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COST Paper | Organisms for change and transformation

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Summary

For all the interconnectedness of the modern world, made so by ICT and mass transportation, contemporary society remains highly fragmented, and is becoming increasingly so. Something is missing, that leaves people feeling ill at ease with what is happening in the world, and desiring a very different future, that is not just the past, with all its problems, presented in a different form that is made so by more advanced technology. Along the way to achieving material comforts, important aspects to life, such as sense of community and belonging, have been lost. And now, at the point where human civilisation faces its greatest challenge, to find a way of keeping what has been gained, but without the human and environmental costs that threaten to destroy the gains, it is appropriate to seek new paths by looking at how to use the technologies that we have, as well as emergent and future ones, but in different ways, and towards very different ends. Thus it has become timely to consider how art, in particular artists working with technology, taking in also the mind, can create new visions for the future, which are grounded in what people and societies want and need so as to once more become healthy and wholesome places. Bringing artistic perspectives into play is considered through three dimensions that help illustrate how artistic practices, engaged with emerging, new and future technologies can create novel products and services to enhance innovation, welfare and the greening of Europe. Through these three dimensions **-The Anticipatory and Predictive; Architecture as Instrument; and Organisms for Knowledge Building and Acquisition-** artistic practice emerges as powerful creative and imaginary force, based in new research approaches where energies are directed towards the transformation of humankind. The nascent research community in this field, if properly nurtured, could be instrumental towards positioning Europe as the world leader in this area of development, with a note here that similar initiatives can already be seen developing in other economic powers, such as the SEAD initiative of the US administration. SEAD is the network for Sciences, Engineering, Arts, and Design, facilitates research, dialogue, and communication within and among those working in these areas. It builds up from the notion that innovations emerging from the

intersection of the sciences, engineering, arts, and design are transforming our economy, culture, and learning contexts. COST therefore provides the framework for the development of this new community, with a possible focus on exploring and creating the foundational base for this new paradigm.

Introduction

With the purpose of exploring the value of developing a COST initiative in the field of art, technology and mind, a *COST Arts and Technologies* strategic event was held in Zagreb, Croatia, 25-27 November 2013. The method employed at the event was based on two days of presentations and interactions and then a one-day workshop where the topics included in this paper were outlined and discussed in groups formed by the participants of the event. The composition of these groups changed during the process to assure involvement of all participants in the discussion of all subjects. Paragraphs addressing items of the resulting outline were written by the members of the CaiiA-HUB (the Centre for Advanced Inquiry in Integrative Arts) of the Planetary Collegium present at the meeting. The process of creation and production of the text, in Zagreb, was mediated by Roy Ascott. The resulting paragraphs where collated and edited, in Brussels, by Luis Miguel Girão, revised by Dina Šimunić, in Zagreb, and Sjur Baardsen, in Oslo, and copy edited by Paul Kidd, in Macclesfield.

The basic structure for development of ideas was established by Roy Ascott as a consequence of discussions happening in the first two days of the event. This structure comprises three dimensions for examining how artistic practices can engage with emerging, new and future technologies to create new products and services to enhance innovation, welfare and greening of Europe. The three dimensions are:

1. Anticipatory and predictive (25 yrs): Supply and Exchange; Materials and Production; Access to Knowledge; Social Organisations; Dreams, Desires and Necessities; Relationships, Responsibilities and Identity Play.

2. Architecture as instrument: Rural/Urban Transmutation - Nature II; ICT as environment.

3. Organisms for knowledge building and acquisition: From primary learning to advanced inquiry, to promote Creativity through Technoetic Art Practice[1]; Hypercortex[2] - Development of Connective and Collective Mind; Interstitial Exploration.

[1] Technoetic Arts focuses upon the juncture between art, technology and the mind.
[2] The term hypercortex is intended to bring together body, cortex and telematic environment into one indissoluble whole.

The results of the workshop discussions

Anticipatory and predictive

We understand with regard to **The Right to be Creative** and **The Right to be Curious,** the focus is not on the to be less the need for 'rights', as there is no infringement of this practice, but rather what is at stake for the arts and technologies as are methodological approaches to for thinking and planning. In contemporary (and future) looking at European societies and cultures, there are no restrictions on imagination, playfulness, creativity or curiosity. In fact, these activities are encouraged as part of a healthy and developing society: the COST Workshop for Art and Technology is perhaps an example of this. However, the work that needs to be done lies in allowing creativity and curiosity to become part of the developmental methodologies for progress. The question therefore is: are organisational and research entities, such as COST and the European Commission and its HORIZON 2020 programme, able to address and engage the inclusion of the potentially non-measurable and, more explicitly, social and emotional dimensions in their strategies and planning?

The mobile information device has augmented human sociability in such ways allowing us to foresee a **Trans-human Being** composed of **50 billion connected devices.** The modularisation of communication devices has led to a situation circumstance in which almost every person owns a personal device that is embedded in a global system. This global ICT and personalised system is not forming a trans-humanism, in that it is taking humanity past its physical constraints; rather the human system — as single intelligent entities among other single intelligent entities— is now augmented by technology. Beyond the development of new products to a more technology dependent society, the benefits lie in the possibilities for creating a society based on self-organisation and shared knowledge systems. And in this vision, in this a level of trust and responsibility, not presently evident, is required by managing entities (governments), in understanding the benefits of a socialised and self-organised way of living. Art meets technology here in that it allows for the expression of a socialised and emotional form within this augmentation; allowing in essence the human aesthetic capability to be communicable in this augmentation – i.e. audible and visual stimulation; social justice; and philosophical or speculative inquiry.

We believe that in the future people will increasingly be part of communities that exist beyond significant geographic references. People will have the possibility to interact not only with what happens in our their neighbourhood, our their city, our their country, but as well with what happens in other recognizable or not recognizable (geographic) areas with which we people become affiliated via connectivity. It is therefore possible to envisage that **ICT will be a medium: a step further in human evolution**. ICT becomes the mediator of the above described **Trans-human Being** and its creative state of mind.

Because of the advancement of technologies and the enhanced possibility to communicate, the individual will be more connected with the community. The possibility for information to quickly circulate amongst members of a community will bring about the perception that the individual is in fact acting as part of a bigger organism, transcending the individual body. The quality of information that a person disseminates will have a real-time measurable impact on that person's life and on interacting communities. This will, for example, give origin to the concept of **Democracy Direct** where **ICT** will

allow for a complex democratic complex system with very different **no political representatives** than that which currently exist, possibly also including some circumstances when no representation will be needed. This will enable the cultivation of the sense of responsibility that people from a variety of cultures need in order to develop collaborations as part of a wider community. **Reciprocal Social Responsibility** will arise as the notion of bi-directional connectivity between the individual and the collective.

Once the physical body will be part of larger organism made of other physical bodies and the necessary technologies to communicate between them. Part of these technologies will have a life of their own and we will find to an understanding that of the need to address ourselves addressing the concept of identity as a dynamic structure that emerges into **Open Systems** as a measure of psychological capacity to adapt to this consciousness paradigm shift. Personalised Production processes will become the standard.

E-Healthcare will become a field that provides the means to solve communication problems, not only inside one's the individual physical body, but also between several bodies through technological means and the adoption of alternative medicines, such as plant-based medications and health promoting natural supplements, and bio-photonics.

De-centralized production of **Recyclable Goods and Tools** will fall within a 'Positive Energy Directive', by which Europe will provide the incentives for the development of technologies that are not only self-sustainable, but that provide energy in excess of their specific needs.

Architecture as instrument

Architecture here refers to traditional physical constructions, and more significantly infrastructures, temporal manifestations, and networked entities. Architecture becomes a critical tool in envisioning and designing the future. Space is understood as a limited and precious resource and we the city (or town or village) square is designated elect the square as its main element.

City squares are connected to many other squares (nodes) across Europe and the rest of the world. Without the city square, the city and its people would be faceless. The city square makes a space where individuals may relate to the whole of the community and the community, to its environment. An **Expanded Narrative** is created through all the nodes (the connected squares). Art plays this role. Art is marked by individual originality as it embodies an element of universality. Art stimulates the quality of mind that goes beyond individual interests and locality; it brings ecological awareness of the network of human relationships and the relationship between people and the natural world.

The functions of art —the experiences and actions it generates— may be compared likened to the functions of a city square. **Art connects people**; communication is its primary purpose. Art puts ideas into the world that people gather around, learn from, share with each other, and through each other. Like the city square, art is place and purpose to share, generating community.

Like the city square, art is a common space of narratives that reveals the community to its individual members, thereby creating shared history and shared future. Art is the "city square" of our time, this

age, and also and our future time. It is a “city square” that is not necessarily made of material, or fixed in space and time. Art is a “city square” that crosses national, economic, disciplinary and other borders, making a world-community that generates **Security** through affinity. The community shares the square, by living and occupying. It is shared space with narratives that encompass histories whilst integrating new narratives.

Visible and ludic[3] spaces built as places for sharing of memories and histories, affording local intensities of connecting physically and emotionally, are part of the history of Europe, be it the kotas in Finland, cafés in France or the Forum in ancient Rome. In the recent decades, with the development of television and then telematic networks, the use of public spaces has decreased. Public spaces tend to disappear, through processes of privatisation of space such as the construction of private and enclosed neighbourhoods, or urbanism plans that do not contemplate those types of spaces within the constant rebuilding of cities. But it should be pinpointed and highlighted that unplanned initiatives also flourished, including illegal, semi-legal or tolerated autonomous cultural or social centres, throughout Europe, as because the sense of community is indeed a basic human need.

Sharing and Community Building are crucial in terms of public safety, health, education, cultural and economic development. If the importance of the development of telematic networks cannot be denied, physical connection and sharing of memories and histories in a face- to- face context fulfil indeed intellectual, emotional and psychological human needs.

With various processes of normalisation that the construction of Europe requires, different approaches could be applied to the building of public places, allowing the emergence of societies where **Energy and Sustainability** are the core of concerns. The study of similar initiatives that have flourished in Detroit (USA) after the economic collapse of the city, could bring provide relevant learning and references. Those spaces include indeed gardening or food in exchange for a certain amount of collaborative work and provide what politics failed to offer citizens: a true sense of community. Future spaces would include non-invasive systems using invisible energy for sustainability such as the movement of bodies.

Trees, plants and parks can be instrumental in the building of communities. They can become symbolic of the shift between humanity and nature, marking a return to tribal veneration as opposed to progressive dominion: technology will no longer be used to exploit earth but rather to celebrate the sustainable integration of natural and technological processes. Trees for example could be connected to global systems that will serve as barometers of ecological and social well-being at several levels. They will monitor the state of the biosphere as well as they will mark the degree of social harmony and well-being amongst inhabitants of a given community, by changes in a continuum of colour. Awareness and empathy with conditions in other cities, in other parts of the world will be made apparent.

The Rural/Urban transmutation —which can be termed Nature II— anticipates the accelerated transformation of rural communities (contraction in size, confidence, wealth and ambition), and

3 Meaning, showing spontaneous and undirected playfulness.

conurbations (massive urban and peri-urban expansion, simultaneous increase in wealth, consumption, psychosis, deprivation and infrastructure). It recognises the synergies and discrepancies between and implications for the distribution of wealth, production, well-being and knowledge which define the significant role of architecture as an instrument for change. Here the role of architecture is to frame emergent properties that feed off human behaviour to represent collective and shared desires. Its function is to build networks between communities rather than walls around them.

Echoing the architect Buckminster Fuller's desire that "all the world would be dynamically viewable and picturable and radioable to all the world…" this architectural vision will provide a platform for shared spaces that bridge the rural/urban divide and are replicated throughout all of the Communities regions and centres. By fusing the historic function of the Agora, manifesting in the contemporary city **SQ**quare, with the pragmatic local-multidimensionality of the village h**ALL**, the concept of the **SQALL** emerges. SQALL's are networked spaces replicated through rural and urban environments that are programmable, networked, emergent, shared, dynamic community spaces. Technologically facilitated, the SQALL provides an aspirational model for a distributed and shared architecture constructed in real-time by people, for people.

Organisms for knowledge building and acquisition

In regard to knowledge distribution, the recommendations include strategies based on **Open Access**, localized and flexible education narratives and telematic technologies. In the connected world, knowledge becomes readily available under open access conditions. Education is localized, which enables addressing material in an area-based context and developing curriculum driven by local needs. Community oriented education will create localized opportunity for the students. Simultaneously, there is a need to be connected to other posts around the world in order to promote understanding of a global situation circumstance and one's each person's place in an expanded context. This **Connectedness** allows adaptation of different perspectives and innovation within the local area of action. Flexible education narratives can adopt virtual and hands-on styles of learning provided through telematic technologies. In this scenario, learning can take place in the field as well as in classroom allowing a deeper understanding of the material.

Personalized E-Learning is a system that necessarily groups the many to the service of the one and vice-versa. Learning in traditional terms is characterized by the metaphor of a hydraulic system where the full vessel (teacher) empties its content (knowledge) into the empty vessel (student). The possibilities of e-learning are that, as a system of multiple connected trans-geographical nodes, knowledge is open, accessible, additive, bidirectional, and diverse. Possible perils of such systems are within their own inherited advantages. As knowledge is open, who defines the definitions, and for whom? To be avoided is becoming enamoured ourselves with the idea of a single solution, of an infinite continuum logarithm where all answers are constructed by a cumulative process alone. Human communication is built beyond quantifiable senses. It is a holistic system built upon a collective narrative that is inherited through the cultural and biological body. Therefore, we still need direct live human- to- human physical contact so the small nuances of human expression can be detected in order to enable teaching to be personalized on the fly based upon our basic constructs and needs of happiness, sadness, love, understanding and play.

The utilization of hybrid intelligent systems to create dynamic and predictive structures for learning purposes will be based on neural models and **Swarm Intelligence Dynamics**. Neuronal modelling embedded in computational tools afford a less rigid structure for learning and communicating. New neuronal models based on 'plasticity' allow systems to adapt, behave, and respond according to their use – this might be individual, allowing the user to navigate an intricate memory-embedded system, or collective, incorporating swarm intelligence theory and/or neural field theory with predictive and user feedback dynamics, or both theories. The emerging mathematical systems allow complexity in models that engage learning models both proximate and remote. The introduction of **Spike Timing Dependant Plasticity** again further strengthens the dynamics of this system creating **Learning Narratives** both individual and collective. Moreover, the openness of these systems afford greater communication between devices and individuals - information and intelligence is no longer 'locked into' systems and becomes decentralized, and shared between organisms, spaces, users, and devices.

Conclusions

Artistic practices bring solutions closer to emerging problems through research. Their processes are inductive, flexible, non-hierarchical, multi-directional and plastic. Even though these processes can become excellent research and innovation methodologies, they are of course not the only way to provide a solution to a problem. There are often many solutions to any problem. However, it is extremely common to understand that a problem has not been fully understood or sometimes even recognized. This is where artistic practices can help by leading thinking us beyond causality. Through their inherent nature, they can help us to perceive whole events as holistic systems and continuous processes, with all their parts functioning in relation to one another, rather than as separated pieces of a whole which can be fixed, under the assumption that assuming that a the change in one will not throw the whole system out of line, which is rarely true.

This paper demonstrates the existence of a world-wide community of artists-researchers dealing with technologies that are not concerned with the production of artistic master works, but yet focus their energies in developing processes of transformation of the human kind. This community, if properly nurtured, can be instrumental for the positioning of Europe as the world leader in this area of development. In fact, similar initiatives can be spotted world-wide in other economic powers, such as the SEAD initiative of the US administration.

The visions presented in the present document find similarities with already ongoing but yet disperse activities in the European context: initiatives such as ICT- ART CONNECT; projects such as Connecting Cities; areas of research funding under HORIZON 2020 in DG CONNECT, such as Internet of Things, Smart Cities and Experimental Platforms. The idea of Open Access is already strongly implemented in Horizon 2020 where all resulting publications have to be made available in open access.

However, a COST Action in the field of Art and Technology would be instrumental for the strengthening, development and proper guidance of the exposed community of artists-researchers. This will without doubt strongly contribute to enhancing innovation, welfare and the greening of Europe, all of which are necessary to achieve, simultaneously and coherently.