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Sociotechnical Scales for Navigating the Polycrisis: Method, Transformation, Normativity, and Imagined Futures

Introduction

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Faced with the myriad social, economic, political, and technological upheavals driving the polycrisis, scholars and activists alike search for new ways to understand and create change. One of those ways is through the lens of *scale*, the focus of this Forum. Here we frame the study of scale, review its varied normative dynamics, propose scalar shifts as analytical and empirical methods, demonstrate the value of interdisciplinary inquiries into scale, and categorize the Forum's essays into examinations of sociotechnical scale as method, transformation, normativity, and imagined futures.

Keywords: scale, sociotechnical systems, polycrisis, interdisciplinary inquiry

One challenge of living in a polycrisis (Morin & Kern, 1999) is navigating scale. From ecological collapse and democratic backsliding to technological authoritarianism and widening wealth inequalities, today's complex, intertwined dynamics live in many places at once. It is hard to know exactly where they are, how they relate, and what interventions might work best. People in multiple academic disciplines and communities of practice approach this moment as a *scalar* challenge—trying to understand, navigate, and shape polycrisis phenomena that span physical, demographic, and temporal scales. Climate change is local and planetary; gerrymandering disenfranchises individuals and neighborhoods, racialized groups, and representative government; generative artificial intelligence (AI) technologies seem to have appeared out of nowhere yet have long histories. The polycrisis is simultaneously long-simmering and fast-moving, felt within individuals and among populations, demanding personal action and collective responses.

Understanding such dynamics requires *scalar logics*. Such thinking delineates and situates phenomena; shows how perspectives shape knowing; problematizes assumptions about order and control; interrogates mystical and unknowable sublimes; and provokes new sizes and relationships (DiCaglio, 2021). Scalar thinking pushes us to debate scopes (e.g., how much does one data center warm a neighborhood?),

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juxtapose experiences (e.g., what recourse do sleepless residents have if noise emissions from the neighborhood data center are within legal limits?), propose new relationships (e.g., should university leaders championing ChatGPT track the water needed to cool the data centers fueling classroom generative AI experiments?), and center the often invisible poetics, aesthetics, and ethics of expansionist technological futures (e.g., how might indigenous origin stories unsettle neocolonialist space explorations?).

Making sense of these examples means working at myriad scales and questioning scalar assumptions. It means, for example, following a person, controversy, story, or injustice from a "conventional single-site location, contextualized by macro-constructions of a larger social order, to multiple sites of observation and participation that cross-cut dichotomies such as the 'local' and the 'global,' the 'lifeworld' and the 'system'" (Marcus, 1995, p. 95).

The challenge—analytical, pragmatic, and normative—of tracing, shaping, and judging such interconnected change is exacerbated by thin appreciations of how scalar language subtly pervades so many aspects of life (Lempert, 2024). From everyday clichés ("start small") to technological hype ("AI is changing the world"), scalar talk reflects and shapes how we understand and act upon similarities and differences (Ribes, 2026) that need to be described and debated, and that cannot be naively kept at one scale or another. Put differently, we should question scalar stereotypes—what can or should be done locally or globally, immediately or slowly, individually or collectively. Doing so might help scholars, activists, individuals, companies, and governments tackle polycrisis dynamics anew, making interconnected political, technological, economic, and environmental conditions feel a little less dizzying or paralyzing.

Consider, for example, prioritizing local news, while simultaneously seeing it as inseparable from macro forces shaping professional journalism, information infrastructures, global politics, media economics, and the struggle for shared social realities. In the United States, some local news systems are increasingly funded by public, nonmarket sources that are politically untenable at national levels (Powers, 2026); local news audiences can mobilize and link to create systemic change (Wenzel & Crittenden, 2021); people with thriving local journalism are less lonely (Hayes & Trivedi, 2026); and audiences perceive local news more favorably, trust local journalists most, and experience the least amount of stress when consuming local news (AP-NORC Center for Public Affairs Research, 2026). How does strong local journalism thrive while global media consolidates? How might one scale inform the other?

Acknowledging that polycrisis forces are complex, intertwined, often invisible, spanning histories, and seemingly intractable in ways that can paralyze and sustain endless debate (Horton, 2021; West, 2018), focusing on scale is simply pragmatic. Scale is a "keyhole issue" (Hochschild, 2016, p. 10)—a way to peer into, see through, and shape worlds that are otherwise too messy and inaccessible to change. Scholars and activists alike might focus on a single scale (e.g., local journalism funding) and then purposefully connect it to another scale (e.g., household finances or advertising infrastructures). Choosing a scalar starting point and strategically picking a scalar direction can bound a project and make it tractable amid dauntingly intertwined polycrisis forces.

To investigate scale and craft this Forum, we took inspiration from anthropologist Michael Fischer's charge to challenge, work across, and reassemble scales through playful interdisciplinarity. This means

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grappling seriously with "juxtaposing, complementing, or supplementing other genres of writing, working with historians, literary theorists, media critics, novelists, investigative or in-depth journalists, writers of insider accounts (e.g., autobiographers, scientists writing for the public), photographers and filmmakers, and others" (Fischer, 1999, p. 455).

The authors assembled here all adopted this spirit and participated in the "Media As SocioTechnical Systems" (MASTS) group[1], a collective of students and faculty at the University of Southern California that approaches themes of sociotechnical importance through multi-, inter-, and transdisciplinary lenses. As an intellectual (and social) home for people in often-siloed departments, schools, methodologies, and normative stakes, we keep terms like "discipline" and "method" loose and make as much room as possible for perspectives that cut across multiple ways of knowing and working. This is an ideal orientation and culture for approaching the theme of scale.

In this spirit, we solicited short essays on "sociotechnical scale," which we define as *interplays of forces that convene, fragment, measure, compare, aggregate, anchor and shift perspectives on, speed up and slow down, narrow and expand human-nonhuman relationships*. We invited authors to answer questions about scale including but not limited to:

- How does discourse about technological scale reflect and normalize assumptions about change, with some fetishizing local action and others trying to impact the world (Avle et al., 2020; Laurent & Violle, 2025; Riemens, 2024)? When is scale a noun (a quantity to bound and reckon with) versus a verb (a practice to enact and refine) (Carr & Lempert, 2016)?
- How do creators of sociotechnical systems define and divvy up scale by framing problems—seeing them as big or small, urgent or long-term, needing individual experts, crowds, small cases, or big data (Allen et al., 2020; Campolo & Schwerzmann, 2023)?
- What does it *feel* like to be in a niche or personalized sociotechnical system versus one meant for masses and collective experiences (Horton, 2021; Lempert, 2024)?
- How do sociotechnical scales work as seemingly neutral objects for measuring, categorizing, and normalizing people, making their experiences observable, calculable, comparable, commodifiable, and changeable (Merry, 2011; Ribes, 2026; Seaver, 2021)?
- How do organizations define scales as relevant, threatening, or essential to their missions, and what role do communication technologies play in negotiating these institutional sizes (Barrett & Orlikowski, 2021; Josefy et al., 2015)?
- What politics, constituencies, and publics are essential to, and possible at, different scales of space and time? How do communication technologies support or thwart scales of political association and action (Gillespie, 2020; Peters, 2001; Rountree et al., 2022)? Who or what benefits from one scale versus another, and how have scalar politics of representation changed (Dahl & Tufte, 1973; Delaney & Leitner, 1997)?
- How do media make scale something that can be sensed, becoming something to see, smell, feel, hear, or taste? Which scalar sensations do media privilege, ignore, or fetishize (Richardson, 2020)?

[1] https://www.uscmasts.org/

- Who has the power to shift scales—to force perspectives, aggregations, fragmentations, accelerations, or slowdowns—and who experiences that power? How is such power tied up with technologies of race, colonial expansionism, and indigenous sovereignty and resistance (Bellier & Hays, 2020; Crey, 2024; Shaw & da Silva, 2023)?
- What labor creates, maintains, defends, or resists sociotechnical scale? Who does that work, what risks and joys does it entail, and how is it tied up with using, hacking, and refusing algorithms, platforms, datasets, and apps (Gehl & Zulli, 2023; Geiger et al., 2021; Mulvin, 2021; Pfotenhauer et al., 2021)?
- What scalar transformations (e.g., the thumbnail, the network, the zoom, the dashboard, the clip, the summary, etc.) do digital media enable and privilege (Horton, 2021; Nanna & Stina, 2017)?
- What systems or phenomena stubbornly resist becoming bigger or smaller, faster or slower, similar or unique? What does non-scalability suggest about the persistence or resilience of a system's human-nonhuman relationships (Hanna, 2020; Tsing, 2012)?
- Finally, from the small and slow to the big and fast, what new scales do people struggle to define, compare, and shape? How does studying the instability and ambiguities of sites like "climate," "planet," and "space" invite new understandings of scale (Halpern, 2021; Jones, 1998; MacKinnon, 2011; Marston et al., 2005)?

This Forum's essays emerged from a year-long process of brainstorming, workshopping, drafting, and refinement. Authors pitched an idea, presented it to our interdisciplinary group, honed it, and helped others do the same through weekly conversations, informal presentations, social gatherings, formal presentations, and multiple rounds of editorial feedback on essay drafts. We do not claim that the essays—individually or collectively—exhaustively examine all aspects of scale; indeed, some pieces only begin to sketch rich debates, sites, and events that need further attention. We instead offer them as short, diverse, teachable provocations that stand alone and fit together—that scale.

Though each essay considers myriad aspects of scale and cannot be neatly categorized, they all speak to one of four senses of sociotechnical scale—as methodology, transformation, normativity, or imagination.

Methodology. Focusing on how general-purpose AI models can quickly create large-scale societal harms, Angel Hwang proposes "scale hacking" as a way to intervene before such models become too large to understand or govern. Kyooeun Jang critically examines how Meta transforms messy and relational aspects of content moderation into discrete and scalable units that can be computationally combined and deployed.

Transformation. Tracing the "Couch Guy" meme, Celeste Oon shows how internet forces can quickly amplify a small, private, interpersonal exchange into a massively viewed and analyzed event. Joy Hannah Panaligan examines how a seemingly singular site of labor (an online gaming guild in the Philippines) is actually a complex and globally circulating set of intertwined forms of work, currency, valuation, exchange, and colonialism. And focusing on the "segment" feature of the activity app Strava, Louise Xie shows how seemingly innocuous design decisions construct definitions of scale that measure and control bodies and movements.

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Normativity. Examining how pregnancy intertwines with scalar ideologies, Molly Frizzell shows how people navigate pregnancy app categories and measurements to interpret the scale and significance of prenatal development. And questioning the gendered scalar logics of venture capitalists, Edith Hollander and Sook-Lin Toh find that white, cis-male investors often ignore the growth potential of startups that fall outside their personal experiences.

Imagination. Asking how urban planners generate public support for new developments, Kexin Lin shows how renderings, exhibitions, and models that celebrate scale build collective desires and senses of inevitability. Critically examining the language that Elon Musk uses to market and celebrate his space colonialization, Stephen Yang finds the trillionaire's discourse rife with simplistic celebrations of scale as a means of planetary escape. And by taking the affective and scalar dynamics of dreams seriously, Seongkyung Lee shows them to be powerful techniques for motivating and mobilizing collective action.

In the spirit of taking scale seriously—as a scholarly analytic and driver of change—we hope that these essays offer ways to understand and impact the polycrisis, and serve as invitations to playfully combine, expand, or fragment scales that feel right and workable.

References

Allen, J., Arechar, A., Pennycook, G., & Rand, D. (2020). *Scaling up fact-checking using the wisdom of crowds*. https://psyarxiv.com/9qdza/

AP-NORC Center for Public Affairs Research. (2026). *The evolving news landscape: Comparing media habits and trust between teens and adults*. https://apnorc.org/projects/the-evolving-news-landscape-comparing-media-habits-and-trust-between-teens-and-adults/

Avle, S., Lin, C., Hardy, J., & Lindtner, S. (2020). Scaling techno-optimistic visions. *Engaging Science, Technology, and Society, 6*, 237–254. https://doi.org/10.17351/ests2020.283

Barrett, M., & Orlikowski, W. (2021). Scale matters: Doing practice-based studies of contemporary digital phenomena. *MIS Quarterly, 45*(1), 467–472. https://doi.org/10.25300/MISQ/2021/15434.1

Bellier, I., & Hays, J. (Eds.). (2020). *Scales of governance and indigenous peoples' rights*. London, UK: Routledge.

Campolo, A., & Schwerzmann, K. (2023). From rules to examples: Machine learning's type of authority. *Big Data & Society, 10*(2), 1–13. https://doi.org/10.1177/20539517231188725

Carr, E. S., & Lempert, M. (Eds.). (2016). *Scale: Discourse and dimensions of social life*. Berkeley: University of California Press.

Crey, K. (2024). *Producing sovereignty: The rise of indigenous media in Canada*. Minneapolis: University of Minnesota Press.

Dahl, R. A., & Tufte, E. R. (1973). *Size and democracy*. Stanford, CA: Stanford University Press.

Delaney, D., & Leitner, H. (1997). The political construction of scale. *Political Geography, 16*(2), 93–97.

DiCaglio, J. (2021). *Scale theory: A nondisciplinary inquiry*. Minneapolis: University of Minnesota Press.

Fischer, M. M. J. (1999). Emergent forms of life: Anthropologies of late or postmodernities. *Annual Review of Anthropology, 28*, 455–478. https://doi.org/10.1146/annurev.anthro.28.1.455

Gehl, R. W., & Zulli, D. (2023). The digital covenant: Non-centralized platform governance on the mastodon social network. *Information, Communication & Society, 26*(16), 3275–3291. https://doi.org/10.1080/1369118X.2022.2147400

Geiger, R. S., Howard, D., & Irani, L. (2021). The labor of maintaining and scaling free and open-source software projects. *Proceedings of the Association for Computing Machinery Conference on Human-Computer Interaction*, *5*(CSCW1), Article 175. https://doi.org/10.1145/3449249

Gillespie, T. (2020). Content moderation, AI, and the question of scale. *Big Data & Society, 7*(2), 1–5. https://doi.org/10.1177/2053951720943234

Halpern, O. (2021). Planetary intelligence. In J. Roberge & M. Castelle (Eds.), *The cultural life of machine learning: An incursion into critical AI studies* (pp. 227–256). Cham, Switzerland: Springer International Publishing. https://doi.org/10.1007/978-3-030-56286-1_8

Hanna, A. (2020). *Against scale: Provocations and resistances to scale thinking.* Proceedings of the CSCW 2020 Workshop: Reconsidering Scale and Scaling in CSCW Research. https://doi.org/10.48550/arXiv.2010.08850

Hayes, D., & Trivedi, A. (2026). *Loneliness and the local news environment*. https://doi.org/10.2139/ssrn.6183182

Hochschild, A. (2016). *Strangers in their own land*. New York, NY: The New Press.

Horton, Z. (2021). *The cosmic zoom: Scale, knowledge, and mediation*. Chicago: University of Chicago Press.

Jones, K. T. (1998). Scale as epistemology. *Political Geography, 17*(1), 25–28. https://doi.org/https://doi.org/10.1016/S0962-6298(97)00049-8

https://doi.org/10.65476/wa08ev81

Josefy, M., Kuban, S., Ireland, R. D., & Hitt, M. A. (2015). All things great and small: Organizational size, boundaries of the firm, and a changing environment. *The Academy of Management Annals, 9*(1), 715–802. https://doi.org/10.1080/19416520.2015.1027086

Laurent, B., & Violle, A. (2025). Scaling up or deep scaling? Problematizing the scalability imperative in technological innovation. *Science, Technology, & Human Values, 50*(2), 419–446. https://doi.org/10.1177/01622439241259411

Lempert, M. (2024). *From small talk to microaggression: A history of scale*. Chicago, IL: University of Chicago Press.

MacKinnon, D. (2011). Reconstructing scale: Towards a new scalar politics. *Progress in Human Geography, 35*(1), 21–36. https://doi.org/10.1177/0309132510367841

Marcus, G. E. (1995). Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Review of Anthropology*, *24*, 95–117.

Marston, S. A., Jones, J. P., & Woodward, K. (2005). Human geography without scale. *Transactions of the Institute of British Geographers, 30*(4), 416–432. https://doi.org/https://doi.org/10.1111/j.1475-5661.2005.00180.x

Merry, S. E. (2011). Measuring the world: Indicators, human rights, and global governance: with CA comment by John M. Conley. *Current Anthropology, 52*(S3), S83–S95. https://doi.org/10.1086/657241

Morin, E., & Kern, A. B. (1999). *Homeland Earth: A manifesto for the new millenium*. New York, NY: Hampton Press.

Mulvin, D. (2021). *Proxies: The cultural work of standing in*. Cambridge, MA: MIT Press.

Nanna, T., & Stina, T.-L. (2017). The transformative power of the thumbnail image: Media logistics and infrastructural aesthetics. *First Monday, 22*(10). https://doi.org/10.5210/fm.v22i10.7869

Peters, J. D. (2001). "The only proper scale of representation": The politics of statistics and stories. *Political Communication, 18*(4), 433–449. https://doi.org/10.1080/10584600152647137

Pfotenhauer, S., Laurent, B., Papageorgiou, K., & Stilgoe, J. (2021). The politics of scaling. *Social Studies of Science, 52*(1), 3–34. https://doi.org/10.1177/03063127211048945

Powers, M. (2026). The growing non-commercial basis of U.S. journalism employment: Evidence from one city, 2015–2025. *Critical Studies in Media Communication*, 1–19. Advance online publication. https://doi.org/10.1080/15295036.2026.2645098

Ribes, D. (2026). *Machineries of similarity and difference: AIDS from its research infrastructures*. Cambridge, MA: MIT Press.

Richardson, M. (2020). Witnessing the Anthropocene: Affect and the problem of scale. *Parallax, 26*(3), 339–359. https://doi.org/10.1080/13534645.2021.1883298

Riemens, R. (2024). Fixing the earth: Whole-systems thinking in Silicon Valley's environmental ideology. *Internet Histories, 8*(4), 294–311. https://doi.org/10.1080/24701475.2024.2416295

Rountree, J., Anderson, C., Reedy, J., & Nowlin, M. C. (2022). The internal dynamics of "scaling up" deliberative mini-publics. *Communication and the Public, 7*(3), 146–164. https://doi.org/10.1177/20570473221106025

Seaver, N. (2021). Care and scale: Decorrelative ethics in algorithmic recommendation. *Cultural Anthropology, 36*(3), 509–537. https://doi.org/https://doi.org/10.14506/ca36.3.11

Shaw, K., & da Silva, R. d. C. O. (2023). One size (doesn't) fit all: New metaphors for and practices of scaling from indigenous peoples of the Northwest Amazon [Original Research]. *Frontiers in Public Health, 11*. https://doi.org/10.3389/fpubh.2023.1166134

Tsing, A. L. (2012). On nonscalability: The living world is not amenable to precision-nested scales. *Common Knowledge, 18*(3), 505–524.

Wenzel, A. D., & Crittenden, L. (2021). Reimagining local journalism: A community-centered intervention. *Journalism Studies, 22*(15), 2023–2041. https://doi.org/10.1080/1461670X.2021.1942148

West, G. (2018). *Scale*. New York, NY: Penguin Random House.

https://doi.org/10.65476/wa08ev81