

Fig. 1 - *Le Temporium*, 2014, Lia Giraud (SACRe / EnsadLab - PSL)
Autonomous machine for the continuous creation of Algaeographies

Towards Organogenesis

For an instrumental approach in research in art

Creating is researching. Or is it? And if not, what is the difference? Debate is currently very lively on the subject of what is known as practice-based research in art and design, or, in French-speaking countries, “research & creation”,¹ or more simply, “research-creation.”

In France, the field of music and sound was responsible for opening the way for a new kind of research, one in direct connection with creation. It began soon after the war, under the leadership of Pierre Schaeffer and then Pierre Boulez.² Others having followed the French example, it is clear that, of all the arts, research in music is particularly well developed, structured, and supported.³ That research focuses largely on instrumental issues, ranging from composing to forms of interpretation, without neglecting the musical instruments themselves, including technological ones, such as, of course, computer music.

It is not necessary to discuss the dominant position occupied by research in the experimental and engineering sciences, which also includes an important practical dimension. However, we must recall the extent to which those disciplines are also confronted with questions of instrumentality, as Bruno Latour highlights perfectly.⁴ Indeed, in the sciences, that is also the term employed, as in “optical instruments”, for example.

In light of these other disciplines, and confronted—in my laboratory, EnsadLab—with the need to organize my team and advise student-researchers, that instrumental dimension has emerged as an asset and a particularly formative lever for the development of practice-based research in art, or research-creation.

How can the instrumental dimension, which is at the heart of most approaches in artistic research, be recognized, promoted, tested, organized, developed, and enhanced?

¹ Samuel Bianchini (dir.), *Recherche & Création. Art, technologie, pédagogie, innovation*, Éd. Burozoïque and École nationale supérieure d'art de Nancy, Montrouge, 2009, 264 p. Reprinted in digital form in January 2012, by Art Book Magazine [www.artbookmagazine.com].

² In particular at the Ircam, an Institute that quite quickly employed the expression “research and creation”. Cf. Bayle Laurent et al., *Recherche et création, vers de nouveaux territoires*, Éd. Ircam Centre Pompidou, Paris, 1992.

³ This can be established by a simple survey of the large number of journals and conferences in the field, compared to the visual arts, for example.

⁴ Bruno Latour, *Les 'vues' de l'esprit. Une introduction à l'anthropologie des sciences et des techniques*, in *Culture et technique*, n°14, juin 1985, pp.4-29. Bruno Latour, *Morale et technique : la fin des moyens*, in *Réseaux*, n°100, 2000, pp. 39-58. (“Moral and Technology - The End of the Means”, translation by Couze Venn in *Theory, Culture and Society*, Vol.19, n°5/6 p.247-260, 2002.)



Fig. 2 (left) - The *MisB KIT*, a prototyping toolkit to experiment with behavioral objects. The *MisB KIT* is being developed by the Reflective Interaction team, under the direction of Samuel Bianchini, with support from Labex Arts-H2H and the Bettencourt Schueller Foundation in the frame of "Chaire Innovation et Savoir faire".

Fig. 3 (right) - Workshop "The Misbehavior of Animated Objects", 8th International Conference on Tangible, Embedded and Embodied Interaction (TEI 2014), February 2014, Munich, developed by EnsadLab in relationship with the Tangible Media Group of the MIT Medialab, with the support of the Labex Arts-H2H and of the Bettencourt Schueller Foundation in the frame of "Chaire Innovation et Savoir faire".

To begin answering that question, let us base ourselves on practice by starting with a few brief examples.

- 1- At the intersection of art, design, aesthetics, social science, cognitive science, and robotics, *Behavioral Objects*⁵ is a theoretical and practical project aimed at studying, understanding, theorizing, testing, and designing works that integrate a behavioral dimension, meaning they have faculties of action and reaction in relationship to their environment and/or their audience. To test and produce such objects, we are developing a modular robotics kit at EnsadLab, the *MisB KIT*,⁶ which has already been used in numerous workshops⁷ and several creations, such as *Voir des choses bouger*⁸ (*Seeing Things Move*, a choreographed work for objects), by Benoît Verjat (an EnsadLab student-researcher), presented at the Théâtre de la Ville in Paris, in 2014, as part of the *Danse élargie* festival.
- 2- Several of my own installations—in particular *niform* (2007), *Crossing Values* (*Valeurs croisées*, 2008), and *Distances* (*À Distances*, 2012)—have as an operating principle the measurement of the distance between the bodies of audience members looking at the work. Proceeding from that principle, and taking into account the variation both of those distances and their speed of change, how can one design a unique, implementable, interactive model in

⁵ A project I co-direct with Emanuele Quinz, with the support of the Laboratoire d'excellence Arts-H2H.

⁶ Cf. <http://diip.ensadlab.fr/fr/projets/article/the-misb-kit>

⁷ Such as *The Misbehavior of Animated Objects*, TEI 2014 [8th International Conference on Tangible, Embedded and Embodied Interaction], Munich, February 2014.

⁸ Cf. <http://vdcb.dcfvg.com>

relationship to those original capture devices that aims to reconcile physical and mental—even critical—distances during an aesthetic experience?



Fig. 4 - *niform*, interactive installation, 2007

Samuel Bianchini

A CiTu, Dispothèque, Numeriscausa and Bouillants co-production, with the scientific collaboration of the Laboratoire d'Informatique pour la Mécanique et les Sciences de l'Ingénieur (LIMSI-CNRS)

This project was funded in part by the Ministry of Culture & Communication (DICRÉAM program) and the City of Paris.

Large Gallery of The École régionale des Beaux-Arts of Rouen (France), May 2007

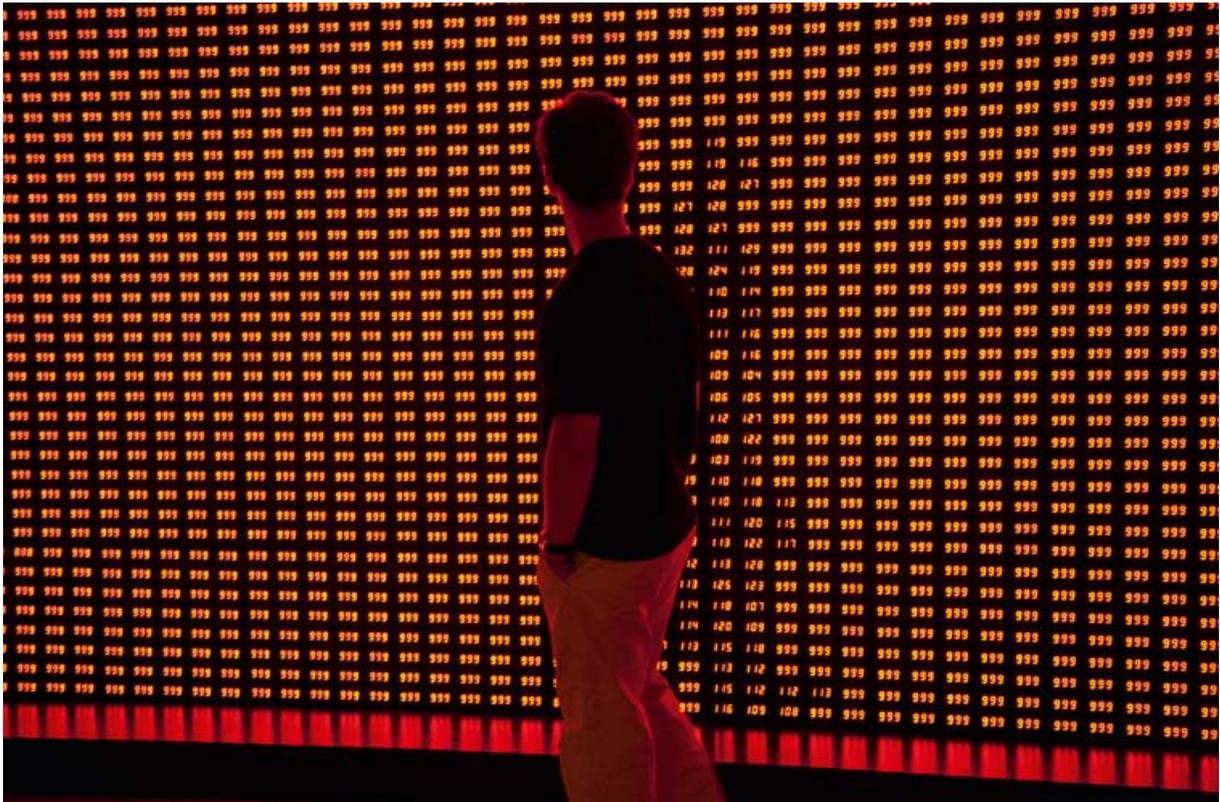


Fig. 5 - *Crossing Values* [Valeurs croisées], interactive installation, 2008
Samuel Bianchini

Produced in the framework of a joint research project between Orange Labs and CiTu, for the 2008 Rennes Contemporary Art Biennial, also entitled *Crossing Values*

- 3- Lia Giraud—a SACRe/EnsadLab doctoral student—has for nearly three years been developing a process, Algaegraphy, to make “living images” using photosensitive micro-algae that she grows and exposes to light in such a way that they organize themselves into images, which are alive.
- 4- How can interactive artistic approaches be developed that enable a large number of individuals to interact together and on the same installation? With the Large Group Interaction axis at EnsadLab, we are focusing specifically on smartphones. We are developing a novel software environment called Mobilizing.js⁹ in order to facilitate interactive creation and the interaction of groups via mobile devices. A catalyst for this research was a project, the *Discontrol Party* (an interactive party apparatus, 2009-2011), the next version of which should integrate interaction with smartphones. *Overexposure* (*Surexposition*, a city-wide collective installation with smartphones, 2014), another project in the field, led to a new, singular implementation of those tools, while also driving their development—for example for synchronized collective aesthetic experiences.

⁹ Development coordinated by Dominique Cunin in the context of the research project Cosima (Collaborative Situated Media), with support from the Agence nationale de la recherche.

Though presented rapidly here, these research and creation projects all involve researching and developing original means. They are not isolated cases at all. Most fruitful research and creation projects lead to similar approaches. Moreover, if some projects develop from artistic intentions calling for specific, possibly new means, we have to recognize that others emerge quite simply from encounters with potential means. It is therefore not uncommon, as an artist, to be particularly stimulated while visiting scientific laboratories that have a lot of processes, instruments, demonstrators, and other innovations, sometimes mature, if unutilized. The more we rely on a mature technology, the faster we can achieve results, though we must of course comply with the constraints of that technology, and the more advanced it is, the more oriented it is, even closed. On the other hand, the more we work on developing a project, well in advance, with scientists and engineers, the more the possibilities will be open, though it will take longer to obtain results (Fig. 6).

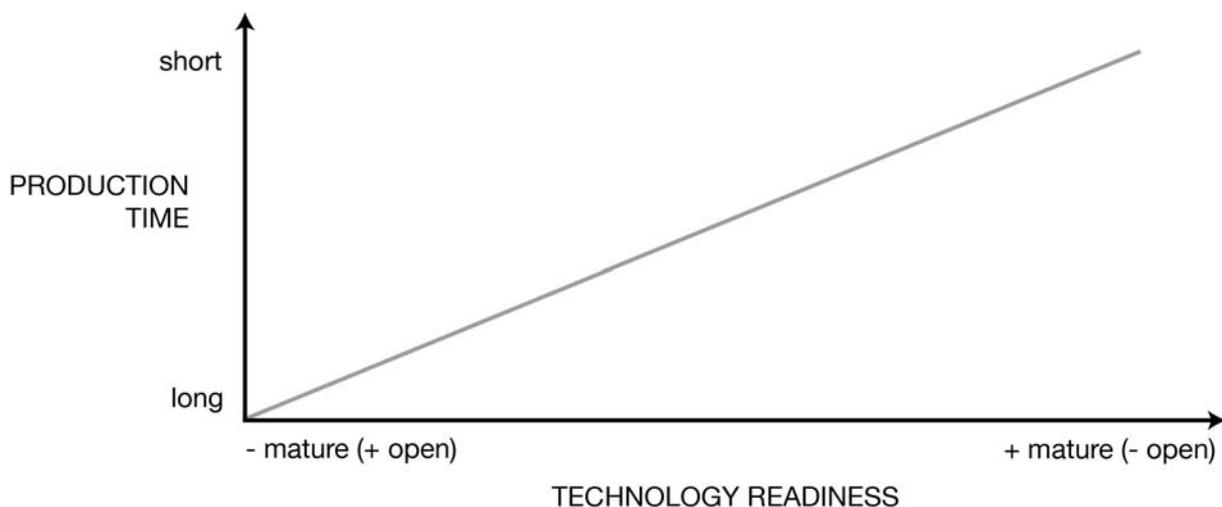


Fig. 6 – Production times related to the degree of maturity (technological readiness) and the openness of technologies employed

When research in art revolves primarily around means rather than ends, it is “instrumental research” insofar as we consider the instrumental dimension in the broadest sense: relative not only to objects made to be used, to enable operations, but also to processes associated with those objects and other approaches, and even to more conceptual ones. This approach to research in art is highly technical, but not “technicist” in the least: it does not seek to reduce the artistic to the technological, to find arguments in technology alone, no matter how innovative. On the contrary, it is a matter of considering technology, fundamentally, as a way of doing, an art of doing, that brings together various means—material and conceptual. Firmly rooted in making, in production, this practical ambition “instrumentalizes” technology, taking advantage of it for another field, creation. However, that instrumentalization is not an initial reduction of the technical potential. It must assert itself when the time is right, without cutting itself off from what technology can offer, in particular during experimentation. Instrumentation will clarify a practical orientation, or even a use, of the technology.

Research focuses on means, creation on ends. That may be, but such a vision can lead to two assumptions: research time and creation time are distinct, and they are consecutive, the former leading to the latter. While the distinction is worth maintaining, the consecutive relationship is not. On the contrary, the relationship between means and ends, as we have already indicated, is not fixed: an artistic project can emerge from the encounter with a potential technology that is experimented with and implemented, just as a technology can be born from an artistic need. And that technology can itself be reevaluated along the way through experiments that closely interweave the technical and the artistic. This back-and-forthing, evidence of a subtle relationship between means and ends, is far from marginal in research-creation; it is, in fact, a very common process.



Fig. 7 - Iterative relationship between Research and Creation, the process starting with either term, but always according a central position to Experimentation.

All the same, we must maintain the distinction between research and creation, between the instrumental, research phase, which revolves around means and techniques, and the creation phase, focusing on ends, on works of various kinds. Even if it needs to be refined, the distinction is valuable and helps to address many organizational and methodological issues. Does that mean that the creations discussed here are all part of a two-phase art, “allographic”¹⁰ in nature? If we broaden the meaning of the notion, we can pose that hypothesis. In addition to phasing, another element unique to the allographic system converges with our approach: the first phase can produce specifications (notations) and, for that reason, allows for collective work. That work, driven by a common interest and shared protocols and specifications, can be multidisciplinary, summoning, for example, the convergence of an instrumental approach from engineering or the experimental sciences (physics, chemistry, biology...) and another one from art. Not only is collective research made possible, including for the arts, it is most often necessary, since such instrumental research is complex, rarely conceivable alone or within a single discipline.

While creation is not the equivalent of research, many artists nonetheless develop their own processes, their own techniques, their own instruments.¹¹ That step is

¹⁰ Nelson Goodman, *Languages of Art. An Approach to a Theory of Symbols*, Indianapolis, Bobbs-Merrill, 1968.

¹¹ From this perspective, the works or approaches of a number of artists could be considered retrospectively as emerging from instrumental research. Emmanuel Carlier, who, following directly in the wake of Étienne-Jules Marey and Eadweard Muybridge for his *Temps mort* (1995), presented at the Lyon Biennial that same year, invented and perfected a photographic method that would then be hugely popularized under the name Bullet Time by the Wachoski siblings in their well-known *Matrix*. We could similarly consider the works of Dziga Vertov (image-making device), Sergei Eisenstein (editing), Marcel Duchamp (*Rotorelief*), Fujiko Nakaya (*Fog Sculpture* process), the Vasulkas (video synthesizers or *Machine Vision*), Brion Gysin and William S. Burroughs (*cut-up*), David Rokeby (*softVNS*), etc.

necessary, but it is not enough to qualify a given approach strictly speaking as research (systematic or academic). For that, artists must also translate their research to make it shareable, concretely, in an instrumental form (tool, approach, software, notation, protocol, etc.), and/or theoretically, in the form of knowledge: theory (publications), patents, licenses (including public licenses). Such research is “usable” because it is instrumental.

Research, as it is constituted in any given discipline, necessarily includes a dimension of sharing: its vocation is to increase universal knowledge, even if that means questioning past knowledge. For the research in art we are concerned with here, that knowledge is practical and must be able to be embodied, conveyed, and published in ways that are not limited to the standards of academic journals. Publication should be understood in its most basic sense (to make public), thereby allowing for a broad range of procedures for making public. The arts are not lacking in ways to make things public, to say the least—the obvious example being the exhibition. Rethinking the forms of publication—publicizing—is fundamental and strategic when considering the development of research in art and its social and even political impacts. And, in return, that investment can also make possible a reassessment of the way art is made public, beyond the usual methods. That broadening of publication may then have, retrospectively, an impact on the research itself: if creation is both an engine and a result of research, following an iterative and incremental principle, the relationship to the public could also be included in that dynamic¹², with public experimentation considered as a kind of publication.

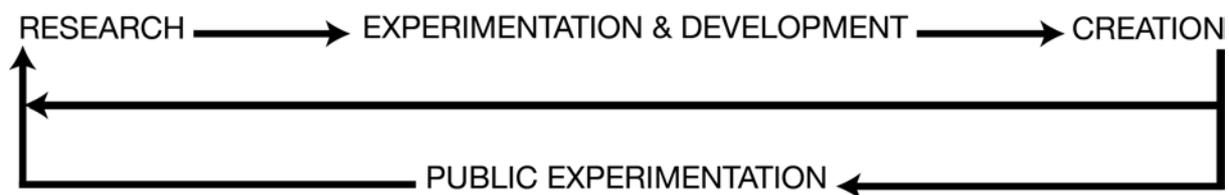


Fig. 8 – Iterative relationship between Research and Creation, including the possibility of public experimentation, as a method of publication

If creations that implement instrumental research and development are, in fact, good vectors for publicizing, if only because they can be exhibited, many other publicizations and sharings can exist on the basis of instrumental research itself. Thus, the transfer, in both the industrial and more broadly societal senses, could primarily be achieved through that research stage and its instrumental production: patents, licenses (public and private), new tools, artistic and other artifacts, etc. If the artwork is a form of implementation of the research, then it could be considered a specific mode of transfer. Theorization also often concerns this stage of work: its questions, hypotheses, conditions, methods, processes, analyses, results, experimentations (including public experimentation), avoiding egocentric failings by

¹² Cf. Samuel Bianchini, *Exp. - De l'expérimental à l'expérimentable*, in *In actu - De l'expérimental dans l'art*, Elie During, Laurent Jeanpierre, Christophe Kihm, Dork Zabunyan (Eds), Les presses du réel, Dijon, 2009, pp. 285-304.

keeping a distance from works considered for their own sake.¹³ As in the sciences, the description of specific means (instruments and their implementation) that allow for the reproduction of experiments constitutes a substantial response to how to theorize practice and therefore to produce writings for research-creation.

Works, theorization, transfer, but also a space for sharing knowledge, skills, and collective experimentation: we see that this phase of instrumental research is a real hub from which research and its transfer can be organized.

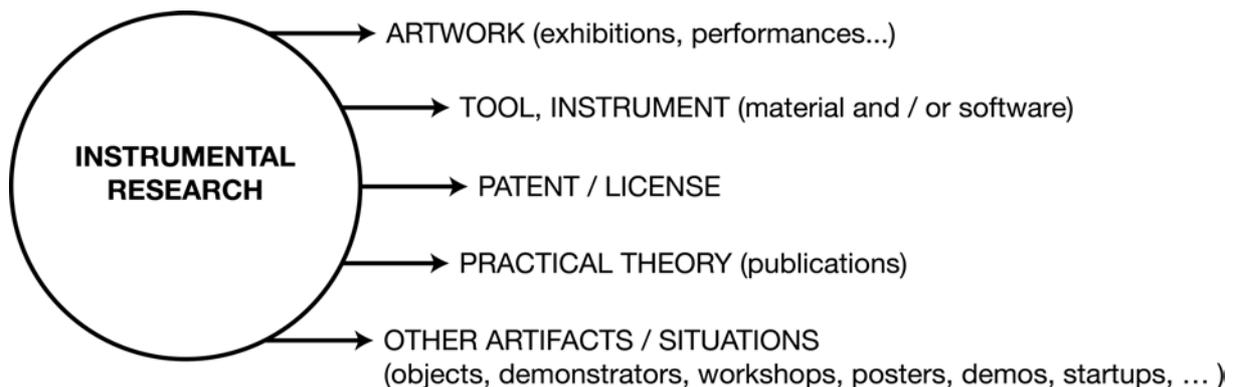


Fig. 9 - The instrumental research phase as a hub allowing many kinds of transfers

After considering instrumental research from various angles and perspectives, we present here a brief summary of its main features. Instrumental research in art is:

- 1- based on practice, by and for practice;
- 2- technological;
- 3- collective;
- 4- multidisciplinary;
- 5- generic (can be modeled and applied to many contexts);
- 6- shareable (within its own research and development community and beyond);
- 7- iterative (in relationship to creation)
- 8- incremental;
- 9- testable (in public and with the public, therefore deployable);
- 10- transferable;
- 11- theorizable;

As unsurprising as these criteria may be from the viewpoint of other research disciplines, they are not trivial today in the field of art. They even break with some well-established—even founding—principles of artistic practice. The assertion of an individual artistic originality, for example, does not seem to fit with our instrumental

¹³ We should recall, if need be, that historical and aesthetic (philosophy of art) research on art is well established and very solid, in particular in academia, and it is not our intention to compete with it. The proposals formulated here take that considerable field into account, and emerge in a space of their own, being rooted in practice, in experience and knowledge that are possible, and only possible, through practice.

approach that requires collective effort, and that targets the modelization of principles that can lead to usable and appropriable generic forms. Redistributing authority and depressurizing egocentrism is therefore essential. Changes are needed: on the one hand, the necessary search for instrumental originality, led collectively, must be shared, and, on the other hand, the singular appropriation of the instrumentarium is fundamental from the viewpoint of that instrumental genericness and the aesthetic orientation it consists of. The overall balance should be sought in both phases—research and creation—and therefore requires a powerful and unique investment in the creative phase, during the specific implementation of the instruments produced by the research. Those two phases require two different attitudes—as complementary as they are antagonistic—that each researcher-creator must affirm and accept individually and in relationship to others.

The present text focuses on issues related to practice-based research in art more than on creation itself, with the exception of what is specific to creations resulting from research. The general structure we propose also applies to this text: just as it is possible and necessary to establish some epistemological, methodological, and organizational principles for research in art, so it would be presumptuous to want to define the uniqueness of the resulting works of art. However, if it is possible to express it this way, the “general specificity” of these creations is precisely that they implement original instruments and techniques in a pertinent and certainly contextualized manner, enabling an aesthetic experience. Thanks to the originality of the new instrumental approach, intensified by an original appropriation of those means, the works have a distinct prospective potential. They cannot however content themselves with only that claim, which would reduce them to a dynamic at the intersection of boundless belief in progress and the productivist innovation required by the logic of economic growth whose limits, in particular environmental, are well known. Once again, without claiming to define or even guide what those creations might be, in the particular relationship that they maintain with their means, it is essential that they question those very means, even as they implement them. The creations must analyze the means, offer them for analysis, and at the same time propose an experience of them. In other words, a reflexive dimension must accompany the forward-looking character that drives these works, during their development as well as in the aesthetic experience they offer.

This instrumental research is caught in a body of criteria that require it to be simultaneously practical, prospective, and introspective. We understand that if the question of “how” is essential in this approach to research in art, it cannot be disconnected from that of “why”; it cannot ignore the social issues related to the research and development of such instruments, with regard both to their production processes and to their uses, and, of course, through the works of art that result. The consequences of this instrumental research—of its artifactual, methodological, technical, and conceptual instruments—should not be measured only in terms of the various transfers to which it gives rise. On the contrary, the instrumental production is not neutral, carrying within it social, human, aesthetic, and technical issues.¹⁴ It must be considered through the prism of an organological approach, following the broader

¹⁴ A set of issues that obviously requires involvement of the human and social sciences in the research and creation process, as regards both reflexiveness and the involvement of such developments and works in society.

interpretation provided by Bernard Stiegler,¹⁵ while considering the development of artificial organs—here, the instruments—together with physiological organs and social organizations. If technical and physiological organology are closely related in projects whose experience is primarily sensitive, their relationship to social organizations may be less direct. Yet even before imagining the reach of these instruments through their productions (starting with the creative works), two notable consequences should be considered immediately. On the one hand, the instruments thus produced have a “practical value” capable of transforming the modes of production and organization of those who might use them. On the other hand, the very modes of researching and developing these instruments entail a reorganization of artistic work. In this sense, this text—beyond its methodological scope—does aim to propose new organizational principles for artistic research and creation, a reorganization that should also be understood on an institutional level. This approach is therefore fully a matter of general organology, but, to be even more precise, since it is a question of elaborating instruments and not of studying existing ones, perhaps one should speak of organogenesis, of organogenetic research, for the benefit of artistic creation, of experiments and experiences, and of renewed and emancipatory relationships among technical, physiological, and institutional organs.

An essay published in Pat Badani, Owen Chapman, Louis-Claude Paquin, Louise Poissant, Kim Sawchuk, *Research-Creation: Explorations*, Media-N, Journal of the New Media Caucus, November 2015.
<http://median.newmediacaucus.org/research-creation-explorations/towards-organogenesis-for-an-instrumental-approach-in-research-in-art>



Fig. 10 and 11 - *Overexposure [Surexposition]*

An interactive public installation with smartphones, 2014

An Orange/EnsadLab project under the direction of Samuel Bianchini (EnsadLab), in collaboration with Dominique Cunin (EnsadLab), Catherine Ramus (Orange Labs/Sense), and Marc Brice (Orange Labs/Openserv), in the framework of a research partnership with Orange Labs

Lyon, December 2014

¹⁵ Bernard Stiegler, *De la misère symbolique*, Paris, Flammarion, “Champs-Essais” Collection, 2012. Grouped reissue, *De la misère symbolique 1. L’époque hyperindustrielle*, 2004 et *De la misère symbolique 2. La catastrophe du sensible*, 2005, Galilée, Paris, p. 173.