

Case Study of a Workshop for the Ecological Redirection of a Public Science Institution

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Abstract

In the face of the environmental and climate crisis, many organisations are being led to branch out, to take a path that shifts away from their original practices towards more sustainable futures. A variety of initiatives have emerged as a result of such concerns, aiming to facilitate that sought-after change. I shall explore how the use of collaborative workshops can be a tool in these environmental transition dynamics to support a practice of ecological redirection. In that context, this paper discusses the case of a speculative workshop that was designed in the context of the ecological redirection of the French Cité des Sciences et de l'Industrie. A particular focus is given to the design process of the workshop aiming to enhance the overlooked voices of local environmental activists and the tools that were developed in that context, proposing a methodology for a transition workshop.

Keywords: Workshop, Transition, Ecological Redirection, Museum, Design

Introduction

Transition Design is critical for successful society-wide environmental and climate change transitions. As (Irwin et al. 2022) observe,

Transition Design acknowledges that we are living in ‘transitional times’ and takes as a central premise the need for societal transitions to more sustainable futures. It argues that design has a key role to play in these transitions and applies an understanding of the interconnectedness of social, economic, political and natural systems to address problems at all levels of spatio-temporal scale in ways that improve quality of life.

Ecological redirection is a transitional design practice concerned with the shift of organisations away from anthropocentric modes of existence (Bonnet, Landivar, and Monnin 2021). It offers analytical possibilities for organizational transition.¹ Participatory workshops are key tools for ecological redirection, facilitating individual life transformations through community-led initiatives. However, there is a gap when it comes to transition workshops relating to ecological redirection specifically. Here I examine the design of a “sustainable transition workshop,” including the transition/redirection tools developed for and during the workshop. The workshop was delivered in collaboration with Origens Media Lab and the Cité des Sciences et de l’Industrie, Paris, France to understand the ecological concerns and vision of climate activist youth living in the Parisian region. Using the case study methodology of (Picketts et al. 2012), I contribute to existing workshop case study literature and offer insights into transition workshop design to improve their efficacy for practitioners and organisations.

Related Work

In this section, I shall delve into three notions that are at the heart of this article. These include *workshops*, *ecological transitions* and specifically *ecological redirection*.

Workshops

Literature on workshops in the context of climate change often have a tendency to focus on the **results** of said devices. They focus on the

outcome of workshops rather than what their methodology entails or how they might have been built. Picketts et al. offer an interesting example in that context, as they unpick what they learnt about adaptation to Climate Change from a workshop (Picketts et al. 2012).

Participatory Design literature offers some insight into these subjects through the study of participatory or creativity levers (McKiligan, Seifert, and Gonzalez 2010). Cooperation in such contexts may necessitate appropriate mediation (Fougères and Ospina 2010).

This article explores the design of a participatory workshop that makes use of alternative realities in collaborative inquiry process. In that context, Dindler and Iversen's work on fictional inquiry offers some insights on the strength of fictional frames to bring forth participant ideas surrounding the future of museums (Dindler and Iversen 2007).

This case study will aim to offer insights into the design process of a workshop using speculation as a form of fictional enquiry, adding to the existing workshop case study literature.

Transition towards carbon free-futures

Ecological Transitions have, on their side, been thoroughly studied. Transition initiatives concern many disciplines, reflecting the complex nature of this environmental crisis and its often cited climate change aspect.

Such a focus on transition connects with the often cited need for a paradigm shift (Ichioka and Pawlyn 2021; Head 2016). Ideas of transition connect to society-wide shifts, concerning education, energy (Jorgenson, Stephens, and White 2019) or economical transformations (Monnin 2018). Climate change itself presents itself as a transitory state for ecosystems as deep changes in their environment impact the ways one might imagine their future (Grimm et al. 2013). Transition studies, says Caletrío, "is concerned with long-term processes of radical and structural change to sustainable patterns" (Caletrío 2016).

In line with Transition Studies, Irwin et al. propose to explore Transition Design (Irwin et al. 2022) :

Transition Design acknowledges that we are living in 'transitional times' and takes as a central premise the need for societal transitions to more sustainable futures. It ar-

gues that design has a key role to play in these transitions and applies an understanding of the interconnectedness of social, economic, political and natural systems to address problems at all levels of spatio-temporal scale in ways that improve quality of life.

Literature also concerns itself with the community-led shifts through the example of the aforementioned transition towns initiative, which seems to offer a way to facilitate individual life transformations through the help of communities. My work concerns a specific transitional practice named **ecological redirection**. This concept has been theorised by Landivar, Monnin and Bonnet in France, and concerns itself with the shift of organisations away from anthropocentric modes of existence (Bonnet, Landivar, and Monnin 2021). Research engaging with that concept focuses on case studies of organisations or phenomena in crisis in the context of the anthropocene such as an exploration of swimming pools (Landivar 2022; Marchand and Bouteyre 2023). Origens Media Lab, the organisation that hosts these researchers, can be asked to perform an analysis of the possibilities for ecological redirection of organisations.

Following practices of ecological transition and transition design, this case study offers insights into the cogs of workshop design, which should be relevant for practitioners and organisations aiming to make use of workshops in their transition journeys.

Though there is an abundance of research using of case studies to explore practices surrounding the environmental crisis, there is still a gap when it comes to transition workshops relating to ecological redirection specifically. This is the research gap I will attempt to cover in this article.

Case Study about the Cité des Sciences et de L'Industrie 2050 Workshop

Case study context

In this section, I will explore the context of the workshop I designed. This workshop was designed surrounding a collaboration between Origens Media Lab whom I was working with and the Cité des Sciences et de l'Industrie. A report was mandated by the latter, asking the lab to investigate its potential ecological redirection. In that con-

text, I created a workshop, aiming to bring forward the voices of climate activist youth living in the region. The workshop serves to collect their vision for 2050 in line with their current ecological preoccupations. This section delves into contextual elements pertaining to the CSI and the participants of the workshop – concerning the CSI, the following section delves further into the methodological framework surrounding its contextual investigation.

The Cité des Sciences et de l'Industrie

The Cité des Sciences et de l'Industrie (CSI) is a Public Institution situated in the 19th arrondissement of Paris, France. It is comprised of a Museum, a Library, and a variety of public services including a Conference center, job services and a collaborative workshop.²

In that multifunctional space, I conducted a total of five informal observation days over the months of March and April 2023, aiming to get a sense of the place beyond its numerical values. They were supplemented by informal interviews which were recorded through the use of handwritten notes. This allowed to bring to light the following of many insights about the visitors of the CSI:

Many of these visitors are children younger than 12. Standing around the Main Hall of the CSI, one can observe a flurry of children, with their schools during weekdays or their families on weekends. In one informal interview, a science mediator told me that her space was aimed at older teenagers and adults, yet adults seemed to come only to bring their children. There are specific areas dedicated to children, including the Cité des enfants which is aimed at 7 to 12 year olds and hosted over 700 000 visitors in 2022 (Universcience 2023b). The difficulties to attract youth beyond the age of 12 (teenagers and young adults) as well as the desire to do so fed into the design of the workshop as they were the voices I sought to collect. It also demanded that I incorporate appropriate activities, which is something I will delve into further in this paper, in the workshop design methods section (see section 3.2.4, Collective collaborative thinking phase).

Different populations visit the museum and the rest of the CSI (demographic use differentiation). If just over 50 000 people visited the library in 2021 (Universcience 2021), this component (the second most important one in the CSI following the museum), welcomes a very different kind of population. According to the

Director, this part of the CSI is mostly attended by the local migrant population as well as students. This demonstrates how multifaceted the CSI is, but also how compartmentalised it is, which fed into the design of workshop tools through the representation of a CSI which's uses are split between different divisions (also see section 3.2.4, Collective collaborative thinking phase).

Workshop Participants: European Climate Activist Youth

The workshop that is examined in the following section was designed to collect the perspective of potential future users of the CSI who are particularly preoccupied with the environmental crisis. I chose to engage, in that context, with climate activists who were part of youth activist groups. Little work can be found surrounding French environmental activism, yet the case of Europe offers interesting insights into that question.

Climate Activism in Europe is often perceived as middle-class, university- educated and privileged. (Cotgrove and Duff 1980; Kriesi 1989; Giugni and Grasso 2015). However, Della Porta and Portos note that reality is more contrasted (Della Porta and Portos 2023). Through work with Fridays for Future (FFF, a group that also exists in France) they note that:

our empirical results challenge the idea that, in Europe at least, the FFF marches are predominantly populated by 'rich kids'. Rather, despite some cross-national differences, we noted that about half of the surveyed activists self identified as lower/ working or lower- middle classes.

In the context of the CSI, it is worth noting that activists might have variable relationships with institutional responses to the environmental crisis.

Della Porta and Portos also delve into that question:

the social background seems to impact FFF activists' reliance on different strategies, as lower/ working class activists are less trustful of companies/ markets and individual lifestyle choices to cope with environmental challenges and stop climate change.

Therefore, the CSI workshop design needed to consider activities that would open up for creative suggestions from the climate activist youth regarding possible futures for the Cité de Sciences et de l'Industrie. It was decided to engage in a four-stage co-operative inquiry workshop aiming to bring forth such suggestions from Climate activist youth regarding possible futures in the 2050 horizon for the Cité de Sciences et de l'Industrie.

Workshop Design Methods

In order to open alleyways for the ecological redirection of the CSI, I followed a specific design methodology which will be explored in this section. The design process began with a cartographic investigation of the CSI before moving onto a cosmological exploration. These fed into the development of the role of the researcher-facilitator within the workshop, but also into the organisation of the four-stage workshop which will be discussed in the next section.

Cartographic investigation

In the process of designing this workshop, I began with a thorough mapping of the CSI, aiming to delve into the various parties that existed within the place. I looked into archives concerning the creation of the place, to bring forth a historical perspective of the genealogy of the place. That inquiry included an investigation through two archives that exist within the city of Paris. One of them is the Kandinsky Library (Bibliothèque Kandinsky 2023), which has collections pertaining to museums overall, including old exhibition catalogues and some documents connecting with the birth of the CSI as it is known today. I also investigated the architectural genesis of the CSI including documents that were provided by the state to architects. To do so, I went to the Modern Architecture Archive Center in Paris to consult files relating to the original project, produced by the architect, Adrien Fainsilber, himself (Fainsilber 1986).

This ground work was completed by an online exploration that included a look into the place of the CSI within the urban organisation of the city itself through the use of the Paris 'Plan Local d'Urbanisme' (PLU), what one might call a General Urban Organisation Plan ('Le Diagnostic Territorial Du PLU' 2023).

These various sources allowed for me to build a general overview of the CSI before delving into work directly with participants.

Through the use of cartography, the researcher sheds light over possible expectations they might have for participant's responses. This allows for the researcher to ensure an understanding of their own biases towards the place, opening up possibilities to develop options for the participant to engage with, including perhaps more neutral grounds.

This also allows the researcher to position themselves as detainers of extended knowledge within collaborative frameworks, offering enhanced perspectives on participant's insights.

When it comes to designing experiences aiming to offer situated insights surrounding possible futures in a given place, cartography allows for some unexpected questions to emerge, feeding into the design of such experiences. In that context, the vast scale of the CSI building and the historical intentions behind the design of the institution offered critical insights to bring forward with participants later on. The architectural division of the building fed into the design of a prototype that participants were invited to design from (see section 4, Collective Collaborative Thinking Phase).

Identifying Tensions and Institutional Cosmologies

The cartography was completed by another, more critically-oriented piece of work. Drawing from a pragmatic, object oriented cartography (Rossetto 2019), I built a more interpretative cosmography. This work aimed to identify underlying ideologies and modes of thinking/perceiving that could be interpreted from prior observations. The word 'cosmography' refers to a graphic representation of CSI's cosmologies. The notion of cosmology is used in line with French anthropologist Descola's work (Descola 2015) which uses that word almost interchangeably with the idea of ontologies, referring to societal representations of the world and its origin (Santos 2013). Key findings included a presence of tensions between different philosophies of science and technology and the role of the CSI in wider society.

Co-operative inquiry: A Multifaceted researcher

This cartography and cosmography presented themselves as an important part of preparatory work for the workshop, and served to develop one important aspect of the event, whereby the researcher

and facilitator of the workshop also became a device, not far-removed from it but active within its context.

This methodological point spurs from a theoretical assumption that it is impossible to avoid both bias and impact on the researched piece, and therefore not incongruous to fully acknowledge that reality. This allows for a more humane mode of facilitation in line with what Heron and Reason call 'co-operative inquiry' (Reason, Bradbury, and Heron 2005):

Co-operative inquiry is a way of working with other people who have similar concerns and interests to yourself, in order to: (1) understand your world, make sense of your life and develop new and creative ways of looking at things; and (2) learn how to act to change things you may want to change and find out how to do things better.'

Effective Design Results

This sections explores results from a workshop design perspective, engaging with ways in which the workshop was shaped. It was divided into four main phases. These phases were supplemented by custom-designed tools that will also be described in this section.

Four Phases

The preliminary work led to the building of a workshop divided in four distinct phases for a two hour session. These included an introductory visit, a individual ideation phase, a collective collaborative thinking phase, and a conclusive feedback phase.

- **Introductory phase**

The introductory phase begins with the arrival of participants in front of the CSI. This is where the mapping of the place through its pragmatic cartography and its cosmological analysis come into hand. That previously accumulated knowledge presented itself as food for discussions with participants. This is where the facilitator/ researcher presents themselves most as a live device, whose prior investigations allow for a conversational approach to the visit of the place. This is when we collectively decided where in the CSI the rest of the workshop would take place, in this case on a table that was provided for visitors to reflect.

- **Individual ideation phase**

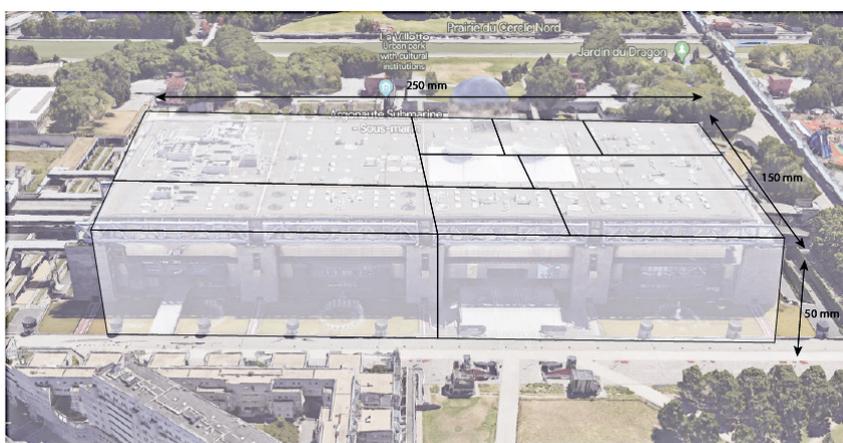
The second phase requires sitting down and writing/ sketching ideas. Participants were prompted to imagine the CSI in 2050 and speculate on what they hope it might house then. This individual phase aims to facilitate individual participant engagement by allowing them to “digest” prior information through personal reflection. This personal reflection is particularly important as the participants are chosen for their individual qualities - in regards to their belonging to a climate activist community.

- **Collective collaborative thinking phase**

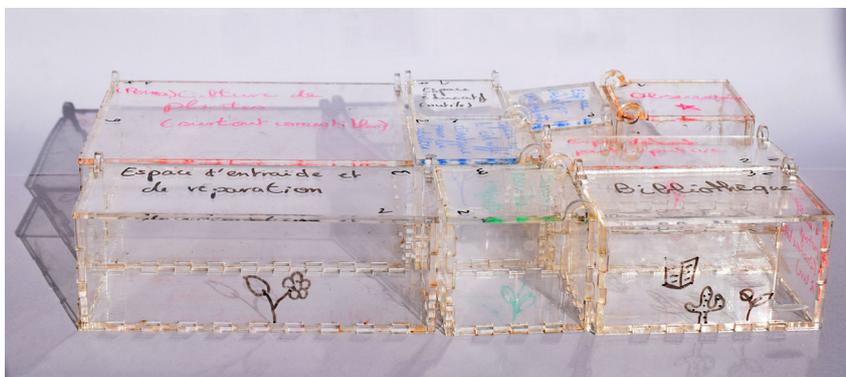
The third phase draws upon previous phases to paint a collaborative, idealised picture of the CSI. It also presents itself as a somewhat playful practice, which facilitates the engagement of the youthful participants by encouraging creativity and positive emotions (Doyle 2020). This phase is a co-design phase, whereby possible futures are imagined in collaboration, in line with the evolution of design from user-centered to collaborative practices (Sanders and Stappers 2008).

The introductory visit of the museum and some of the other spaces of the CSI allows for participants to have a sense of the scale of the place. This situated experience was translated through the use of a model representing the CSI at a scale of 1/1000. Participants drew on ideas from the ideation phase to collaboratively discuss the future of the CSI by assigning uses to different sized blocks within the model.

Figure 1:
 the CSI participatory model



A : a sketch of the model, overlaid with 3d imagery of the CSI



B : the model, final version as used by participants. The model is composed of an assemblage of different sized transparent acrylic boxes composing a simplified version of the building as an overall cuboid. The variety of sizes allows for participants to prioritise some uses over others. They are also invited to subdivide some blocks if the scale seems too big, or use more than one block if they wish to use more space.

- **Conclusive feedback phase**

The final phase acts as a conclusion to the workshop. It invites participants to discuss the results, but also the format of the workshop with the facilitator. One important aspect of the phase also includes the way participants have felt during that workshop, to measure the short-term effect of the event on participants.

Conclusion

This case study offers a number of observations. This workshop was designed aiming to build a qualitative dataset of future potential for the Cité des Sciences et de l'Industrie according to young climate activists. With that aim in mind, the following observations surrounding its design process are the main contributions of this article:

Putting subjectivity at the heart of the Workshop

- **The place of the researcher-facilitator**

In this context, the researcher is also the facilitator of the workshop. Their multiple roles before (mapping out and analysing the CSI) and during the workshop (as a facilitator) feed into its design and the final appearance of the workshop depends on their work prior but also their subjective personality. Embrac-

ing that reality, I have chosen to position myself fully within the workshop design.

- **Engaging dialogue with specifically situated participants in a workshop for transition design research**

Feeding into the design of the workshop was also the choice of participants. I chose to work with climate activist youth to gather subjective perspectives on possible futures for current infrastructure.

- **A blend of individual and collaborative practices**

A choice was made to use both individual and collaborative practices separately within the final workshop design. This choice allows for participants to take time between a visit of the place and a collaborative

Situated Design Methods and Tools

- **Investigate to situate**

In the methods used to design this workshop, a strong importance was given to investigation through a cartographic and cosmographic explorations. These served to better situate the workshop through its various phases.

- **A phase-centered design**

This workshop was indeed designed using the notion of phases to designate clear divisions within the various activities. These script the activities of the session for better facilitation, but also making sure there is progress between different activities

- **A place-oriented phase: exploration as a protreptic activity**

In one phase of the workshop, participants are invited to engage with the place through a visit enhanced by the researcher's prior investigation. This exploration allows for participants, in dialogue with the researcher (then acting as a facilitator), to develop a further understanding of the environment they will be speculating about in later phases.

Further Discussion

In this article, we saw how subjective engagement and situated methods can lay grounds for the design of participatory workshops in the context of the ecological redirection of an organisation. If a case study offers valuable contributions through such observations, further research is needed when it comes to the design of ecological

transition workshops overall, through the development of a taxonomy of transition workshops for example.

References

- Bibliothèque Kandinsky. 2023. "Accueil | Bibliothèque Kandinsky". <https://bibliothequekandinsky.centrepompidou.fr/>
- Bonnet, Emmanuel, Diego Landivar, and Alexandre Monnin. 2021. *Héritage et Fermeture: Une Écologie Du Démantèlement*. Éditions divergences.
- Caletrío, Javier. 2016. "Transition Studies". *Mobile Lives Forum*, March. file:///C:/Users/anhel/Downloads/mobile_lives_forum_-_transition_studies_-_2015-12-15_Caletrio.pdf
- Cotgrove, Stephen, and Andrew Duff. 1980. "Environmentalism, Middle-Class Radicalism and Politics". *The Sociological review*, 28(2): 333-351. <https://journals.sagepub.com/doi/10.1111/j.1467-954X.1980.tb00368.x>
- Della Porta, Donatella, and Martín Portos. 2023. "Rich Kids of Europe? Social Basis and Strategic Choices in the Climate Activism of Fridays for Future." *Italian Political Science Review/Rivista Italiana Di Scienza Politica* 53 (1): 24-49. <https://doi.org/10.1017/ipo.2021.54>
- Dindler, Christian, and Ole Sejer Iversen. 2007. "Fictional Inquiry—Design Collaboration in a Shared Narrative Space." *CoDesign* 3 (4): 213-34. <https://doi.org/10.1080/15710880701500187>
- Doyle, Julie. 2020. "Creative Communication Approaches to Youth Climate Engagement: Using Speculative Fiction and Participatory Play to Facilitate Young People's Multidimensional Engagement With Climate Change". *International Journal of Communication* 14: 2749-2772.
- Fainsilber, Adrien. 1986. "Cité Des Sciences et de l'industrie, La Villette, Paris 19e." Fond Adrien Fainsilber. CENTRE D'ARCHIVES D'ARCHITECTURE CONTEMPORAINE.
- Fougères, Alain-Jérôme, and Victoria Eugenia Ospina. 2010. "A Mediation System to Facilitate Cooperation in a Co-Design Platform." In *2010 10th International Conference on Intelligent Systems Design and Applications*, 664-69. <https://doi.org/10.1109/ISDA.2010.5687189>

- Giugni, Marco, and Maria T. Grasso. 2015. "Environmental Movements in Advanced Industrial Democracies: Heterogeneity, Transformation, and Institutionalization." *Annual Review of Environment and Resources* 40 (1): 337–61. <https://doi.org/10.1146/annurev-environ-102014-021327>
- Grimm, Nancy B, F. Stuart Chapin III, Britta Bierwagen, Patrick Gonzalez, Peter M. Groffman, Yiqi Luo, Forrest Melton, et al. 2013. "The Impacts of Climate Change on Ecosystem Structure and Function." *Frontiers in Ecology and the Environment* 11 (9): 474–82. <https://doi.org/10.1890/120282>
- Head, Lesley. 2016. *Hope and Grief in the Anthropocene: Re-Conceptualising Human–Nature Relations*. London: Routledge. <https://doi.org/10.4324/9781315739335>
- Hopkins, Rob. 2010. "The Transition Handbook: from oil dependency to local resilience; Manuel de transition. De la Dependance au Petrole a la Resilience Locale." France. <https://www.osti.gov/etdweb/biblio/21539610>.
- Ichioka, Sarah, and Michael Pawlyn. 2021. *Flourish: Design Paradigms for Our Planetary Emergency*. Triarchy Press.
- Irwin, Terry, Cameron Tonkinwise, Gideon Kossoff, Terry Irwin, Cameron Tonkinwise, and Gideon Kossoff. 2022. "Transition Design: An Educational Framework for Advancing the Study and Design of Sustainable Transitions." *Cuadernos Del Centro de Estudios En Diseño y Comunicación. Ensayos*, 105: 31–72. <https://doi.org/10.18682/cdc.vi105.4188>
- Jorgenson, Simon N., Jennie C. Stephens, and Beth White. 2019. "Environmental Education in Transition: A Critical Review of Recent Research on Climate Change and Energy Education." *The Journal of Environmental Education* 50 (3): 160–71. <https://doi.org/10.1080/00958964.2019.1604478>
- Kriesi, Hanspeter. 1989. "New Social Movements and the New Class in the Netherlands." *American Journal of Sociology* 94 (5): 1078–1116. <https://doi.org/10.1086/229112>
- Landivar, Diégo. 2022. "How to Close a Modern Parenthesis: The Case of Swimming Pools." *Multitudes* 89 (4): 200–203. <https://doi.org/10.3917/mult.089.0200>
- Le Diagnostic Territorial Du PLU. 2023. <https://www.apur.org/dativiz/plu-diagnostic-territorial/>.

- Marchand, Bastien, and Philippe Bouteyre. 2023. "Fermer l'héritage de l'Urbanocène." *lest.fr*. Published January 16, 2023. <https://lest.fr/fr/publications/2023/fermer-lheritage-de-lurbanocene>
- McKilligan, Seda, Colleen Seifert, and Richard Gonzalez. 2010. "Cognitive Heuristics in Design: Instructional Strategies to Increase Creativity in Idea Generation." *AI EDAM* 24 (3): 335–55. <https://doi.org/10.1017/S0890060410000235>
- Monnin, Pierre. 2018. "Central Banks and the Transition to a Low-Carbon Economy." Council On Economic Policies, Discussion Note2018/1, Available at SSRN: <https://doi.org/10.2139/ssrn.3350913>
- Oxford Learner's Dictionary. 2023. "Workshop Noun - Definition, Pictures, Pronunciation and Usage Notes | Oxford Advanced Learner's Dictionary at OxfordLearnersDictionaries.Com." 2023. <https://www.oxfordlearnersdictionaries.com/definition/english/workshop>
- Picketts, Ian M., Arelia T. Werner, Trevor Q. Murdock, John Curry, Stephen J. Déry, and David Dyer. 2012. "Planning for Climate Change Adaptation: Lessons Learned from a Community-Based Workshop." *Environmental Science & Policy* 17: 82–93. <https://doi.org/10.1016/j.envsci.2011.12.011>
- Reason, Peter, Hilary Bradbury, and John Heron. 2005. *Handbook of Action Research: Concise Paperback Edition*. SAGE.
- Sanders, Elizabeth, and Pieter Jan Stappers. 2008. "Co-Creation and the New Landscapes of Design." *CoDesign* 4 (1): 5–18. <https://doi.org/10.1080/15710880701875068>
- Santos, Antonio Dos. 2013. "Philippe Descola, L'écologie des autres. L'anthropologie et la question de la nature, Paris, Éditions Quae, coll. Sciences en questions, 2011, 110 p." *Développement durable et territoires. Économie, géographie, politique, droit, sociologie* 4 (1): 1-5. <https://doi.org/10.4000/developpementdurable.9639>
- Squires, Roger SquiresRoger. 2005. "Ego." In *The Oxford Companion to Philosophy*, edited by Ted Honderich, (2 ed.). Oxford University Press. <https://www.oxfordreference.com/display/10.1093/acref/9780199264797.001.0001/acref-9780199264797-e-700>
- UNDP. 2021. "The Peoples' Climate Vote | United Nations Development Programme." Published January 16, 2021. <https://www.undp.org/publications/peoples-climate-vote>

Universcience. 2021. *Rapport D'activité 2021 Universcience*. https://www.universcience.fr/fileadmin/fileadmin_Universcience/fichiers/connaitre-universcience/_documents/rapports/2021/Universcience_Rapport_d_activite_2021.pdf

Universcience. 2023a. "Cité des sciences et de l'industrie - Nous connaître – Universcience." <https://www.universcience.fr/fr/nous-connaître/cite-des-sciences-et-de-lindustrie>.

Universcience. 2023b. "Fréquentation 2022." Published January 2, 2023. https://www.universcience.fr/fileadmin/fileadmin_CSI/fichiers/vous-etes/professionnel/presse-media/cp/US_CP_Frequentation2022.pdf

Notes

- 1 Origen Media Lab, for example offers ecological redirection analysis for organisations (Landivar 2022; Marchand and Bouteyre, 2023).
- 2 One might add that it is - if considered overall a museum - the biggest science museum in Europe. It is 250 m long, 150 m wide and 50 m high, for a total of 1 875 000 m³ (Universcience 2023a). The CSI employs 1051 people while it hosts over a million visitors every year (Universcience 2023b).