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Third spaces for science: reimagining research beyond academia and industry

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Science is a public good, yet the spaces where it is produced remain structurally constrained. Independent researchers, citizen scientists, and practitioners often lack access to institutional conditions needed for scientific work that is sustainable and publicly perceived as credible. We argue for third spaces—autonomous, collaborative ecosystems—as essential complements to academia and industry, promoting a distributed, transdisciplinary, and democratic knowledge ecology.

The need for third spaces for science

Contemporary research systems are increasingly shaped by structural constraints that limit how and where scientific knowledge can be produced. Academic institutions, historically associated with intellectual autonomy, are now frequently governed by metric-driven evaluation, administrative burdens, and competitive funding regimes that prioritize economic productivity over cultural and epistemic value. At the same time, they offer limited and inflexible employment opportunities—often due to funding constraints or a predominant focus on teaching [1]. Public or government-funded laboratories have traditionally been more akin to universities in culture and approach, while industry laboratories, though often well-resourced, prioritize commercial outputs. Between these worlds lies a growing population of practitioners, independent scholars, citizen scientists, individuals working at the intersection of art and science, and retired researchers, who—despite losing formal institutional affiliation—retain deep domain expertise and a continued drive to develop new research ideas. All possess the expertise to conduct meaningful research yet lack access to the institutional conditions required to do so, leading them to seek environments grounded in curiosity, collaboration, and shared inquiry [2]. Despite the widely recognized societal importance of scientific research, very few spaces exist for independent researchers to pursue practices that reach the public in meaningful and sustainable ways.

Neuroscience is particularly illustrative in this regard. Spanning a broad range of disciplines, including neurobiology, human cognition, computational modeling, and philosophy of mind, it is one of the most methodologically and conceptually diverse fields in experimental science. Its infrastructure varies widely—from resource-intensive neuroimaging facilities to more accessible recording tools—making it a field where the barriers facing independent researchers are both acute and varied (e.g., funding access and ethical oversight). These challenges often make it difficult to sustain research activity, while others are compelled to depend on affiliated collaborators to navigate institutional requirements. In our view, the breadth of neuroscience makes it especially well positioned to benefit from, and to pioneer, third-space models of research organization.

Because increased access to higher education and formal research training is not met with an increasing number of permanent academic positions [3], many people find themselves outside academia while possessing the expertise, ideas, and skills to conduct meaningful research. They may be deterred not by a lack of capability but by structural rigidity, hierarchical cultures, publishing pressures, or simply a lack of access to institutional resources needed to sustain meaningful projects.

By creating third spaces that welcome these communities and promote knowledge exchange, the scientific landscape could be enriched through collaboration, diversity, and intellectual freedom, without requiring major financial investment. Advances in digital tools, open data, and accessible infrastructure [4] now make such models feasible within the empirical sciences. Legitimate alternative organizations that gain credibility from their outputs, networks, and transparency could bridge academia and society, providing affiliation, funding access, and ethical oversight for independent researchers.

Limits of academia and industry

In academia, there is a persistent loss of scholarly expertise as researchers exit the system due to precarious contracts, a lack of stable opportunities, and the erosion of autonomy. Institutions educate and train more qualified experts than they can employ, yet provide little formal support for alternative career pathways. Rigid hierarchies and unequal cultures hinder diversity and equity, while reliance on institutional affiliation for funding reinforces dependency on governmental or disciplinary norms. Even within these systems, the process of securing funding is increasingly formalized and administratively mediated. Furthermore, academia has limited flexibility in employment structures, disciplinary mobility, and geographical positioning. Publishing pressures prioritize quantity over quality, driving a culture of output metrics at the expense of intellectual growth and an emphasis on long-term societal relevance

[5]. Practice-based and transdisciplinary knowledge often struggle for recognition, particularly when outputs are not peer-reviewed papers but creative or applied outcomes.

Research in industry settings, while often well-resourced, faces its own constraints when inquiry is shaped primarily by commercial priorities. This can lead to a narrowed intellectual scope and limited genuine innovation for societal benefit, with researchers facing restricted autonomy and few opportunities for fundamental exploration. Innovation becomes tied to profitability rather than curiosity or civic value, leaving limited space for the type of slow, uncertain, and transformative thinking that is argued to be essential for scientific progress [6].

Defining third spaces for science

Third spaces for science are autonomous yet interconnected infrastructures that facilitate research outside conventional academic and corporate frameworks. Inspired by the notion of the 'third space' as a hybrid zone where meaning and identity are continuously negotiated [7], these environments represent epistemic and social alternatives to hierarchical systems of knowledge production—a concept elaborated on extensively in higher education contexts [8,9]. Scientific third spaces function as collaborative hubs where researchers, artists, engineers, and practitioners co-develop methods, share resources, and pursue projects driven by curiosity rather than compliance.

In practical terms, a third space for experimental science could take the form of an independent research hub or community, implemented as a physical space or a distributed network. Such spaces serve multiple functions: they enable horizontal learning structures—interdisciplinary seminars, workshops, and shared laboratories—that facilitate exchange across disciplines and hierarchies; they provide access to shared equipment, digital platforms, and administrative support through flexible resource models; and they function as institutional bridges, providing affiliation for grant applications, access to ethical review, and opportunities for institutional partnership. As such, they represent independent yet credible institutional structures capable of hosting grants and ensuring ethical oversight—a model that is more equitable, more economical, and more ecological than the duplication of resources across isolated individual laboratories.

An existing example of this model is the National Coalition of Independent Scholars (NCIS)—a USA-based non-profit supporting independent scholars through affiliation, peer review, small grants, and access to scholarly resources.[i] The NCIS, however, cannot currently provide ethical oversight or Institutional Review Board approval, limiting its utility for empirical research. Groups in the Global South offer another model, pursuing innovative workarounds to conventional academic structures despite limited resources.[ii] Together, these cases illustrate both the demand for alternative infrastructures and their current limitations; extending them into experimental domains, where requirements are more demanding, is, in our view, a critical next step. The Association for Independent Research is a relatively recent Switzerland-based initiative focused on empirical research.[vii] Involving distributed researchers working either full or part time within academic institutions, or fully independently, it serves as a hub to envision alternative formats for empirical research in the long run. Despite being at an early stage and involving a limited number of members, the organization has already invested significant administrative efforts (related to community management, internal organization and administration, and maintaining communication infrastructures), highlighting the need for dedicated resources for such initiatives to grow, maintain their community of members, and remain viable.

Governance and inclusivity: designing organizations beyond traditional academic structures

For scientific third spaces to fully achieve their goals, they should avoid replicating academia's structural inequities and instead embody inclusivity and transparency. Evidence suggests that universities continue to prioritize specific demographics, leaving fewer opportunities for women, ethnically under-represented groups, first-generation academics, LGBTQ+ researchers, and those with disabilities. In our view, third spaces must therefore be inclusive by design, embodying shared governance and transparent accountability [9]. For experimental research, this also requires clearly articulated ethical oversight mechanisms—rotating ethics committees, external review partnerships, or federated review boards—alongside democratic decision-making, economic accessibility, hybrid participation, and cross-hierarchical mentorship. Alliances with community organizations, citizen-science groups, and local institutions can ensure third spaces remain socially embedded and relevant [10].

Challenges and infrastructure for sustainability

Third spaces must establish frameworks that balance freedom with credibility, including diversified funding models (e.g., crowdfunding, philanthropy, microgrants, and institutional partnerships), robust peer networks, and appropriate legal frameworks. Platforms for public engagement through seminars, education, and consulting may also represent alternative funding sources [10]. In an era of misinformation and eroding trust in expertise, legitimacy must be cultivated through open data, participatory governance, and clearly articulated standards of quality [5]. Integration with schools, lifelong learning institutions, and non-governmental organizations can further

extend the reach of scientific inquiry into everyday life [8].

Real-world precedents: third spaces already in practice

A growing number of real-world examples demonstrate that third-space models are not only viable but already in practice. Thomas Edison's 'Invention Factory' operated as an open-floor laboratory designed for collaborative idea development,[iii] and the Homebrew Computer Club of the 1970s–1980s is widely credited as the birthplace of the personal computer revolution.[iv] More recently, Genspace, a community biotechnology laboratory founded in 2009 in New York,[v] allows professional researchers and citizens to work side by side with shared access to equipment and expertise.

The logic of resource-sharing is not confined to spaces outside academia. At the Zentrum für Molekularbiologie der Pflanzen (ZMBP; Center for Plant Molecular Biology),[vi] University of Tübingen, research groups pool access to central core facilities covering imaging, biochemistry, analytics, and plant cultivation. Expensive equipment is maintained collectively rather than duplicated, and early-career researchers gain scientific independence without building a laboratory from scratch—a model that is more economical and more conducive to interdisciplinary exchange.

Taken together, these examples suggest not a single template but a family of approaches, each adapted to its community and context, collectively pointing toward what a distributed, open, and equitable research ecosystem could look like [8].

Toward a distributed knowledge ecology

Third spaces do not aim to replace universities or corporations but to complement them as part of a distributed research ecosystem where independent inquiry, institutional science, and community knowledge intersect [10]. Yet because they operate at the intersection of these worlds, questions of intellectual property, ownership, and commercialization cannot be sidestepped. Who owns a discovery made in a shared laboratory by a rotating community of contributors? How are researchers protected in terms of employment security and legally binding contracts? These reflect real tensions that have historically shaped who benefits from scientific knowledge. Rather than treating intellectual property as an obstacle, third spaces can model alternative frameworks: commons-based licensing, collective stewardship agreements, and open-science commitments that protect contributors while keeping knowledge accessible [5].

If designed inclusively and governed transparently, third spaces could transform scientific legitimacy and public trust, redefining where and how science happens [9]. There is a clear need to acknowledge existing gaps and open up conversations on potential solutions. The model outlined in this article may evolve into a network of locally grounded research communities advancing scientific literacy, social innovation, and equitable access to knowledge. Neuroscience, spanning an unusually wide range of methodological and conceptual traditions, is, in our view, particularly well placed to pioneer such models—and, in doing so, to demonstrate their value for experimental science more broadly.

Declaration of interests

M.R., B.L., M.R.L., and D.S. are affiliated with AIR—Association for Independent Research; L.B. and A.J.H. are affiliated with the National Coalition of Independent Scholars (NCIS). AIR and NCIS are discussed in the manuscript.

Resources

[i] https://ncis.org

[ii] https://ncis.org/wp-content/uploads/2024/12/NCIS-Guide-for-Independent-Scholars.pdf

[iii] https://www.menloparkmuseum.org/history/

[iv] https://www.computerhistory.org/revolution/personal-computers/17/312

[v] https://www.genspace.org/

[vi] Redaktion Pflanzenforschung.de. (June 30, 2011). *Flache Hierarchien für exzellente Pflanzenforschung* [Flat hierarchies for excellent plant research]. Pflanzenforschung.de. https://www.pflanzenforschung.de/de/pflanzenwissen/journal/flache-hierarchien-fuer-exzellente-pflanzenforschung-1411

[vii] www.a-i-r.science

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