PROCEEDINGS OF SCIENCE

Making space for reactive citizen science: reflections from the "Sensing for Justice" project roundtable

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The project Sensing for Justice—researching the potential of citizen science in environmental litigation and mediation—convened a dialogue roundtable at the Engaging Citizen Science Conference 2022. During the roundtable, participants were invited to reflect along three main lines: (I) how to provide social and legal support to less structured and more spontaneous citizen science initiatives, here framed as "reactive"; (II) what type of legal/institutional recognition is desirable for these more "reactive" forms of citizen science; and (III) which novel communication approaches—for example, visuals and story-telling—can enable us to enter in dialogue with these initiatives. After these prompts, we asked the participants to react with spoken interventions and drawings. Together, we could draft a "manifesto" voicing the need of reactive environmental citizen science and sketching avenues to ensure that the practice can flourish and have impact.

Engaging Citizen Science Conference 2022 (CitSci2022)
25-26 April 2022
Aarhus University, Denmark

* Speaker, together with all the participants to the roundtable

PoS(CitSci2022)016

1. Introduction

The Marie Skłodowska-Curie Action-funded Sensing for Justice (SensJus)[i] project researches the potential of strongly grassroots-driven environmental (health) monitoring, i.e., *reactive citizen science*, as a source of evidence in environmental justice litigation, and as a tool for conflict mediation in extrajudicial setting [1]. The project focuses on grey zones of citizen science where its recognition and valorisation is more difficult than for established, large-scale, institutionally-funded citizen science initiatives. It targets especially very local, spontaneous, small-scale and low-budget initiatives that are not supported by a public agency nor linked with an academic institution, and that deploy in contexts dominated by high social distrust and conflict.

SensJus is exploring through fieldwork specific instances of this type of citizen science, for example in Basilicata where ordinary people are monitoring the impact of oil pollution on their land, exposing themselves to legal and even health risks. The ultimate aim is to facilitate policy, legal and judicial recognition and uptake of these forms of strongly grassroots-driven citizen science, born out of resistance to situated instances of injustice (this is why "reactive").

During the dialogue roundtable convened by SensJus at the Engaging Citizen Science Conference 2022, Aarhus, titled “Building spaces for reactive citizen science" within the thematic session “Citizen Science in Institutions”, we started by briefly illustrating preliminary findings stemming from our research to then stimulate a collective reflection along the following lines:

- The need to establish spaces, which can be legal clinics at universities, museums or libraries, where peer citizens, experts and students can advise less structured and more spontaneous citizen science initiatives and offer support in order to assure that they comply with applicable laws and regulations. Moreover, these clinics could also provide support to avoid legal liabilities (e.g., in the form of strategic lawsuits against public participation—SLAPPs) and avoid health risks for participants stemming from citizen science [2]. Lastly, they could provide support in terms of citizen science data management in the short and long term [3].
- The recognition at the legal-institutional level [4] [5] of more "reactive" forms of citizen science, such as those that are struggling to get funding and visibility, introducing a discussion on how to support these civic sentinels through creative approaches (for example forming a collective of citizen scientists similar to a labour union). This can arguably legitimize these initiatives vis-à-vis institutions and broader society [6].
- The reflection on new forms of communication that bring a wider audience closer to civic monitoring, for example through drawings and story-telling, as we did for the SensJus project with a free graphic novel recounting the story of a civic sentinel facing

oil contamination in an imaginary land [7]. This method of communication could facilitate a dialogue with low literacy citizen science participants from more

In terms of less structured and more spontaneous citizen science initiatives, we introduced the participants of the roundtable to the specific case of civic environmental monitoring of oil pollution and its impacts on human and animals health in Basilicata, Southern Italy.[ii] The initiative is quite small-scale compared to more renowned environmental citizen science projects. Moreover, it is very local and most of its participants do not speak and understand English, making it scarcely present on European and international citizen science fora. Its main source of funding is crowdfunding campaigns and auto-funding from the initiative's participants. Lastly, the initiative deploys in a context of frictions between competent authorities and local citizens, which makes it often appear "in contrast" to those of the local government [8].

Fieldwork on the case enabled us to interview the initiative's participants are demonstrating that the initiative faces the following challenges that prevent it from having more impact:

I. language-related barriers that create difficulties in entering English-dominated citizen science fora;
II. struggles to financially sustain data collection analyses and communication, coupled with a lack of personnel dedicated to run the administrative and financial sides of the initiative, which makes the option of applying for grants very demanding and almost prohibitive, in addition to the language barrier that already makes it hard (application to European grants, for example, demand English fluency);
III. different needs from those often shared by mainstream citizen science, including the need for legal support for standing in court when needed and for advancing legal requests, such as access to documents held by competent authorities;
IV. lack of communication channels with competent institutions and often-reported denial of spaces for dialogue and confrontation with governmental actors, both at a local, national and international level.

2. Takeaways from the discussion

After these prompts, we asked the discussants to react with spoken interventions and/or drawings. A series of drawings and keywords extracted from the session can be found in the annex. The ultimate aim was to draft a "manifesto" voicing the need for reactive environmental citizen science and sketching avenues to ensure that this practice can flourish and have an impact. The session was well attended by a diverse array of participants, from academics, to non-governmental organization (NGOs), and to practitioners. The important takeaways from the session are summarized below in a short manifesto:

I. In approaching reactive citizen science, the first steps that researchers and institutions should take is to engage community leaders who can act as mediators between the community and the external actors. These mediators can help frame the problem that the community is addressing with citizen science and voice collective demands (e.g., demands of recognition, of specific support).

II. Considering the threats that environmental defenders are facing in an era of environmental disinformation, in particular the silencing of protest and the strategic attacks from corporations and governments in the form of SLAPPs, a legal intervention is urgent, with the aim to ensure that the contribution of environmental defenders, including the civic sentinels, is recognized. Attempts in this sense are ongoing, for example, the proposed EU directive[iii] against manifestly unfounded or abusive court proceedings aimed at silencing and discouraging environmental protest and dissent. Another legal strategy could be to give recognition to a certain natural body (for example a river) in the form of legal personhood and then recognize the right of the sentinels to act as nature "guardians" on its behalf.

III. As most civic sentinels do their monitoring during their free time, it emerged that there was a need to provide not only legal but also social support to these sentinels in the form of a "labour union" but without using a union, which may sound like a contentious concept. There is a need to explore through selected case studies, at different geographical scales, with specific communities, which type of structure would work in a given context. An inspiration on how to structure this support to fit citizen science needs could be the example of the U.S. Citizen Science Association's experience at the Emmett Environmental Law Centre, Harvard University, with a space for asking a legal question open to any citizen scientist.[iv] Existing Citizen Science Associations (CSAs) could step in by providing resources and spaces for legal advice and social security to the sentinels (e.g., offering training on possible risks, medical aid and insurance). Funding could come from CSAs members, NGOs like Client Earth, cascade funding from bigger (e.g. Horizon Europe) projects, or crowdfunding.

3. Theoretical reflections and conclusion

Moving from these applied reflections to the theoretical level, the session was also an occasion to discuss how the sentinels performing reactive citizen science could help us embrace "non-human worlds", such as plants and fungi suffering the impacts of contaminants, in the way we make decisions about the environment. Offering their perception of the non-human (or "more than human", citing scholars from the Sovereign Nature Initiative),[v] the civic sentinels can go beyond "facts reporting" to instil in the evidence they report also beliefs, imagination, and—at times—an almost spiritual (re)connection with nature that happens when humans

monitor the non-human with their bare senses. They "hack" institutional knowledge, enrich it with their own very situated understanding of the environment, also embedded with shared imaginaries and values, and offer it back to broader publics in a decentralized manner. Decentralized and non-hierarchical systems, like networks of reactive citizen science, can be advantageous, as they may prove to be strategic and effective in offering a fine-grained oversight of the status of nature. Yet, actors in these networks may be more vulnerable to attacks and silencing attempts (e.g., from private corporations and hostile governments) as in any node of the "net" they are relatively alone.

The civic sentinels protect nature as "stewards" in a legal, emotional, sensorial and scientific way. The law, however, scarcely captures this multifaceted dimensions of nature protection. Acting on their behalf, the civic sentinels could be regarded as "nature's representatives" with a clear legal role in the system. This can occur especially in those cases where nature itself has been granted rights of its own, for example the case of Rio Atrato (Colombia), of Wekiva River (Florida), of Te Urewera National Park (New Zealand) and of Turag River (Bangladesh). In these cases, the sentinels would act "on nature's behalf" and their intervention could be considered a legitimate "extension" of the protection that the system grants to nature itself.

However, when this is not the case, the law does not offer, as such, a legal recognition to the sentinels and in general to environmental defenders, unless they manage to demonstrate that the act of monitoring is an exercise of one's own rights, for example of the right to live in a healthy environment. One limitation is that often among the sentinels there is no clarity on existing rights and low trust in their enforcement. Recognizing and communicating a new right, like the "human right to contribute to environmental information" could be a radical legal innovation that offers legitimacy and protection to the sentinels. Yet, it may also risk hampering innovation from below as the law tends to capture the status quo and "close" it down, compelling the reality to fit to set rules. In this sense, we may need to work more at a socio-political level than at a legal level, ensuring a strong and sustained support from society (e.g., from journalists and lawyers) and from institutions (e.g., public libraries and research centres) to the work of the citizens.

At a subsequent session held by SensJus at the European Environmental Agency, Copenhagen, for a network of European Environmental Protection Agencies (EPAs), and specifically the Interest Group on Citizen Science, several EPAs shared the clear need to be provided with tools to identify "reliable" citizen initiatives as they lack the tools to establish cooperation with the most grassroots-driven initiatives. This may suggest that EPAs tend to work more with established and "visible" citizen science projects, whereas smaller and more reactive projects lack this opportunity. In a way, this is reasonable, as EPAs often cannot even find out about the existence of these initiatives. From our exchanges with this network, however, there emerged a willingness to discover "the good" behind these less visible projects, and to identify intermediaries (such as citizen science associations) that could help establish a dialogue (which should not become control) between EPAs and more local, smaller citizen science initiatives.

References

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Endnotes

[i] See https://sensingforjustice.webnode.it/.
[ii] See https://covacontro.org/la-campagna/.
[iii] See https://ec.europa.eu/commission/presscorner/detail/en/ip_22_2652.
[iv] See https://citizenscience.org/get-involved/working-groups/law-policy/ask-a-legalquestion/.
[v] See https://constitutionalizing-anthropocene.org/events/reconfiguring-more-than-human-normativities-strategic-litigation-collective-actions-and-sensing-technologies/ and http://sovereignnature.com/experimental-zone-event-1.