PROCEEDINGS OF SCIENCE

Is this innovative? -

Changes strengthen the importance of Citizen Science!

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Citizen Science and participatory research have a highly innovative as well as emancipatory potential. In the article, ideas are presented to unfold this potential through a renewal of the concept of innovation, appropriate institutional structures and changes in research funding rules.

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1. Introduction

The core element of Citizen Science (CS) projects is the active participation of citizens in the research process. Althoug CS research approaches differ in terms of form and timing of involvement, there is general agreement that the role of participating citizens changes from the studied object to the acting subject [1]. This is the innovative power of the CS concept and the fundamental difference from the traditional understanding of research [2].

Unfortunately, CS projects still play a rather minor role in the research community in terms of number of projects, share of funding, and reputation in the scientific community [3]. We would like to share our considerations on reasons for this case and what changes can strengthen the importance and impact of CS. In the following, we address three, from our perspective important starting points and measures: necessary renewal of innovation concepts in research, strengthening of appropriate university structures, and adaptation of research funding.

1.1 Establish a new concept of innovation

According to the traditional cliché, independent researchers are the creators of innovation. This conception of knowledge production fails to recognise the productive power of social actors through their influence on what is researched and which research results become socially relevant. Innovations do not emerge independently of society and they do not unfold their potential in the laboratory, but in the complexity of social reality. If we look at "society", we see that it is a very heterogeneous structure. The influence of the various social actor groups on agenda setting and their participation in research and development shows great differences. Large companies in the automotive, energy, and chemical sectors determine the research agenda to a much greater extent, are involved in research or finance research institutions more often than associations of small companies in these sectors or the employees and citizens and their associations in total. CS gives voice in the development of innovations to those social groups that are usually excluded from the knowledge production of scientific research. Citizen Science is both an innovative and an emancipatory concept. In order to have an impact in line with its meaning, a change in the concept of innovation is required that appreciates the relevance of the participation of these social groups in the development of innovation; and, therefore, also systemically includes citizens, employees, small businesses, etc. as citizen scientists in research and development processes and involves them appropriately, to the extent of including them in the development of the research questions. Vice versa: The more frequently CS is applied in research practice and leads to innovations, the more the scientific added value of CS is perceived and leads to a change in the concept of innovation.

1.2 Adapt university structures

Involving Citizen Scientists in research is by no means trivial or a matter of goodwill. Science and society are different "cultures" with different logics. Joint inter- and transdisciplinary research is demanding and requires a high level of communication. Researchers cannot do this offhanded; it requires capacities and self-reflection on their roles. In order to develop the potential of CS, appropriate independent university structures are needed to promote and implement the initiation and support of transdisciplinary research and teaching with an integrative research approach. It requires "docking points" that enable civil society actors to have access to

universities; it requires "cultural translation services" in the research process provided by intermediaries who are at home in different worlds; it requires conceptual skills and, above all, manual dexterity in shaping participatory processes; and, of course, contacts to the relevant social networks. An important condition for success is the permanent establishment of university intermediary structures in order to ensure appropriate visibility internally and externally and permanent contact persons to strengthen the capacities of direct communication (Fig. 1). For further reading refer to [3] and [4].

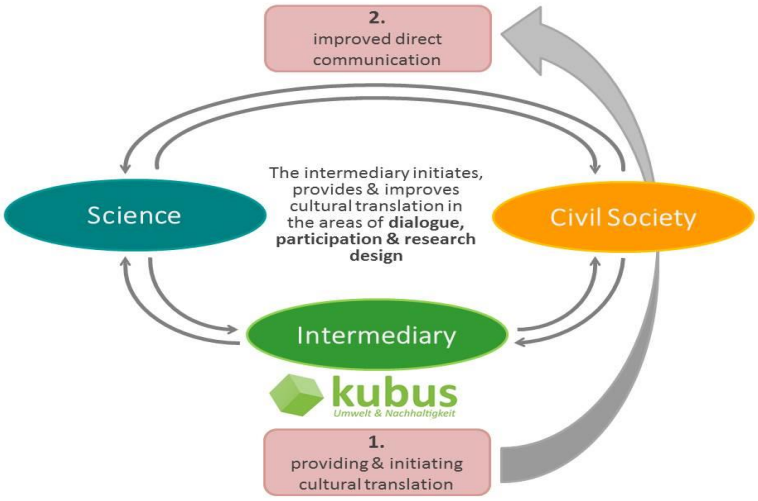

Fig. 1: Role of the intermediary institution in the participatory research process

This role, which goes far beyond the common contact and transfer concept, is performed by kubus as a university based science shop. Kubus is financed as an institution of the TU Berlin to open the university to civil society actors, e.g., Civil Society Organisations (CSOs), neighbourhood initiatives, Small and medium-sized enterprises (SMEs), and regional institutions.

1.3 Change research funding

In addition to the further development of the concept of innovation, adapted university structures, and new funding programmes, which finance CS, the change of funding regulations and evaluation criteria are important elements to enable the inclusion of social actors that have not been sufficiently involved so far. [7] Current funding rules still too often make it difficult to include citizens and grassroots' initiatives as funding recipients in projects. The participation of innovative small businesses and individual entrepreneurs often faces insurmountable hurdles as well. Involving citizen scientists in projects without funding excludes larger parts of the population. New ways must be explored to allocate them budget shares as partners, which they manage independently according to transparent criteria, e.g., for refunding salaries, expense allowances, travel, etc..

The criteria for evaluating projects and applications in order to acknowledge the cooperative development of research questions and their implementation with social actors should be changed as well. Being involved in such applications we experienced that evaluation results appreciated

the choice of partners and the diversity of measures, but doubted the scientific excellence pointing out that research questions and methods were not regarded being concrete enough. We argue such feedback reflects the traditional concept of innovation discussed earlier and creates a barrier to the involvement of civil society in the selection of the research objectives and the research questions. The inclusion of civil society actors already in these first project steps as well as greater flexibility in the design of the research process is considered to be of great importance for the successful outcome of co-creational processes, e.g. living labs or community based design [5] [6] [7].

A change of the innovation concept can open up the opportunity to involve citizen scientists in research projects in the future to much more extend and make greater use of their expertise for the development of social innovations.

For many years, the authors are active as research assistants at the Science Shop kubus, which was established in 1986 as an intermediary structure of the TU Berlin. The University is currently active on strengthening its transdisciplinary research and teaching.

References

[1] C. Göbel, L. Ottolini, E. Lhoste, J. Gunnel, M. S. Jørgensen, P.-B. Joly, *Empowering civil society through participatory investigation? European Round Table Workshop*. Workshop report. doi.org/10.5281/zenodo.3522369 (2019).

[2] Jack Stilgoe, *Citizen scientists: Reconnecting science with civil society,* Demos, London, ISBN 978 1 9066930 12 1 http://www.demos.co.uk/files/Citizen_Scientists_-_web.pdf?1243869835= (2009).

[3] Glenn Millot, *Boutiques des sciences: La recherche à la rencontre de la demande sociale*, Éditions Charles Léopold Mayer, https://www.eclm.fr/, ISBN-10: 2843772141, ISBN-13: 978-2843772146, https://docs.eclm.fr/pdf_livre/401BoutiquesDesSciences.pdf (2019).

[4] Enric Senabre Hidalgo, Josep Perelló, Frank Becker, Isabelle Bonhoure, Martine Legris, Anna Cigarini, *Participation and Co-creation in Citizen Science* in Katrin Vohland, Anne Land-Zandstra et.al. (eds.), *The Science of Citizen Science*, Springer, Cham 2021, Pages 199-218, Online ISBN 978-3-030-58278-4, Print ISBN 978-3-030-*58277*-7, doi.org/10.1007/978-3-030-58278-4 (2021).

[5] Stefan Böschen, Martine Legris, Simon Pfersdorf, Bernd Carsten Stahl, *Identity Politics: Participatory Research and Its Challenges Related to Social and Epistemic Control*, in Social Epistemology, Volume 34, 2020, Pages 382-394, doi.org/10.1080/02691728.2019.1706121 (2020).

[6] Alexandra Lux, Martina Schäfer, Matthias Bergmann, Thomas Jahn, Oskar Marg, Emilia Nagy, Anna-Christin Ransiek, Lena Theiler, *Societal effects of transdisciplinary sustainability research - How can they be strengthened during the research process?* in Environmental Science & Policy; Volume 101, November 2019, Pages 183-191, doi.org/10.1016/j.envsci.2019.08.012 (2019).

[7] Axel Pfleger, Constantin Schlug, *Citizen Participation Matters - Fostering Co-Creation for Climate Change Mitigation and Adaptation - Monitoring, Validation and Evaluation for the Knowledge Transfer (WP5)*, D5.1 Policy Brief 1, Outcomes of *TeRRIFICA - Territorial Responsible Research and Innovation fostering Innovative Climate Action*, project under Horizon 2020 2020-SwafS-2018-1, Grant agreement nº 824489, 2019-2023, https://terrifica.eu/wp-content/uploads/2021/03/TeRRIFICA_D5.1_Policy_Brief_I_2021-02-09_def.pdf (2021).