Supporting Citizen Science in Academia and Beyond

16 January 2020, ETH Zurich

Executive Summary

On January 16th 2020, about 100 Citizen Science (CS) practitioners and researchers gathered at ETH Zurich from all over Switzerland to discuss the basis for a common strategy to promote Citizen Science in Switzerland, focussing on the role of Academia.

At the heart of the event was a series of six workshops, where participants shared their vision, experience and expertise on the topics of: motivations and incentives for researchers, CS infrastructures, CS in curricula, early career perspective on CS, funding for academic CS, and evaluating CS. The event included also insightful speeches from strategical actors in the field: Claudia Appenzeller, Secretary General of the Swiss Academy of Sciences, Michael Hill, Deputy Director of Strategy at the Swiss National Science Foundation, and Michael O. Hengartner, president of swissuniversities, shared perspectives on citizen science and plans for the future.

This summary consolidates the outcome of final reports from the workshop discussions, which featured some recurring topics and suggestions that cut across the different themes and emerge as the most relevant for the community.

CITIZEN SCIENCE AND ACADEMIC CULTURE

"**Research excellence**", a concept dear to academia, is often at the core of the complex relation between CS and academia. In CS, research excellence includes multiple aspects, from quality of research data to level of participation and agency of citizens in the overall research process. Many discussions at the workshops focused on the need to **redefine** and **diversify** this concept. This is not an easy task, considering the intrinsic "fluid" quality of any CS research effort, and its grassroots nature.

The need emerged also for a **fundamental shift in the academic culture**, as CS entails embracing activities and skills beyond traditional methods, such as outreach and communication with diverse audiences, dealing with unforeseen developments, and embracing challenges as valuable learning processes.

Evaluation criteria for career advancements have to be redefined as well, acknowledging success in different and new ways (for instance recognizing that doctoral students involved in CS may acquire a broader set of skills and competencies compared to their peers). Notably, **impact factors** need to be adjusted in order to allow for the specific challenges of CS projects – and definition of impact needs to include societal and social impact to be favourable to a broader acceptance of CS.

Another academic aspect that would need revision is the development of **curricula**: the shared sentiment at the workshops was that curricula should be more flexible and CS should be included as early as possible both as a subject of teaching/courses and as a methodology for research.

CS should be integrated into **teaching** – and teachers should be encouraged to innovate and include CS at all levels from undergraduate courses to PhD training, and in different ways (i.e. non-conventional ways of learning, including art, theatre, as well as experiential learning such as project based learning and learning-by-doing). Ideally, every university should nurture and support CS practitioners, and be able to "train the trainers".

The uncertainties introduced by CS may have an impact on **early career researchers** different than on more senior researchers. These include delays introduced by fluctuation in participation, or by the long-term nature of the co-creation process. Particular support may be achieved acknowledging early

career researchers' achievements, for example through awards.

CITIZEN SCIENCE METHODOLOGY

Easy access to **state of the art guidelines** and top-standard methodologies is considered essential to facilitate CS adoption. This can be in the form of recommendation, checklists, "cookbooks", or diverse forms of (interactive) training. It is important to include examples of successes and failures as a way to learn from past experiences.

Evaluation of projects needs to be considered as a structural part of the process, a continuous practice embedded in the procedures and facilitated by tailored tools. Criteria for evaluation frameworks should be based on a transparent, mutually agreed, process-oriented approach being sensitive to regional contexts and different scientific disciplines involved. Different dimensions need to be considered i.e. scientific impact, empowerment of participants, education, learning and impact to the wider society.

Ethics was mentioned as well as an essential component of the methodology. However, while most agree on the importance of transparency, accessibility, dignity, in any research project (let alone the ones involving citizens), some perceived the implementation of ethical procedures and processes at the university as potentially lowering **efficiency**. A balance is needed, that can be reached by standardizing procedures and facilitating access to agreed guidelines.

ROLE OF CITIZENS

Many conversations touched on the **role of citizens** as co-creators of CS projects. Most of the workshops agreed that citizens should have the opportunity to participate as much (and as early) as possible, and they should be given tools and incentives for participation equivalent to the ones for scientists. This would allow a more balanced mix of scientist-generated and citizen-generated initiatives. In both cases, "**co-creation**" ie. maximizing the collaboration between the two communities in (potentially) all phases of the research cycle, is considered an essential element to optimize all outcomes.

There is a strong feeling that to achieve this, the conversation between the two communities should be facilitated with the implementation of **easily accessible interfaces** that lower the barriers to communication, and with the establishment of a common language for mutual understanding and empowerment.

Other aspects that would facilitate citizens' participation and bottom-up projects include **financial support** – which is currently provided only to scientists (SNSF, EU, and others).

Two more subjects emerged from the discussions, related to citizens. The first concerns the **subject of research**: while "blue sky" projects are sometime crucial to advance knowledge in certain fields of science, projects that reflect local needs and have a strong **social component** are often felt to be more interesting and relevant for citizens.

The second is the need for better, more professional **communication**, and wider reach. CS needs a new narrative and better storytelling, and could profit from professional marketing tools and more explicit help of academic communication services.

FUNDING CITIZEN SCIENCE

Funding bodies and research institutions should consider that CS projects have a lot more stakeholders in society and therefore work differently from 'classic' research. **Societal valorisation** of CS projects need to receive a lot more attention and support.

There is the need to develop **new funding schemes** to facilitate adoption. This can be in the form of direct funding, but also by developing pathways from seed funded small scale projects to implementation funding or growth funds for successful projects. Also, public/private partnerships could be explored to this end.

Sustainability of projects should be kept in mind, and project leaders need to think of how they will valorise/sustain projects after funding ends.

INFRASTRUCTURES

Several conversations highlighted the interest in establishing a **common infrastructure** to support scientists and citizens in designing and implementing CS research projects.

Practitioners invest significant resources in implementing projects, sometime advancing by trial and error, often reinventing the wheel for lack of better options, and/or unawareness on what has been already done by other groups, departments, institutions. A central CS infrastructure (or resource centre) could:

- Provide **shared knowledge** in the form of best practices and guidelines, and gather questions and policies regarding CS;
- Provide methodological **support**, research support, training for citizens and researchers, "training for the trainers";
- Centralise information for **funding;**
- Provide **tools** and practical support for CS project development (platforms, web, app, toolkits) making sure they offer an excellent user experience;
- Provide standards (metadata) and guidelines for FAIR **data** gathering and storage, making data and knowledge obtained with CS projects reusable for science and for policy. Potentially, it could include a central database to avoid multiple databases based at universities;
- Help **scaling up** successful local projects to nationwide or international projects.

Overall, it was felt that Switzerland would be in the position of establishing the first example of national CS infrastructure, potentially federating existing and complementary expertise present in Swiss universities and research institutions.