It is important to keep the fantastic, the mythological and the ideological as three different registers of an imaginary relationship.’ As Haraway’s comment suggests and, as much recent cultural studies research attests, analysts have been pushing beyond representations towards much more complex accounts of meaning making and affect generation.

However, what might seem *de rigeur* in cultural studies may be more problematic in STS. In this regard it may be appropriate to return to Verran’s (1998), Waldby’s (2000), and Squier’s (2004) contentions that the denial of imaginaries has been a crucial feature of Western science and to assumptions about there being clear demarcations between fact and fiction or fantasy that may still linger around STS. Likewise, subjectivity is another domain that many may find uncomfortable territory for STS, even if Steven Shapin (2011) has nominated it as *the* new challenge for the field. While there may be unease about bringing subjectivity and fantasy into STS research, the concept of imaginaries may provide an avenue onto that terrain. If this is to occur, there may need to be more awareness of and recourse to the diverse repertoires through which the concept has emerged.

Finally, we must return briefly to inter-disciplinarity and to the breadth and scope of STS as these figure in recent deployments of the concept of imaginaries. The range and diversity of STS scholarship which pivots on notions of imaginaries is impressive. Our investigation has generated a sense of the many flowers blooming in this rich field. Our concern has been to broaden awareness of this complex development and to encourage further experimentation in STS investigations of imaginaries.

1. There are obvious connections between the sociology of expectations and the conceptualization of imaginaries in STS. However, the disciplinary specificity, the focus on particular technoscientific developments, and on orientations towards the future distinguish the former from the explorations of imaginaries considered in this chapter. [↑](#endnote-ref-2)
2. [↑](#footnote-ref-2)
3. Nevertheless, some STS researchers (as noted above) do use the concept together with the notion of imaginaries.

   **REFERENCES**

   Althusser, Louis. "Ideology and Ideological State Apparatuses." In *Lenin and Philosophy and Other Essays*, edited by Louis Althusser. London: Verso, 1971.

   Anderson, Benedict. *Imagined Communities:  Reflections on the Origin and Spread of Nationalism*. London and New York: Verso, 1983.

   Blaagard, Bolette .B. "The Flipside of My Passport: Myths of Origin and Genealogy of White Supremacy in the Mediated Genetic Imaginary." In *Complying with Colonialism:  Gender, Race and Ethnicity in the Nordic Region*, edited by S. Keskinen, S. Tuori and D. Mulinari. Farnham: Ashgate, 2009.

   Borup, Mads, Nik Brown, Kornelia Konrad, and Harro Van Lente. "The Sociology of Expectations in Science and Technology Analysis." *Technology Analysis and Strategic Management* 18, no. 3/4 (2006): 285-98.

   Brown, Nik. "Hope against Hype: Accountability in Biopasts, Presents, and Futures." *Science Studies* 16, no. 2 (2003): 3-21.

   Brown, Nik, and Mike Michael. "A Sociology of Expectations: Retrospecting Prospects and Prospecting Retrospects." *Technology Analysis and Strategic Management* 15, no. 1 (2003): 3-18.

   Castañeda, Claudia, and Lucy Suchman. "Robot Visions." *Social Studies of Science* 44, no. 3 (2014): 315-41.

   Castoriadis, Cornelius. *The Imaginary Institution of Society*. Translated by Kathleen Blamey. Cambridge, Mass.: MIT Press, 1987.

   Cutting, Andrew. "Ashes in Orbit: Celestis Spaceflights and the Invention of Post-Cremationist Afterlives." *Science as Culture* 18, no. 3 (2009): 355-69.

   De Saille, Stevienna. "Dis-Inviting the Unruly Public." *Science as Culture* 24, no. 1 (2014): 99-107.

   Fortun, Kim, and Mike Fortun. "Scientific Imaginaries and Ethical Plateaus in Contemporary Us Toxicology." *American Anthropologist* 107, no. 1 (2005): 43-54.

   Franklin, Sarah. "Life Itself: Global Nature and the Genetic Imaginary." In *Global Nature, Global Culture*, edited by Sarah Franklin, Celia Lury and Jackie Stacey. London and New York: Routledge, 2000.

   Fujimura, Joan. "Future Imaginaries: Genome Scientists as Sociological Entrepreneurs." In *Genetic Nature/Culture: Anthropology and Science Beyond the Two-Culture Divide*, edited by A.H. Goodman, Heath, D. and Lindee, M.S. Berkeley, CA.: University of California Press, 2003.

   Gaonkar, Dilip Parameshwar. "Toward New Imaginaries: An Introduction." *Public Culture* 14, no. 1 (2002): 1-19.

   Geissler, P. Wenzel, and Ruth J. Prince. "Active Compounds and Atoms of Society: Plants, Bodies, Minds and Cultures in the Work of Kenyan Ethnobotanical Knowledge." *Social Studies of Science* 39, no. 4 (2009): 599-634.

   Gerlach, Neil. *The Genetic Imaginary:  DNA in the Canadian Justice System*. Toronto: University of Toronto Press, 2004.

   Good, Mary-Jo DelVecchio. "The Medical Imaginary and the Biotechnical Embrace: Subjective Experiences of Clinical Scientists and Patients." In *A Reader in Medical Anthropology: Theoretical Trajectories, Emergent Realities*, edited by Michael M.J. Fi Byron J. Good. Oxford: Wiley-Blackwell, 2010.

   Haraway, Donna. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." In *Simians, Cyborgs and Women:  The Reinvention of Nature*, edited by Donna Haraway. London: Free Association Books, 1991.

   ———. *How Like a Leaf: An Interview with Thryza Nichols Goodeve*. London and New York: Routledge, 2000.

   ———. "Modest\_Witness@Second\_Millennium.Femaleman©\_Meets\_Oncomouse™: Feminism and Technoscience." London and New York: Routledge, 1997.

   ———. *Primate Visions: Gender, Race and Nature in the World of Modern Science*. London and New York: Routledge, 1989.

   Harvard University. "STS Research Platform:  Sociotechnical Imaginaries." <http://harvard.edu/research/platforms/imaginaries.>

   Hedgecoe, Adam, and Paul Martin. "Genomics, STS, and the Making of Sociotechnical Futures." In *Handbook of Science and Technology Studies, 3rd Edn*, edited by Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wajcman. Cambridge, Mass and London: MIT Press, 2008.

   ———. "The Drugs Didn't Work: Expectations and the Shaping of Pharmacogenetics." *Social Studies of Science* 33, no. 3 (2003): 327-64.

   Hess, David J. "Publics as Threats? Integrating Science and Technology Studies and Social Movement Studies." *Science as Culture* 24, no. 1 (2014): 69-82.

   Jasanoff, Sheila. "Future Imperfect: Science, Technology and the Imaginations of Modernity." In *Dreamscapes of Modernity:  Sociological Imaginaries and the Fabrications of Power*, edited by Sheila Jasanoff and Sang-Hyun Kim. Chicago: University of Chicago Press, 2015.

   ———. "Imagined and Invented Worlds." In *Dreamscapes of Modernity:  Sociological Imaginaries and the Fabrications of Power*, edited by Sheila Jasanoff and Sang-Hyun Kim. Chicago: University of Chicago, 2015.

   Jasanoff, Sheila, and Sang-Hyun Kim. "Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea." *Minerva* 47, no. 2 (2009): 119-46.

   ———. "Sociotechnical Imaginaries and National Energy Policies." *Science as Culture* 22, no. 2 (2013): 189-96.

   Kay, Lily E. *Who Wrote the Book of Life? A History of the Genetic Code*. Stanford: Stanford University Press, 2000.

   Kim, Sang-Hyun. "The Politics of Human Embryonic Stem Cell Research in South Korea: Contesting National Sociotechnical Imaginaries." *Science as Culture* 23, no. 3 (2013): 293-319.

   Koch, Gertraud, Estrid Sørensen, and Les Levidow. "Childish Science: Editorial Introduction." *Science as Culture* 20, no. 4 (2011): 421-31.

   LeDoeuff , Michele. *The Philosophical Imaginary*. Translated by Colin Gordon. Stanford: Stanford University Press, 1985.

   Marcus, George. "Introduction." In *Technoscientific Imaginaries*, edited by George Marcus. Chicago: University of Chicago Press, 1995.

   ———, ed. *Technoscientific Imaginaries: Conversations, Profiles and Memoirs*. Chicago: University of Chicago Press, 1995.

   Marris, Claire. "The Construction of Imaginaries of the Public as a Threat to Synthetic Biology." *Science as Culture* 24, no. 1 (2014): 83-98.

   Mikami, Koichi. "State-Supported Science and Imaginary Lock-In: The Case of Regenerative Medicine in Japan." *Science as Culture* (2014): 1-22.

   Nerlich, Brigitte, and Carol Morris. "Imagining Imaginaries." 2015.

   Olarte Sierra, María Fernanda, and Adriana Díaz Del Castillo Hernández. "‘We Are All the Same, We All Are Mestizos’: Imagined Populations and Nations in Genetics Research in Colombia." *Science as Culture* 23, no. 2 (2013): 226-52.

   *Oxford English Dictiona*ry (2009).

   Pollock, Neil, and Robin Williams. "The Business of Expectations: How Promissory Organisations Shape Technology and Innovation." *Social Studies of Science* 40, no. 4 (2010): 525-48.

   Prasad, Amit. *Imperial Technoscience: Transnational Histories of MRI in the United States, Britain, and India*. Cambridge, Mass: MIT Press, 2014.

   Reardon, Jenny. "The Democratic, Anti-Racist Genome? Technoscience at the Limits of Liberalism." *Science as Culture* 21, no. 1 (2011): 25-47.

   Said, Edward. *Orientalism*. Harmondsworth: Penguin Books, 1977.

   Sartre, Jean Paul. *The Imaginary: A Phenomenological Psychology of Imagination*. Translated by J. Webber. London: Routledge, 2004.

   Shapin, Steven. "The Science of Subjectivity." In *4S: Society for Social Studies of Science Annual Conference*. Cleveland OH, 2011.

   Smith, Elta. "Imaginaries of Development: The Rockefeller Foundation and Rice Research." *Science as Culture* 18, no. 4 (2009): 461 - 82.

   Sobchack, Vivian. *Screening Space: The American Science Fiction Film, 2nd Edn*. New York: Ungar Press, 2001.

   Squier, Susan. *Liminal Lives: Imaging the Human at the Frontiers of Biomedicine*. Durham, NC: Duke University Press, 2004.

   Stacey, Jackie. *The Cinematic Life of Genes*. Durham, NC: Duke University Press, 2010.

   Stephens, Neil, Paul Atkinson, and Peter Glasner. "Institutional Imaginaries of Publics in Stem Cell Banking: The Cases of the UK and Spain." *Science as Culture* 22, no. 4 (2013): 497-515.

   Taylor, Charles. "Modern Social Imaginaries." *Public Culture* 14, no. 1 (2002): 95-124.

   ———. *Modern Social Imaginaries*. Durham, N.C.: Duke University Press, 2004.

   Taylor-Alexander, Samuel. "Bioethics in the Making: “Ideal Patients” and the Beginnings of Face Transplant Surgery in Mexico." *Science as Culture* 23, no. 1 (2013): 27-50.

   Teil, Geneviève. "No Such Thing as Terroir?: Objectivities and the Regimes of Existence of Objects." *Science, Technology & Human Values* 37, no. 5 (2012): 478-505.

   Traweek, Sharon. *Beamtimes and Lifetimes:  The World of High Energy Physics*. Cambridge, Mass.: MIT Press, 1988.

   Twine, Richard. "Is Biotechnology Deconstructing Animal Domestication? Movements toward Liberation." *Configurations* 21, no. 2 (2013): 135-58.

   Van Dijck, Jose. *Imagenation: Popular Images of Genetics*. London: Macmillan, 1998.

   Van Lente, Harro. "Promising Technology:  the Dynamics of Expectations in Technological Developments." PhD, Twente University, 1993.

   Verran, Helen. "Re-Imagining Land Ownership in Australia." *Postcolonial Studies:  Culture, Politics, Economy* 1, no. 2 (1998): 237-54.

   Waldby, Catherine. *Aids and the Body Politic:  Biomedicine and Sexual Differences*. London and New York: Routledge, 1996.

   ———. *The Visible Human Project:  Informatic Bodies and Posthuman Medicine*. London and New York: Routledge, 2000.

   Warner, Michael. "Publics and Counterpublics." *Public Culture* 14, no. 1 (2002): 49-90.

   Welsh, Ian, and Brian Wynne. "Science, Scientism and Imaginaries of Publics in the Uk: Passive Objects, Incipient Threats." *Science as Culture* 22, no. 4 (2013): 540-66.

   Wyatt, Sally. "Talking About the Future:  metaphors of the Internet." In *Contested Futures: A Sociology of Prospective Technoscience*, edited by Nik Brown, Brian Rappert and Andrew Webster. Aldershot: Ashgate, 2000.

   Wöhrer, Veronika, and Doris Harrasser. "Playful Experiments: Gendered Performances in a Children's Museum." *Science as Culture* 20, no. 4 (2011): 471-90.

   Yaszek, Lisa. *Galactic Suburbia:  Recovering Women's Science Fiction*. Columbus, OH: Ohio University Press, 2008. [↑](#endnote-ref-3)