IN>TRA

La práctica artística como modelo de experiencia

Artistic practice as a model of experience

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IN>TRA
La práctica artística como modelo de experiencia: nuevas formas y prototipos en los procesos de investigación

IN>TRA
Artistic practice as a model of experience: new forms and prototypes in research processes

La publicación de este libro, junto con la exposición itinerante «Noves formes i prototips en els processos de recerca artística», es el resultado del estudio desarrollado por los miembros y colaboradores del proyecto de investigación I+D (coordinado) : IN>TRA. La Práctica Artística Colaborativa como Modelo de Experiencia: Nuevas Formas y Prototipos en los Procesos de Investigación (HAR2015-63952-C3-1-P). Proyecto coordinador: MetaMétodo III. Metodologías Compartidas en Procesos de Investigación y Nuevas Prácticas Artísticas. Subproyecto: Materia Impresa II. De la Virtualidad Digital a la Materialidad Tridimensional en la Investigación Artística. Plan Nacional de I+D+i 2016-2018. Subprograma Estatal de Fomento de la Investigación Científica y Técnica de Excelencia, Subprograma Estatal de Generación de Conocimiento.

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Esther Moñivas

Processes of transfer within the framework of asts (art-science -technology- society)

This chapter explores the concept of *transfer,* from a critical, multi-dimensional and neo-materialist perspective, observing its characteristics in processes of a collaborative nature within the framework of art-science-technology-society (ASTS). Some methodological prototypes are proposed that take into consideration the results obtained within the project IN>TRA, that promote the visualization of intra-actions present in these complex processes.

Current concept of research

According to the Spanish National Plan for Research and Development, the current concept of research called I+D+i (Investigation, Development and Innovation) is adapted to studies related to technological advancement and research, oriented in turn towards a notion of the *progress of society.* Within this trinomial, the term *investigation* (I) is understood in relation to the world of science and implies the investment of capital to obtain knowledge, while *innovation* (i) is related to the world of technology and translates into a complementary process: the investment of knowledge to obtain capital. For its part, *development* (D) is an economic term that completes both processes by connecting them with the progress of society. (*Plan Nacional I+D+i Investigación y Desarrollo* no date). The economic dimension is therefore what governs the interrelation of these three concepts, defining the research ecosystem of which universities, research centres (generators of knowledge), public administrations (public capital) and companies (private capital) form part.

The abbreviated name of the project IN>TRA alludes to two key terms within the current concept of research: transfer and indicators of transference. Both constitute the axes that make it possible to evaluate the economic sustainability and funding models for specific research. The Ministry of Economy, Industry and Competiveness, which finances the project IN>TRA, describes Transfer and the Management of knowledge in a document that articulates the Spanish Strategy for Science, Technology and Innovation 2013-2020 in this way:

> The process for the transformation of scientific and technical knowledge within social welfare is complex for it doesn't respond to easily predicted linear models and demands the intervention of agents with clearly differentiated capacities and skills. [...]In this context, an important part of the interventions

> deriving from the objectives of the Spanish Strategy for Science, Technology and Innovation are aimed at promoting dialogue and communication between agents within the System to generate trust between them through the creation of instruments that improve quality and legal security. In this form, strategic management of the rights of industrial and intellectual property, knowledge transfer, the commercialisation of the results of research are guaranteed and the bases for the implementation of models of open innovation are established. [...] The measures in favour of transfer and the management of knowledge contemplate, amongst others, three fundamental dimensions: (1) transference between sectors that accelerates processes for the application and adaptation of knowledge, technologies and patents in different sectors; (2) transference between regions oriented towards generating synergies amongst the systems of I+D+i of the different territories, and (3) transference between agents of the System deriving from close collaboration and prior participation in the obtaining of results, which connects and anticipates future needs, relying on an efficient structural network. (Ministerio de Economía y Competitividad, no date) In a strict sense, new ideas are only considered innovations when they are implemented as products, services or new procedures that find a successful application, having an impact on the market through their diffusion. The progressive orientation of research towards this economic concept of *innovation,* understood in relation to the management of industrial and intellectual property, the licencing of patents, the exploitation of results and the creation of spin-offs (CRUE Universidades Españolas I+D+i, 2014), causes a large part of current artistic and humanistic research to be found (dis)located within the framework of a meta-reflection relative to this particular idea of the *progress of society.*

This was in fact one of the articulating themes in the previous project of the group IMARTE; *MetaMethods: Shared Methodologies and Artistic Practices in the Society of Knowledge (2008-2011).* In her presentation, Alicia Vela alluded to the redefinition of art, within the society of knowledge and to the *layered* structuring and synergy of languages that feed artistic research as a formula to stimulate debate and facilitate the transference of knowledge (Vela, 2014).

However: how can economic sustainability be achieved in artistic research? What is the *strategic management* of rights here? How does one conceive commercialisation or understand the system of open innovation? All these are questions for which none of the agents of the system currently provide a clear solution. It is accepted by defect –and in a final instance promoted – via the economic unsustainability and imbalance of salaries between artists and scientists. Nevertheless, if we want to do justice to the real complexity of the research system, we need to begin to take into account how the agents involved don't talk the same language, or set out with the same principles. In many cases, the notions of *transfer* with which they operate are established according to conceptual bases that are sufficiently far removed to make it very difficult to locate points of confluence. The fallacy, derived from this system, is that a direction can be interpreted by researchers in art and humanities, without specifying innovation, leading to questions about its effects upon the development of society.

Merely raising this problem does not proportion solutions. Nevertheless, we consider it useful to delve into the articulation of the concept of *transfer* and to develop a systemic gaze that does not simplify, as a basis with which to propose a questioning of the *status quo.*

Processes of transference

In psychology and pedagogy, knowledge transfer is a key concept: it is considered the basis of any learning. This type of transfer is produced when a person applies experiences and understanding from prior learning or to the resolution of problems in a new situation (Mayer, 2008), but the concept equally covers groups, organisations, and even international systems. Since the decade of the nineties, organisational theory has studied the processes of the transfer of human knowledge, understanding these as organisation, creation, and the capture and distribution of knowledge to ensure its availability to other users. Linda Argote and Paul Ingram (2000, p. 151) have defined the transfer of knowledge as "the process through which one unit (for example, a group, department or division) is affected by the experience of another".

The application of organisation theory, developed in many cases by private companies, provides solutions with the aim of ensuring that knowledge is not wasted and is productive for a company or institution at the precise moment it needs it. One of the principal difficulties lies in the fact that the languages, initial knowledge and points of view of the users can be too different to ensure effectiveness. In addition to this, knowledge does not reside solely in people, but also in tools, tasks and networks and, it ends up, moreover, being very difficult to articulate a large part of this, given that it can be tacit or intuitive. From this perspective, it is proposed that other issues affecting the transfer of knowledge are distance, media access, lack of incentives and lack of motivation.

Knowledge transfer raises, on an ethical level, very relevant questions as it is directly affected by relations of power (amongst individuals, institutions, disciplines and areas of knowledge, between productive sectors, territories and nations, etc.). International and national systems of research therefore ought to consider objectively the territorial, disciplinary and economic imbalances affecting the agents involved. A global strategy, on the other hand, should not be oriented exclusively to resolve the issues raised by the rights of industrial and intellectual property, leaving aside other delimiting questions.

Within knowledge transfer, business and economic sectors handle the specific notion of t*echnological transfer,* understood as the process through which science and technology spread through human activities. More specifically, it can be interpreted as the process of the incorporation of a productive unit of knowledge developed in an area beyond it. For Fidel Castro Díaz-Balart (2002) the transfer of technology implies the transfer of those forms of knowledge necessary for the elaboration of a product, the application of a procedure or the supply of a service. So, what is considered an object of transfer in this case is not just the specialised technical knowledge and experience (models, manuals, formulas, proofs, calculations, instructions, etc.) but also the materials for the training of personnel and the rights of industrial

property. Together, these three dimensions, experiential, material and legal, imply the transfer of skills to use, adapt and improve a specific technology. In the ambit where this type of transfer is alluded to, the governing hierarchy which makes these issues problematic is generally not questioned. In fact, there exists an abundance of documented cases of artistic-scientific practices that have experienced different types of friction derived from their collision with a tacit understanding of the scientific structure, governed directly by the economic framework rather than by the obtaining of knowledge or learning. In the face of the difficulties which horizontal models of co-operative research confront, other initiatives see economic potential to be exploited within the terrain of the relations art-science-technology, even though the relational ethics and economic sustainability still evidence a high degree of immaturity.

A non-reductionist perspective makes it possible, moreover, to observe that there are uses of the concept of *transfer* that go beyond those mentioned. Amongst the most consolidated one finds genetic, psychological, energetic, molecular, data, political, linguistic and electrical transfer, although this list could be expanded.

One of the most suggestive models of informative transfer is probably the transfer of genetic information. Even though this has traditionally been understood by way of a branching evolutionary structure, in the last few decades it has been demonstrated that it is a considerably more complex process. Already in 1976, Gilles Deleuze and Felix Guattari alluded in *Rhizome* to the genetic transfer between species and the role of the virus in evolution. Today we know that the donation of genes between species (or horizontal genetic transfer) is common amongst animals, but recent research has demonstrated, what is more, the presence of at least 145 genes, donated by microbes in the human DNA, that were previously considered mere errors (Sampedro, 2015). The imported genes from bacteria and other microbes cover in fact important metabolic functions, related to the need for each species to adapt to its local environment and deal with the chemical singularities of the environment. This is perhaps the most attractive analogy of what could in the future lead to the access of artists to scientific research laboratories.

In psychology and with more intensity in psychotherapy, transfer is discussed in relation to the evocation of affect and emotion in childhood that is produced in all human relations. Jean Laplanche and Jean-Bertrand Pontalis define the use of this term within the ambit of psychoanalysis to allude to the unconscious process by which a patient relives and translates feelings, affect, expectations or repressed childhood desires associated with family members to their new bonds, such as the analyst. Transfer was in fact considered by Sigmund Freud as the fundamental tool of the analyst and is associated with a patient's resistance to let the unconscious emerge. For Jacques Lacan, the very need for psychoanalysis on the part of the patient already implies a dimension of transfer, in which the patient is directed at a "subject to know" (Laplanche and Pontalis, 1996). For the hierarchy and type of relation established between analyst and patient, the processes of *counter-transfer* from the analyst towards the analysand have raised a rich conversation in psychology not found in other fields.

The process of the transfer of energy in non-living systems is analysed in physics, the most characteristic being the transfer of heat that occurs between material bodies as an effect of differences in temperature. Three types of transfer are

contemplated within this process, all of them characterised by mediation. The first is conduction or the transfer of energy from each portion of material to the adjacent material via direct contact, without any exchange, blending or flow of material. Secondly, radiation is produced without any intermediary fluids; it is a type of energy transfer, by way of the electromagnetic waves emanated by warm bodies and absorbed by cold bodies. Finally, there is the process of convection between two bodies at different temperatures, where a fluid acts to transport the energy. This type of energy transfer functions through the combined actions of heat conduction, storage of energy and movement of matter. When movement is produced by differences in density, resulting in a difference of temperature, it is denominated natural convection; and when movement is induced externally it is considered forced convection.

In view of the diversity of these processes, we ask ourselves whether it is possible to extract structures and useful information from these to gain a better understanding of the transfer of knowledge and perhaps to look for solutions to the current challenges proposed within the terrain of interdisciplinary research in art-science-technology.

Processes of transfer

According to the *Diccionario de uso del Español María Moliner*, *transfer* (from the Latin *transferre*) is a synonym for transmission and transportation. All the processes compiled above imply a movement, transportation, donation-incorporation, a remission and a mutation. In essence, transfer is flux, that moves in the opposite direction of stasis and the isolation of elements that constitute a specific system. Transfer, moreover, permits the continuity of the element that is transformed, which in this way maintains its activity in another ambit, body, zone, etc., altering its characteristics.

Any process of transfer, understood as a phenomenon, implies: the component or components mutually alter, both actively and passively; an initial differential that activates and makes possible a transmission and an enrichment or change; a medium/mechanism/channel which makes the contact between zones or elements possible presents some form of difference; possible obstacles, limitations or resistance to the process; and coordinates of space and time.

If we attend to the previously mentioned models, the triggers for these processes go from *inevitability* (entropic processes) to *intentionality* (active agents). A plural collection of texts currently related with transfer permits us to identify motivations, such as the diminution of risk, cooperative synergy, sustainability, the resolution of problems, the improvement of technologies and access to a certain element that in another form would be more complicated to attain. On the other hand, transfer increases risk in as much as it generates destabilisation within a specific system.

Prototypes and relational practices

Within the terrain of ASTS relations, changes in the cultural paradigm have changed the direction of knowledge transfer and even its general structure.

> The question lies in what the new scenarios of the "society of information and knowledge", the traditional linear conception of the production and transfer of knowledge, based on the science-technology-industry-society axis, is transforming into a complex and nonlinear network of relations of an interdisciplinary nature. This network goes beyond the preceding frameworks and propitiates permeability and communication amongst different fields of knowledge and doing. (Ohlenschläger and Rico, 2009, p. 16).

In the International Conference *Prototipos y Plasticidad. Metodologías y procesos de transferencia en torno a la materia* [Prototypes and Plasticity. Methodologies and process of transfer around matter] (2017) we tackle this problem by causing different points of view to converge, from neo-materialist cultural theories to artistic practice, guided by the following questions:

> What principally defines the structure and flow of a process of transfer? How are the apparatuses, the agencies and characteristics of the surroundings in which it is produced articulated? And, above all, how do we signify and materialise these relations and how would we like these to be reconfigured in an ethically and politically desirable horizon? (IMARTE, 2017)

The different presentations, artistic actions, interventions and interactions produced here traced a fertile scenario for material-semantic relations, from a practical as much as a theoretical point of view.

In 2018, we decided to continue to expand upon this reflection with the Working panel "Transfer art-science-society art", directed by Esther Moñivas Mayor, Alejandra López Gabrielidis and Beatriz Regueira within the Symposium *Shared Prototypes, Collaborative Artistic Experiences.* In this case, the objective was to place in action neo-materialist methodological prototypes, within the framework ASTSE (Art-Science-Technology-Society-Ecology), based on the concepts of *cyborg* of Donna Haraway (1991) and Barad's *diffraction* and *intra-action* (Barad, 2007). From this we proposed an experience of productive synergy and knowledge transfer through an act of materialisation-symbolisation that didn't underestimate the importance of sensorial and affective dimensions during the process of production and exchange. The experiment served as a meta-reflexive dynamic which raised the possibility of attaining new prototypes through experimentation, alteration, grafting and methodological re-combining. Human and non-human agents participated in the complex conceptual process; natural and technological: material and semantic, different disciplinary perspectives, philosophical and theoretical, as well as a wide range of affects and corporalities. The range of intra-actions and knowledge transfer materialised performatically amongst the participating agents (tables, plants, people, stones, bits of paper with annotations, wool, digital devices, aluminium foil, cables, printed diagrams, projected images, plastic, etc.) in the form of diverse semantic-material configurations that converged in the concept of complexity (IMARTE, 2018).

Transferencia Tejido vivo [Transfer. Live tissue] is a performatic and audio-visual piece resulting from this experiment that evidences the primacy granted to the

Esther Moñivas. **Processes of transfer in IN>TRA.** Illustrative image, 2017.

Esther Moñivas. **Transference. Live tissue.** Performance and audio-visual. Faculty of Fine Art, Universidad de Barcelona, 2018.

processes and emerging properties, that is to say, the synergetic interactions between the components, not possessed by their separate parts, as opposed to the results and isolated elements. Taking as a reference the relational objects of Lygia Clark, in this piece the physical network of wool makes the position and intensity (number of interventions) of each human agent visible within a certain temporal margin and a spatial system of relations, as well how its connection with other physical-symbolic elements forms part of its discourse, which equally undergoes transformations. In an advanced phase of dialogue, the flow of this tissue, derived from the movement of the hands when talking and from the changes of position of the interlocutors (converted into performers), transmits each minimal tension and fluctuation, extending the transfer of knowledge to a physical dimension. The conceptual aim of this piece, along with other explorations developed, has been to resituate artistic research within a broader perspective of the society of knowledge, understanding the value and issues that its relational, affective and sensorial dimensions imply, which are not therefore exclusively instrumentalised by capital.

Conclusions

Processes of transfer are produced in synchronic and asynchronic time frames, consciously and unconsciously, in a sole direction or with return, and generally derive into new processes. In artistic research, various formats/types/levels of transfer take on a fundamental importance, they:

a) Don't just imply the flow of knowledge, technology or information, but also of affect, imagination, signification and diverse materialities.
b) They are not just produced between human beings.
c) They derive into new processes, and only on occasions into prototypes or results, not necessarily contemplated within the current framework of the *advancement of society.*

Precisely, one of the most important functions that art and humanities have is their capacity to question how knowledge is configured, delving into critical propositions that expand the possibilities for understanding this shared system.

Despite being considered a *strategic territory* amongst the indicators of I+D+I, that constitute the *White Paper for the Interrelation between Art, Science and Technology within the Spanish State*, artistic research tied to the ASTS paradigm has for many years evidenced a conflict regarding the framework that contemplates the articulation of a dialogue between the so-called *generators of knowledge* and the business sector in order to guarantee an economic strategy (FECYT, 2007).

A decade later, the situation has not improved notably. There are the same specialist scientific journals and extremely limited support for research to resolve the basic problems that hold it back. During these years, moreover, there have been important losses, like the disappearance of a consolidated international competition, such as VIDA of Telefónica. The situation could have been much worse if it were not for the pioneering work of institutions such as the different MediaLabs, Laboral, Hangar or the Sónar festival, which lead a vulnerable but broad weave of AST projects in Spain. New centres and structures for support and dissemination such as ETOPÍA in Zaragoza, La Neomudejar in Madrid, the Sónar+D congress (since 2013), or the project *Binomio, diálogos entre arte y ciencia* of the Centro Nacional de Investigaciones Oncológicas (2018) even make it possible to house a certain optimism. Whereas it is still to be seen whether the strong investments realised in the last years in start-up accelerators, such as the axis of the Fàbrica de Creació Fabra i Coats, the Canódrom and the Disseny Hub in Barcelona, or the La N@ve space in the old Boetticher Factoy in Madrid, are capable of transmitting some form of impulse to this sector.

Paradoxically, the latest *Future of Jobs Report* elaborated by the World Economic Forum (2018) evidences that trends in employability in the next few years consider as being on the rise skills such as; active learning, creativity, originality, technological design, critical thought, analysis, the resolution of complex problems, reasoning or ideation, all key characteristics of ASTS research. This invites us to ask ourselves to what extent certain profiles of artists will be able to abandon, in the next few years, the position of *proletariat* within the society of knowledge and locate new roles within the system of economic production.

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IN>TRA recoge los resultados de un tiempo dedicado a abordar, de manera crítica y a la vez creativa, problemáticas en torno a las humanidades digitales, a los nuevos materialismos y a la incidencia de estos en el arte. Todo ello, en el marco de una colaboración abierta y con una voluntad transdisciplinar, que se vehicula a través de la noción de *prototipo.* Los autores de este libro enfocan su práctica artística desde varias perspectivas —filosóficas y tecnológicas— y sinergias de colaboración, para hacer frente a un contexto actual.

IN>TRA gathers together the results of a period dedicated to dealing, critically, and at the same time creatively, with issues surrounding digital humanities, new materialisms, and their impact on art. All this through an open, transdisciplinary collaboration articulated through the concept of the *prototype.* The authors of this book, with diverse philosophical outlooks, use different technologies and collaborative synergies to confront the current context.

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