

Citizen science in Latin America and the Global South, Part 1

Julieta Piña-Romero, Luis Reyes-Galindo & L. Arturo Vallejo Novoa

To cite this article: Julieta Piña-Romero, Luis Reyes-Galindo & L. Arturo Vallejo Novoa (2022) Citizen science in Latin America and the Global South, Part 1, Tapuya: Latin American Science, Technology and Society, 5:1, 2145040, DOI: [10.1080/25729861.2022.2145040](https://doi.org/10.1080/25729861.2022.2145040)

To link to this article: <https://doi.org/10.1080/25729861.2022.2145040>



© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 21 Nov 2022.



Submit your article to this journal [↗](#)



Article views: 309




View related articles [↗](#)



View Crossmark data [↗](#)

Citizen science in Latin America and the Global South, Part 1

Julieta Piña-Romero^a, Luis Reyes-Galindo ^b and L. Arturo Vallejo Novoa^c

^aEscuela Nacional de Estudios Superiores-Unidad Morelia, Universidad Nacional Autónoma de México (UNAM), Morelia, Mexico; ^bKnowledge, Technology and Innovation group, Wageningen University and Research, Wageningen, The Netherlands; ^cDepartamento de Medios y Cultura Digital, Tec de Monterrey – Campus CEM, Mexico

“Citizen science” has become, in recent years, an increasingly visible placeholder for various forms of public participation in science – even while the dominant definition of citizen science by scientists themselves is, still, the outsourcing of “genuine” scientific work to non-scientists (Fraisl et al. 2022; Rosas et al. 2022). Indeed, even metastudies reflecting upon the diversity of citizen science initiatives, when led by traditional scientific viewpoints, focus strongly on the “added value” that citizen involvement brings to “science” and reduced definitions of society (Vohland et al. 2021).

In contrast, social studies of citizen science have placed significant emphasis on the work of non-scientists working outside – or even against – the interests of institutional science. Such a perspective, in which benefits to science may or may not be the end purpose of citizen science, comprises an array of more *politically* heterogeneous activities, which are “more or less spontaneous, organized and structured, whereby nonexperts become involved, and provide their own input to agenda setting, decision-making, policy forming, and knowledge production processes regarding science” (Bucchi and Neresini 2008, 449). If citizen science is intended to broaden engagement in both the dominant science, but potentially also in counter-narrative and dissenting actions (Moore and Strasser 2022), it faces an ongoing process of redefining or even disassembling the boundaries between what is science and what is not, and between those who are legitimized to do science and those who are not (Eitzel et al. 2017). This is particularly important given how critical analysts of citizen science have pointed out that, while scientist-led citizen science can indeed be a successful form of “distributed cognition” within which non-scientists can still display bounded friction (Kasperowski and Hillman 2018), at another extreme, the term can and has been appropriated to carry out “citizen washing” of industrial propaganda and lobbying (Blacker, Kimura, and Kinchy 2021).

Despite the generality of the term, there is nonetheless common ground across all citizen science from an analyst’s perspective. Citizen science, after all, always takes place in specific geopolitical, technical, and epistemic contexts that deeply shape and turn it. It also involves, at least in every paradigmatic case, one of two types of activities: those associated with the collection, classification, and/or analysis of data; or those

CONTACT Luis Reyes-Galindo  luisreyes@ciencias.unam.mx

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

associated with science governance processes. Compared to traditional science, which is mostly carried out within closed circles of defined expert communities (and only then transported or exchanged with other experts outside the locus of production), citizen science often brings together, *ab initio*, different types of actors (general publics, amateurs, community members, activists, volunteers, scientists, educators, policy-makers, museums, universities, hospitals, etc.). Citizen science is also strongly geared towards the satisfaction of *political* objectives (democratic, epistemic, educational, civic, leisure, love, public communication of science, “genuine” research) that need to be made explicit in the many public forms citizen science takes (crowdsourcing science, community-based participatory research, participatory action research, popular science, critical science, community-based monitoring).

Thus, while the discussions it provokes are as diverse as its manifestations, the different incarnations of citizen science all raise issues that are of conceptual and analytical interest to Science and Technology Studies and beyond. This Thematic Cluster, the first part of a two-part series that will be continued in 2023, looks at this motley landscape of citizen-science-as-public-participation by first and foremost considering the degree of institutionalization of practices underlying specific cases in Latin America, added to what Invernizzi (2020) calls the level of engagement with scientific or scientific-political institutions. We, therefore, frame citizen science within three broad families and proceed to look at how the papers contributing to this cluster can be located therein:

- (1) *Top-down approaches* which strongly demarcate what laypersons may, can, and should do within scientific projects (e.g. pre-framed data gathering and sorting).
- (2) *Cooperative (even counter-hegemonic) interactions* in which laypersons-institution interaction occurs on more level epistemic terms (e.g. NGO-led science, patient-group data gathering). Though it might seem counter-intuitive to place the cooperative side-by-side to the counter-hegemonic, here we draw attention to citizen action that is not demarcated by institutions yet encroaches on institutionalized science in some way.
- (3) *Science “on the margins,”* where science and knowledge are created and live out their epistemic lives *independently* from institutions.

The first paper in the cluster (Aguilar, Díaz, and Romero 2022) is linked to processes of scientific governance in the second mode: i.e. in the participation of citizens *as citizens* in regulatory bodies, which is a classic locus of research in STS (Epstein 1995; Jasanoff 2003; Irwin 2008). This article presents the experience of mobilization in three municipalities in the province of Buenos Aires concerning the regulation of cannabis for therapeutic and medicinal uses, illustrating how municipal cannabis regulations are developed from a heterogeneous social base (growers, marketers and users of the plant, doctors, legislators, and officials) that produces, uses, and transmits diverse expertise. In this hybridization of expertise, the article highlights the relationships of trust and the ties of proximity between neighbors; that is, the face-to-face relationships in small or medium-scale spatial dimensions on which citizen science is based. The paper underlines a fundamental task of science governance processes: they reconfigure social identities (from “potheads” to experiential connoisseurs of cannabis cultivation and consumption), create new identities (the “solidarity growers” and “marijuana mothers”), and construct a public problem

by morally re-signifying the various prejudices linked to marijuana production and consumption.

Also falling into the second category, the paper by Hiriart et al. (2022) frames its citizen science as bottom-up, grassroots initiatives explicitly created as alternatives to the top-down setting of educational agendas set by scientists in the Chilean South. Importantly, the paper introduces programs that have been successfully implemented to create local adaptations of scientific education to an *intercultural* setting: where science education is framed not only as a meeting place of scientific knowledge with local teaching infrastructure, but indeed of scientific knowledge cultures in interaction with the rich and diverse Mapuche identities of the participating students and teachers. The paper thus advances a view of science education as a form of science communication that takes interculturality as its main point of departure (Reyes-Galindo and Duarte 2017).

In third place, in their cross-country white-paper review that additionally considers specific instances of citizen science group processes, Espinosa and Rangel (2022) perform an analysis of the different levels of citizen engagement – mainly, through civil society organizations – with the United Nations 2030 Agenda and its Sustainable Development Goals. Looking at cases in Argentina, Colombia and Ecuador, the authors find five avenues for engagement: (1) Participation promotion, (2) Information provider, (3) Data innovator, (4) Watchdog, and (5) Advocacy. Of these, 1–3 overlap with our top-down category. While 4 and 5 display increasing friction with institutions, they correspond to the cooperative/counter-hegemonic family: it is interesting that while “advocacy” in these settings is geared towards amplifying the voices of marginalized sectors, peoples, and knowledges, in effect it tries to bring these voices into the fold of highly institutionalized programs; as such, it might feed off (but should not be confused with) citizen science “on the margins.”

Finally, squarely within the science “on the margins” category, Leinaweaver and Forrester (2022) present the personal search of one of the co-authors for her family roots by collecting, archiving, coding, and analyzing the birth records of several Peruvian adoptees that are hosted in a privately managed open-access digitized database. This endeavor attains the citizen science label, the authors contend, because of the scale of the research that enlarges the sample size of digital registers to hundreds of cases; and because of the scientific methodologies used, which included database creation, management, analysis, and open coding, resulting in social benefits for other people in similar situations. Most importantly, the independent scope of the work conducted looks to highlight the nuances that laypeople may bring to mainstream science by being personally implicated and committed in the matter within the framework of “undone science” (Frickel et al. 2010) – in this case, the incomplete bio-digital understandings of community, ancestry, and heritage.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributors

Julieta Piña-Romero (PhD Candidate in Philosophy of Science, UNAM) is a Professor of Science and Technology Studies at Escuela Nacional de Estudios Superiores, Unidad Morelia (UNAM). She was

Editor-in-Chief of C+TEC, the science communication journal of the Science and Technology Council of Michoacán. Her research focuses on science and public participation, particularly in the context of health activism.

Luis Reyes-Galindo (PhD in Sociology, Cardiff University) is an associate researcher/lecturer at Wageningen University's Knowledge, Technology and Innovation/Philosophy Groups, within the Global Epistemologies and Ontologies (GEOS) project. He has held academic positions in Mexico, Brazil, the UK, and the Netherlands. His research centers on scientific knowledge diffusion as a form of intercultural communication, including comparative micro-sociological studies of open access publishing.

L. Arturo Vallejo Novoa (Doctoral Candidate in Philosophy of Science, UNAM) is a Professor of Media and Digital Culture at Tecnológico de Monterrey's School of Humanities and Education. He previously held academic positions in the National Polytechnic Institute of Mexico and the National Autonomous University of Mexico. His research centers on citizen science within the field of STS & Media Studies.

ORCID

Luis Reyes-Galindo  <http://orcid.org/0000-0003-4269-0460>

References

- Aguilar, Ó, M. C. Díaz, and L. Romero. 2022. "Citizen Science Towards the Regulation of Medical Cannabis in Argentina." *Tapuya: Latin American Science, Technology and Society*. doi:10.1080/25729861.2022.2100037.
- Blacker, S., A. H. Kimura, and A. Kinchy. 2021. "When Citizen Science is Public Relations." *Social Studies of Science* 51 (5): 780–796.
- Bucchi, M., F. Neresini. 2008. "Science and Public Participation." In *Handbook of Science and Technology Studies*, edited by Hackett, et al., 449–472. Cambridge, MA: Cambridge MIT Press.
- Eitzel, M. V., J. L. Cappadonna, C. Santos-Lang, R. E. Duerr, A. Virapongse, S. E. West, C. Kyba, et al. 2017. "Citizen Science Terminology Matters: Exploring Key Terms." *Citizen Science: Theory and Practice* 2 (1): 1–20.
- Epstein, S. 1995. "The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials." *Science, Technology & Human Values* 20 (4): 408–437.
- Espinosa, C., and G. Rangel. 2022. "What Roles Do Civil Society Organizations Play in Monitoring and Reviewing the Sustainable Development Goals? An Exploration of Cases from Ecuador, Colombia and Argentina." *Tapuya: Latin American Science, Technology and Society*. doi:10.1080/25729861.2022.2143669.
- Fraisl, D., G. Hager, B. Bedessem, M. Gold, P. Y. Hsing, F. Danielsen, C. B. Hitchcock, et al. 2022. "Citizen Science in Environmental and Ecological Sciences." *Nature Reviews Methods Primers* 2 (1): 1–20.
- Frickel, S., S. Gibbon, J. Howard, J. Kempner, G. Ottinger, and D. J. Hess. 2010. "Undone Science: Charting Social Movement and Civil Society Challenges to Research Agenda Setting." *Science, Technology, & Human Values* 35 (4): 444–473.
- Hiriart, C. V., D. Salazar Rodríguez, W. Riquelme Maulén, A. Rojo Almarza, and D. Opazo Bunster. 2022. "The EXPLORA Model of Citizen Science at Schools: Design and Implementation in the Intercultural South of Chile." *Tapuya: Latin American Science, Technology and Society*. doi:10.1080/25729861.2022.2117492.
- Invernizzi, N. 2020. "Public Participation and Democratization: Effects on the Production and Consumption of Science and Technology." *Tapuya: Latin American Science, Technology and Society* 3 (1): 227–253.
- Irwin, A. 2008. "STS Perspectives on Scientific Governance." In *The Handbook of Science and Technology Studies*, edited by E. J. Hackett, M. Lynch, and J. Wajcman, 583–607. Cambridge, MA: MIT Press.

- Jasanoff, S. 2003. "Technologies of Humility: Citizen Participation in Governing Science." *Minerva* 41 (3): 223–244.
- Kasperowski, D., and T. Hillman. 2018. "The Epistemic Culture in an Online Citizen Science Project: Programs, Antiprograms and Epistemic Subjects." *Social Studies of Science* 48 (4): 564–588.
- Leinaweaver, J., and M. C. Forrester. 2022. "Adoption Knowledge: A Citizen-Scientific use of FamilySearch to Understand Peruvian Adoption." *Tapuya: Latin American Science, Technology and Society*. doi:10.1080/25729861.2022.2123635.
- Moore, K., and B. Strasser. 2022. "Science & Dissent: Alternative Temporalities, Geographies, Epistemologies." *Engaging Science, Technology, and Society* 8 (1): 53–71.
- Reyes-Galindo, L., and T. R. Duarte, eds. 2017. *Intercultural Communication and Science and Technology Studies*. Cham: Springer.
- Rosas, L. G., P. Rodriguez Espinosa, F. Montes Jimenez, and A. C. King. 2022. "The Role of Citizen Science in Promoting Health Equity." *Annual Review of Public Health* 43: 215–234.
- Vohland, K., A. Land-Zandstra, L. Ceccaroni, R. Lemmens, J. Perelló, M. Ponti, R. Samson, and K. Wagenknecht, eds. 2021. *The Science of Citizen Science*. Cham: Springer Nature.