# Designing (the) politics of participation in science

**Adalberto Fernandes**

**Abstract**      Living Labs foster participatory prototyping and technology testing in "real-life" situations. The literature exhibits a weak approach to Living Labs' power relations. It is crucial to understand the visual apparatus employed by Living Labs because they model power relations inherent to participation, especially when commercial interests are involved. Some Living Labs' visual models display indifference towards power imbalances and unquestioned faith in progress, diminishing the space for divergent positions. Living Labs are just the newest manifestation of the fundamental challenges of making ethical participation and technological innovation compatible, given that increased participation may not translate necessarily into novelty.

**Living Lab's life exploitation**

Living Labs (LLs) are a way of making technology innovation and transfer better attuned to societal needs by introducing a strong element of participation input by agents other than science and the industry. These labs are facilities for prototyping and testing technologies with the participative and co-creative contribution of users inside environments established to be as close as possible to their everyday life encounters with technology [Pierson & Lievens, 2005]. [1] This kind of project uses visual schemes to order its various processes. For instance, visual models organize the different phases of participation, what are the players involved, the deadlines, and the expected outcomes. A promissory way of tackling the power effects of participatory projects lies in the analysis of the *visual* aspect of power. This can be a fruitful approach to analyse power relations, considering the typical heavy use of images in contemporary communication processes (e.g.: smartphones, computers, TV, PowerPoint presentations, social media, advertising, etc.). Given that we think and act upon the world with pictures, which bear the particular mark of their producers' perspectives and context, this means the guiding images of the world

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are *partial*. LLs' visual models or designs are not, thus, just "pure" or "neutral" representations of participation. They organize the world according to certain perspectives because different producers have different interests when they make images. In consequence, diverse modelling design practices open or close distinct possibilities. Therefore, we need a careful analysis of the visual apparatus adopted by LLs, which are used to model participation, something that has not been done.

Before tackling the visual dimension of power, it is necessary to understand how the literature approaches the power effects of LLs. According to the literature, the encounter between the market, science, and participation is unquestionably a *virtuous circle*. The LL calls for a "creative consumer that proactively co-creates value with companies" [Leminen, Westerlund & Nyström, 2014], establishing a perfect match between consumers and producers: "the capability of directly addressing a large number of additional potential customers whilst still within the technology development phase can be expected to significantly expand the potential market of services and solutions" [Eriksson, Niitamo, Kulkki & Hribernik, 2006]. Participation is, therefore, inserted into the logic of "business risk" and "acceptance" of commercial products. LLs embrace explicitly a strategic orientation towards technology consumption: "The integration of users and other stakeholders into development projects has proved to reduce business risks such as the invention and acceptance of products, services and applications" [Schumacher & Feurstein, 2007]. A simple question emerges: *how can we know if LLs are forcing market demand by making a technological need for users in the context of profit-seeking?* One thing is to receive users' input, but another thing is to exploit their contribution for profit. It is necessary to know how commercial objectives govern the possible technological solutions. The literature on LLs, with few exceptions [Pfotenhauer, Laurent, Papageorgiou & Stilgoe, 2022; Delvenne & Macq, 2020; Cardullo, Kitchin & Di Feliciantonio, 2018; Björgvinsson, Ehn & Hillgren, 2012], leaves this issue unquestioned. There is a need for extending the dialogue to those disciplines conducting critical readings of participatory projects in science [Carvalho, Pinto-Coelho & Seixas, 2019].

The literature does not seem to examine conveniently the power asymmetries between users, commercial agents, scientists, and political decision-makers engaged in LLs [Van Geenhuizen, 2019; Dutilleul, Birrer & Mensink, 2010, p. 64]. For instance, there are limits to the amount of knowledge publicly shared by businesses given their interest in exploiting collective participation for private profit through commercial secrets and patents [Dutilleul et al., 2010, p. 72]. This means users shape technology and help to create a profitable market but do not get a share of companies' profits, configuring a situation of exploitation. Transforming stakeholders into shareholders by offering a percentage of profits to users may be an important measure to curb these economic and knowledge asymmetries.

This business-type of thinking encountered in the literature is also present in the science policy associated with LLs, which had an important hallmark in 2006 with the creation of the European Network of Living Labs (ENoLL) during the Finnish European Union Presidency [Hirvikoski, 2018]:

> Develop real life user environments and provide new innovative skills to generate market up take and business growth. Developing a European network of Living Labs in the concept of eWork, providing services of large

deployment to the industry, bringing technology test-beds into real-life user environments [European Commission, 2005].

Market research is using subjects' "real-life" as an object of study to test technologies before they get into the market and workplace. This seems to be the major difference between LLs and other participatory projects in science: the private sector's aim of "business growth" exploits participation. In sum, LLs address social needs inside a framework based on technological fixes guided by corporate profit.

## Political design

It is now obvious that power relations pervade LLs. We propose to tackle this political dimension from the visual perspective, that is, focusing on modelling practices that order how subjects, technology, science and the market fit together (e.g. through schemes, doodles, visual maps, models, etc.). Following Rancière [2011a], the possibilities opened and closed by design are political, which means LLs' models should be critically analysed. Rancière offers an original path to approach the relationships between politics, aesthetics and dissensus, a contribution which could be useful to evaluate LLs' design power effects. One of the most important concepts of Rancière's proposal is the "distribution of the sensible" [*partage du sensible*]. Rancière [2011a, p. 12] says the concept points towards a "distribution of spaces, times, and forms of activity" affecting our "sense perception". This distribution is not merely a simple distribution of perceptions but always a political division: "Politics revolves around what is seen and what can be said about it, around who has the ability to see and the talent to speak, around the properties of spaces and the possibilities of time" (p. 13). Aesthetics is, for Rancière, politics because it contributes to shaping what someone can say and see in certain times and spaces. LLs' models set up a *politico-visual perspective* of the world. In LLs "the technique of prototyping defines modes of participation, what is visible and thinkable, what can be spoken and what is unspeakable" [Tironi, 2020]. To believe that LLs are a faithful "model society", which matches in a neutral form the way subjects handle technologies, is to forget how LLs "re-configure society around a new set of technologies, envisioned futures, and associated modes of governance" which demand a "greater scrutiny of how power is distributed" [Engels, Wentland & Pfotenhauer, 2019, p. 1]. It is, thus, necessary to approach critically LLs' modelling practices because they organize power relations inherent to co-creative and participatory science projects. *What are Living Labs' visual power effects?*

## Living Lab's police and politics of the sensible

Through a qualitative and exploratory political-semiotic analysis based on Rancière, it will be possible to pinpoint how visual apparatus perform the political strategy of some LLs. According to Rancière [2010, p. 205], the distribution of the sensible is fixed by a 'policed' order or is re-distributed and questioned by a 'political' order. Rancière uses these two terms abstractly. This means he does not relate them to any particular police institution or political party. This allows Rancière to transform those terms into general concepts to think about the aesthetics-politics relationship. To police or politicize are two general ways of distributing the sensible. The ordered and unquestionable distribution of places, sounds, times, words, etc. is what defines the *policing* of the sensible [Rancière, 2011b, p. 3]. For instance, when a student sits in a chair staring straightly at the

teacher, she is in a policed aesthetics. This aesthetic produces attention, narrowing alternative uses of vision, posture, etc. On the contrary, *politics* is for Rancière [2010, p. 130] the "activity that breaks with the order of the police". Politics is not "the configuration of a proper place, a non-polemical distribution of the sensible universe where what one sees, what one says, and what one makes or does are rigorously adapted to one another" [Rancière, 2011a, p. 40]. The policed consensus of the senses is something that would produce the dystopia of the impossibility of contesting, of speaking something original. Dissensus is, for Rancière [2010, p. 139], "conflict between sense and sense. Dissensus is a conflict between a sensory presentation and a way of making sense of it (…) This is the way in which dissensus can be said to reside at the heart of politics, since at bottom the latter itself consists in an activity that redraws the frame within which common objects are determined". Rancière provides two examples of dissensual political aesthetics. For instance, the moment workers use the night-time not to sleep, as expected by a distribution of the senses that requires sleeping during the night to work better during the day, but to plan the struggle against capitalism. Another example is when cleaning workers organize a strike and wave their brooms as a public sign of protest, instead of being used, as expected by policed consensus, to clean the street. Consensus is, then, an agreement between different meanings and senses, which are explained in the same way, reducing multiple divergences to a few prevalent readings (e.g.: the night is for sleeping, the broom is for cleaning).

A small sample of LLs' models available online was analysed to evaluate its policed or dissensual distribution of the sensible. They are not representative of the vast universe of LLs, making this exploratory analysis limited in its generalizations. The main aim here is to understand the analytical power of focusing on the aesthetic politics of participation. The LLs' visual schemes analysed are: *Proseu*, *Amsterdam Institute for Advanced Metropolitan Solutions's (AMS) Urban Living Labs*, *CIRC4Life* and *LIVERUR*. Given the impossibility of describing in detail the models, or including them in this exploratory essay, we suggest the reader to follow the links to these images listed in the reference list at the end. *Proseu*, in figure 4 of a 2019 report, uses a visual model accounting for the multiple concerns of participation ("cultural-discursive conditions", "technological-material conditions" and "regulatory and financial conditions"), which are listed inside three differently coloured circles [Pel et al., 2019]. These circles are connected by arrows. This visual presentation allows us to identify and relate different power dimensions (culture, discourse, technology and economy). The *Proseu* report also uses a model in figure 5 which has three arrows that show a change over time, each of them splitting into two additional arrows, progressing from the left to the right, culminating in various results of participation. This branched visual display foresees the prospect of various technological futures, instead of reducing them to one linear objective, leaving open multiple LLs' possibilities. More interesting is the description of the arrows' bifurcations as moments of "breakthroughs/setbacks" and "uncertainties", showing the convulsed dimension of participation.

In the visual summary of the book *Urban Living Labs: A Living Lab Way of Working* of the *AMS*, the LL's design features a zigzagging arrow going downwards, and along it are placed the different processes of co-creation [AMS Institute, 2017]. The arrow has three small loops. They signal moments of assembling "the right capabilities" (loop 1), "refinement" (loop 2), and "learning" (loop 3), which reduce the overly linear and progressive visual scheme of its technological innovation

model. Everything is, nonetheless, narrowed down to one type of future, given the arrow does not bifurcate. There is not any mention of the enduring power inequalities between different participants. *CIRC4Life's* website displays its LL as a rhizomatic connection between different circles that represent agents ("end-users", businesses, experts), outputs (reports) and processes (showcasing, prototyping), showing the interconnected nature between all the elements [CIRC4Life, 2019]. The circle representing the users is repeatedly placed in different phases of the LL, displaying a sense of permanent integration, without reducing their contribution to a secluded moment. However, there is no visual consideration of power imbalances in these co-creative processes, as if the visual multiplication of the presence of "end-users" sufficed to counterbalance businesses' and experts' power. Albeit the overall rhizomatic aspect of the scheme, all the processes are reduced to one endpoint, with a sole circle indicating "showcase", reducing the multiple possibilities of the LL. Finally, the *LIVERUR* LL model, in figure 1 of a 2020 report, puts the user in the centre of a circular model as a locus of arrows that point to, and away from, this centre, showing an input and output of actions ("prototyping; conceptualization; implementation; commercialization; need-finding") placed around the user [Kallai, 2020]. However, in figure 3, this circular model is complexified and the "commercialization" circle ceases to have a connection with the central user and breaks the circularity of the original model, standing as the final moment of the process. This model turns the centrality of the user into a space of exploitation for commercial outcomes. In no moment there is a visual account of the differentiated nature of users' powers and inequalities.

The general results of this exploratory political-semiotic analysis indicate two important things: 1) models depict participants as a visual abstract entity, as "end-users" or "prosumers" without differentiation in terms of education, class, race, disability or gender, flattening important power differentials; 2) the LLs' design picture technology innovation as a "teleological" linear course (with the notable *Proseus* exception). The "telos" (finality) produces an image of linear progress far from the convulsed life of participation. This imagery downplays the value of dissensus, which is a mark of healthy political processes where difference is welcomed. In sum, the models analysed show indifference towards power imbalances and inequalities between distinct agents, and a strong faith in progress. Following Rancière's concepts, these results are a visual composition of a *policed aesthetical consensus*, where models depict individuals as having all the same powers, who are instrumentalized to the single aim of technology transfer and commercialization, reducing the multiple political and knowledge possibilities of participation and co-creation to a fixed technological teleology. These LLs' visual schemes weaken the possibility of challenging the policing of participation. This is not surprising given the commercial objectives of LLs, saving business risks from participatory dissensus, which may problematize the inequalities produced by the market [Garcia, 2019].

## The market as a powerful innovation driver

LLs are just an example of the durable relationship between science and the corporate world [Leminen & Westerlund, 2019]. The potential causes for this situation do not lie simply in an irrational "greedy nature" of the market responsible for eclipsing scientific rationality and the promises of participation, but in the remarkable market's capacity to trigger scientific innovation and mobilize participation. LLs appeared, according to its proponents, because scientific

institutions and universities are struggling with producing innovation targeted to social change, a capacity that purportedly proliferates in the corporate sector, which should be, thus, integrated into the academic world [Purcell, Henriksen & Spengler, 2019; Burbridge, 2017]. Studies have shown how the market might be a powerful innovator in prompting academic cognitive change [Caraça, Lundvall & Mendonça, 2009]. This seems to be an inversion of the traditional idea about the roles of the academy and the market in innovation. How did the market become the pressing driving force behind scientific innovation? It can be fruitful to approach this question through the relationship between science and the market from the communicational perspective [Arboledas-Lérida, 2022; Gradim, 2019]. One *communicational* reason for this "inverted" scenario is the fact the profitable private sector cannot have the luxury of addressing a captive audience, contrary to the academy. Academics, according to an argument proposed by Fuller and Collier [2004, pp. 245–246], have more time to address their peers and students, who are more patient and solidary with academic jargon and lengthy arguments (sometimes in book form). The reason is academic audiences are paying (e.g.: tuition and conference fees) or are being paid to take part in classes, seminars, research groups, etc., to listen and talk to other like-minded people. Academy is, *ideally*, the slow economy of listening and talking. Concerning writing, this slow economy breeds academics with papers read by a few people and quoted by an even more restricted number of specialists. The fact academics provide ideas as a profession does not mean they are always "revolutionary". The science historian Kuhn [1962] has proposed the "normal" science thesis, claiming there are moments with no remarkable breakthrough when scientists are mainly concerned with solving puzzles than questioning the reasons for continuing to solve the same puzzles. Those academic luxuries of time and captive audiences for listening, talking and writing are crucial conditions for the academic cognitive puzzle-solving, something the effective commercial sector cannot have. The private sector's audiences are consumers and investors, which are, by default, not as captive as academic audiences and they must be, on the contrary, rapidly persuaded to invest their money and time in ideas. In this sense, the marketplace of ideas may be faster, not necessarily better, in producing innovation than the slow academic economy.

In the context of an extremely competitive neoliberal economy, which is averse to the academic slow economy of innovation, the academy was forced to adapt to the high speed of innovation of the profitable corporate sector to obtain the means to be financially sustainable. Adapting Schumpeter's view on the economy to communication [Foster, 1997], we can say the market appears to be a much more dynamic innovation-propelling force than the academy. Corporate-based innovations do not take for granted the captivated nature of its audiences, forcing the corporate sector to face the wild marketplace of ideas where candidates for innovation are constantly and rapidly being born and killed. Contrary to the academy, businesses do not have the time and audiences' solidarity to produce ideas through slow puzzle-solving from which a breakthrough could arrive. This means the danger appears not to arise from the destruction of innovative technoscientific practices, but from the fact the market has developed into a successful cognitive machine. This seems to prove the Lyotardian hypothesis: a high concentration of economic and technological investment in a certain knowledge field will dramatically enhance (not determine, though) the *chances* of delivering *useable* results [Lyotard, 1984]. These results, as innovative as they turn

out to be, are based on dangerous teleological visions of progress, which can be a steamroller over dissensus. The ideas and subjects unable to adhere to the fast-paced entrepreneurial cognitive innovation are viewed as negative divergences that operate as a guarantee of the marketplace of ideas winners' quality because these were faster in reaching consensus and cutting critical and time-consuming questioning of the dissensual losers.

## Conclusion: the coming community

It would be naïve, uninteresting, and unproductive to avoid entirely this industrial-academic complex that generates innovation, as if it was possible to face its dangers from a technophobic "outside". Rejecting it would just injure the vulnerable who need those technological innovations and would not certainly make people more likely to conceive alternatives to the neo-liberalization of innovation. The problem, from which LLs are the most recent symptom, is here to last: technology innovation and participatory ethics are not necessarily compatible. On one hand, a ferocious neoliberal marketplace of ideas, with its fast discarding of unprofitable subjects and their ideas without a second thought, may generate extremely original technology, with the risk of dropping compelling ideas requiring maturation, time, and careful evaluation. On the other hand, the patient and protected scientific puzzle-solving within a solidary community and involving participation from interested individuals may not wield any quick disruptive innovation because there is no powerful or immediate stimulus to break from the same reasoning habits.

It is perilous to presume the possibility of working out this problem by choosing just one of the two traditionally most invoked options [Laruelle, 2000]: 1) a (participatory) ethics for an existing market of technology, which risks defending *a posteriori* the technological dangers once they occur, turning them into ethically justified side-effects; 2) or reserving an ethical (participatory) space freed from the dangers of the technology market, refraining from any (participatory) ethical innovation that could learn to handle the unexpected future that is mobilized by the market of technology. In other words, participation must not be employed to support a linear teleological technological transfer process, which mostly favours capitalist technocratic elites (configuring *participationwashing* in the same sense as greenwashing marketing strategies). In the same vein, *participation should not always be the undisputable hallmark of technological invention*. The unexpected nature of invention may not be recognized as such by a group, given the consensual character of the latter may obstruct the appearance of dramatic inventive novelties. For instance, what Kuhn called "normal science" is a type of consensus where nothing revolutionary happens. The invention may challenge the existent participatory consensus, which made that group's formation and coordination possible in the first place, because the invention, if deemed really transformative, can invite the becoming of another community, "the coming community" [Agamben, 1990].

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**Author**        Adalberto Fernandes is a researcher at the Institute of Contemporary History — NOVA University of Lisbon. Member of the editorial commission of Kairos — Journal of Philosophy & Science. Research interests: science communication, science and politics, science and media, and the politics of discourse. Recent publications: "The Appeal of Far Right Pandemic Politics: A Southern Europe Case" (2023, Javnost-The Public); "The Problematic Scientificity of Psychology in the Media" (2022, Tripodos); "Communicating corrected risk assessments and uncertainty about COVID-19 in the post-truth era" (2021, Frontiers in Communication), "Science as a Virulent Myth Archive" (2020, Social Anthropology).
✉ adalberto.castro.fernandes@gmail.com.