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Outline of a Subversive Technopoetic: for a Libertarian Pedartgogy

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OUTLINE OF A SUBVERSIVE TECHNOPOETIC: FOR A LIBERTARIAN PEDARTGOGY

by
FRANCESCO MONICO

A thesis submitted to the University of Plymouth
in partial fulfilment for the degree of

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AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee.

This study was self-financed during the establishment of the School of Media Design & Multimedia Art/Film & New Media at the Nuova Accademia di Belle Arti di Milano, Italia.

A fully legally recognised by MIUR (Italian Ministry of University and Research) new bachelor programme in NEW TECHNOLOGY FOR ART, titled MEDIA DESIGN & MULTIMEDIA ARTS, was established in this years (2004), which included a new two year MA honours course in FILM & NEW MEDIA (2011), and the PhD's Planetary Collegium Node in Milano, named M-NODE (2005).

Three artworks were created by the author as research apparatuses: TAFKAV, I.e. THE ARTIST FORMERLY KNOWN AS VANDA, first exhibit Amber 2007, Istanbul, last exhibit Venice 2011; IS THERE LOVE IN THE TECHNOETIC NARCISSUS?, Padiglione d'Arte Vivente, Turin, 2010 and THE HYBRID CONSTITUTION/MELEZ ANAYASA, Amber 2011, Istanbul.

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ABSTRACT

The thesis explores the relationships between knowledge and knowing in contemporary 21st century information society, using the foundation of the Faculty of Media Design & New Media Art at the *Nuova Accademia di Belle Arti* in Milano as a research apparatus. This Faculty was established between 2003 and 2012, in Milano, Italy. The starting point of the research was established in the hypothesis that technics have tertiarised memory (Stiegler B., 1994), that knowledge is always founded on an ontological pessimism (Queneau R., 1933, Lyotard F., 1979) and on a perpetual process of the generation of meaning (Gadda C., 1923-29, Foucault M., 1966). Knowledge is always and inevitably linked to the technics with which it is passed on. Pedagogy becomes a questioning of the object of knowledge, which transmutes into a definition of the ways it can be visualised. This research then, setting out from a pessimistic position in relation to knowledge and truth, amplifies them to infinite possible forms and therefore causes a dual shift of philosophy towards art and of pedagogy towards hermeneutics. The methodology consisted of a textual and visual description of a territory in a cartography of meaning, seen as the relation between intuition and the way in which practices as knowledges, arts, form remnants.

INTRODUCTION

The Research starts by addressing the problem of the delivery and teaching of 'new media culture' in its 21st century approach in Italy, and specifically in Milan. Lombardy's regional capital has an entrepreneurial and subversive historic tradition. It was here that the ruling classes of the 18th Century opened up to the ideas of Italian Illuminism, it was home to the first hydroelectric plant in Italy and only the second in the world (1895), the first speedway in the world, the Highway of the Lakes (1924), the third racetrack of the world in Monza (1922) and the firms of Italian industrialisation were born and prospered here. Milan was the epicentre of the Italian Risorgimento, when the young intellectual Carlo Cattaneo, took over from the generals to command the insurgent troupes during the 5 Days of Milan, and then constructed the railway line connecting Milan to Venice and established the University of the Italian 20th Century, the Milan Polytechnic. There has always been a libertarian tradition in Lombardy: a tradition that can be traced back to the birth of the 'commons' (1167) with their resistance against the emperor Frederick I Barbarossa, and can still be seen in recent history in the partisan resistance of the second world war.

Milan is a cultural territory that saw the birth of an Italian culture in the 19th Century under the Austrians who financed the Biblioteca Italiana (1816-1849), bringing together the emerging 'intellectuals'; libertarian thinking, inherited from the empire's victorious commons, was forged in the resistance to Austrian occupation and in the claim for liberty. Ferrante Aporti created the nurseries (1830) to support mothers and reduce infant mortality while from the Lombard countryside, let us not forget that Milan is also one of the largest agricultural regions in Europe, Luigi Molinari conceived the 'Modern School' (1912) with the intention of "removing youth from the detrimental and dogmatic education of the Jesuits and militarists of national colleges that triumphed everywhere." Futurism was born in Milan, the anarchical activism of Gabriele D'Annunzio and the director of the socialist newspaper Avanti, Benito Mussolini, founded the Revolutionary Fascist Party.

Milan has a libertarian culture that has produced and still produces new visions and actions, and for this reason, in an Italian legislation that sanctions state control over higher education, Milan is the ideal cradle in which to nurture a New Academy of Fine Arts, the first private Academy to be legally recognised (1980) by the Ministry of the University and Research, known as the NABA.

The defining characteristic of a private academy is that it receives no state funding and for this reason it is enfranchised by political clientèle, i.e. exchange of goods and services for political support, seeing as though without state funding there is no political control over the lists of teachers or directors; there is less state control and a political appointment of the teaching body and researchers.

In this scenario and under these conditions it was possible to create an apparatus that allowed the School of Media Design and Multimedia Arts to operate completely within the legal and state regulations of higher education and research but with a large autonomy in judgement and decision: vital conditions for the construction of a new ecological and sustainable organism of study and research.

Outside of the Italian context, these conditions are necessary and sufficient for accepting the case of the School of Media Design and Multimedia Arts as a pragmatic case, which can be extended to the entire global village; the problems encountered herein being the same as those of other places and territories. In this sense the research with a local model makes it become a general model.

In this Milanese territory it was possible to face the problem of artistic higher education in the digital age, the advent of computers, networks and the globalisation of practices and knowledge.

This problem belongs to the invention of the personal computer (Babbage 1823; Wotzniack-Jobs 1984), as with this new technics the territory of knowledge became multi-modal and fully dynamic. The digital isomorphism, with its unexpected hyper connections, creates a “world of pure imagination”, where borders are hybridized by an accelerated man-machine relation.

However, Italian education was rooted in a classical linear typographic culture and in a rigid separation of Human and artistic fields and scientific and technological (Gentile Reform, 1923)¹; this kind of education is today obsolete. We had to foresee new models for higher education.

¹ Italian royal legislative decrees of 31 December 1922, n. 1679, 16 July 1923, n. 1753, 6 May 1923, n. 1054, 30 September 1923, n. 2102 and 1 October 1923, n. 2185;

The creation of a new degree was made possible by The Process of Bologna (1999)², which resulted in the introduction of the Euro and a series of agreements to ensure comparability in the standards of new common European higher education. This demand created a situation suitable for the production, outside of predetermined patterns and logics, of an entire degree program and an entire area of research. An Academy of Fine Arts, a full member of the MIUR, but less linked with the conservative will of the university, was the apparatus for this project.

This was because a private Italian Academy of Fine Arts started its project on a new degree and majors in Media Design & Multimedia arts. This major was at the origin of a new class of Italian higher education degree named and classified by the Italian MIUR Ministry of University and Research³ as 'New Technologies for Arts'.

The fact that the design and the realization of the school has been made at the same time and place of this PhD research, has led to the possibility of using the whole School as a single apparatus of research and experimentation. This uniqueness, while it exposes them to methodological criticism, was assumed as pragmatic opportunity.

However this case study was conceived not as mere observation field, but as part of the research process itself. In fact, the foundation of the whole School was a concrete 'first hand' test of the insights, meditations, and experimentation of the research. In this way the School was linked to the speculation in a cybernetic way, as all meditations were tested with the teachers and students. It does not represent a fully scientific trial, but instead the School has continued growing from its foundation until the present day.

Part of the School is the PhD program M-Node of the Planetary Collegium, and for this reason we could consider that NABA is not alone but there is also the case study of the setting of a node of Roy Ascott's Planetary Collegium for Plymouth University, UK.

However facing the difficulty in constructing models or simulations that fully capture the workings of complex systems such as a new pedagogy, we can quote Paul Valéry: "*Everything simple is false. Everything*

2 The Bologna Process It was opened up to other countries signatory to the European Cultural convention, of the Council of Europe; further governmental meetings have been held in Prague (2001), Berlin (2003), Bergen (2005), London (2007), and Leuven (2009). On line at 23/04/13 <http://www.ehea.info/>;

3 The Ministry of Education, Universities and Research (*Ministero dell'Istruzione, dell'Università e della Ricerca*, or *MIUR*) is the Italian authority for the Italian universities and research system.

which is complex is unusable." (Notre destin et les lettres, 1937).

Chapter I – The artist as the idiot philosopher

The position of the Idiot is that of awareness: an unusual event that we can sum up as a vague equilibrium between de-vulgarisation (intended as de-objectivisation) and excessive subjectification. He is a conceptual persona who populates the map of the trans-contemporary. Pedartgogy hypothesises that the students must be provided with these homeopathic characters so that they can be independent by incorporating this persona.¹

The Research observed the similarity to Harold A. Innis's insights that 'The medium is the message', (*Empire and Communication*, USA, 1950), which was more widely diffused by Marshall McLuhan, (*The Gutenberg Galaxy*, CA, 1962): the meaning of the information lies in the *remnant* of the communication itself after it has become a hybrid with the technics to which it assigns itself.

I-I The Idiot, negative knowledge and homeopathic knowledge

Everyone can think, everyone wants the truth... (Deleuze and Guattari, 1994: 61)ⁱ - For Descartes, only one pre-conceptual plane exists: thought, the 'I think', or rather the conviction of thinking, the doubtless -being-thought, the *a priori* of certainty of the ownership of the thought. It is the Idiot that says 'I' in Descartes, who assumes thinking as the total identity of itself, who imposes the plane of immanence on the world from the subjective point of view. - *The idiot is the private thinker, in contrast to the public teacher (the school man): the teacher refers constantly to taught concepts (man-rational animal) whereas the private thinker forms a concept with innate forces that everyone possesses on their own account by right ("I think")*. (Deleuze and Guattari, 1994:62)ⁱⁱ – The private thinker is the artist, a persona that stipulates a point of view that is unique and constructive of the world. - *Where does the persona of the idiot come from, and how does it appear?* (1994: 62)ⁱⁱⁱ

The two Frenchmen argue that it perhaps comes from Christianity, since it is true that Jesus invites the 'weak of spirit' to enter the kingdom of heaven, and the weak of spirit are nearer to the persona of the idiot than to the teacher.² Religions set out an idiotic position in identifying the meaning of the world with an "internal and

1 An idiot is said to be idiotic, and to suffer from idiocy, with connotations of selfishness, derived from the Greek ἰδιώτης, *idiōtēs*, "a private citizen," "individual", from ἴδιος, *idios*, "private," "one's own"; it identifies an individual who lives their private life outside of society, who thinks alone;

2 It is also true that *cretin* derives from *chrétien*: kinderred with christian, he who believes 'per se' (intrinsically);

extraterrestrial” cause. If effectively our beliefs guide our desires and shape our actions, as Peirce stated, then in the end the idiot always rears his head. From this point of view, the conceptual persona of the idiot is the origin and the limit of our 'humanity'³. In fact, for the third axiom of the *Pragmatics of Human Communication* (Watzlawick, Beavin and Jackson, 1967) any group that shares sensory characters generates the sharing of feedback. This feedback has constructed a system of signs for the nexus that have given life to the territory that we call human culture. The limit of the character is that this idiocy is always present, in the very act of creating the world. But it must continually equate itself with the acceptance of the social group and of the cultural context if it is not to blow up and dissolve into an impassable dimension, out of reach of sharing, and therefore 'absolutely' idiotic. In this sense, knowledge is idiocy.⁴ But the paradox of any knowledge is that it depends on an *idionized* act, that is on a necessity of the world that only we produce and only we accept. For this reason, all knowledge is ultimately a system of beliefs and desires, which presuppose the assumption of the conceptual persona of the idiot.

The Research crosses paths with Nicholas of Cusa; (DE, 1401-1464). The roots of this medieval thinker's gnoseology lie in the idea that the possibility of knowledge is based on the proportion between the known and the unknown. By this he means that what one knows, one knows only in relation to what one does not know, but this becomes possible only when the unknown element has at least something to do with what one already knows. According to Nicholas of Cusa, this is the position of the 'learned ignorance', the only position one can assume before knowledge (which in his work coincided with God, in accordance with medieval metaphysics) on a perfect and infinite dimension, incompatible with the possibility of knowledge of imperfect and finite beings (i.e. Mankind). For this reason we can talk about (Theology) Negative Knowledge, in as much as erudite is he who knows his own ignorance. We cannot in fact be aware of our own ignorance without having already partially or unconsciously foreseen what we do not know; and vice versa, the 'absolute idiot' has no knowledge of his own ignorance. Nicholas of Cusa proposes a limit to human reason, which cannot go beyond the finite,

3 We are animals that have assumed an idiotic gesture, 'the *cogito*', original sin, that is we have assumed ourselves as the only source of meaning of the world, and to do this we have burdened ourselves with the greatest egocentricism possible and have subsequently begun a narcissistic conquest of the world. As the only source of meaning of the world, we began to share the feedback;

4 The idiot is the person outside of the social community, who does not participate in political life, who does not realise, who is in an anarchical position, and this is the point: an idiot is he who is an idiot by himself, who is not part of the shared idiocy, which the Research defines: the 'vulnus', the 'vulgate';

and which, therefore, in front of the finite, cannot do other than cancel itself out and for this reason become infinite. The concept of episteme is therefore impossible according to Nicholas of Cusa, since it is not possible to grasp the knowledge (God for Cusa) in its totality in our finite existence, or even partially through levels, which themselves must be finite and therefore beyond the finiteness that is mankind.

A Negative Knowledge therefore defines the erudite (teacher) as he who knows his own idiocy, and is for this reason aware of his own inherent limits. One cannot in fact be aware of one's own idiocy without having foreseen what it is that one fails to create; vice versa, the 'absolute idiot' is unaware of his own idiocy, and therefore of his own being. Negative knowledge therefore identifies the position of the idiot as critical yet creative, it identifies all unequivocal knowledge as a hardening of the position of the idiot, while it identifies a syncretic use of all the forms of knowledge, where all knowledge is nevertheless always an idiot-act of man; and this act must be received as an acceptable strategy of knowledge. But be aware that Negative Knowledge does not imply a debasement of the knowledge of the pupils; on the contrary, when facing the task of learning, the student's reason is stimulated by a progress in knowledge, even if it is negative. Knowledge therefore becomes a matter of interpreting the role of the idiot.

The *Idiot* and *Negative Knowledge* seem to be two limits to knowledge; but actually it is the limit that establishes the knowledge. As Paul Valéry states (1937): - “*all that is simple is false, all that is complex is unusable.*”^{iv} By extension, the complex can be seen as unlimited, or rather chaos. So it is not the limited thing that sets a limit for the infinite; rather it is the limit that makes the limited thing possible. Deleuze and Guattari write - “*Pythagoras, Anaximander, and Plato himself understood this: the limit and the infinite clasped together in an embrace from which things will come. Every limit is illusory and every determination is negation [...]*” (1994: 120)^v.

I-II The Non Overlapping Magisteria: the five Vr's.

Speculating the term “knowledge”, the research begins to include philosophy. Nevertheless, if we talk about knowledge in a non-philosophical way, the question arises of whether it is legitimate to talk about knowledge in an artistic research as “reason” or “intellect”. And if it is true that philosophical meanings are attributed in

ordinary language, not all the possible definitions of a concept are received in the specific cultural tradition to which the word relates. Philosophy investigates the criteria that regulate linguistic acts; it identifies one of their properties as the characteristic of being rational, and places “reason” at the centre. There is no unitary history of the concept of “reason”, but rather a plurality of definitions. For many authors, the knowledge of “reason” is a discursive knowledge: reason attains cognitive results at the end of a temporal succession of inferential procedures. In classical philosophy, “reason” means a process of knowledge based on a linear sequence of inferences. In this definition, reason is distinguished from “Intellect – Intelligence”, terms that, perceived as akin to the first, do not express a knowledge based on sequences of inferential procedures (discourse), but refer to a knowledge⁵ based on an immediate apprehension of its own contents and of the complete identity of the perceiving subject and perceived object. It seems clear, therefore, that reason belongs to the philosopher and intellect to the artist (or the mystic). Throughout history, however, the concept of reason has oscillated, straying further from the identity with intelligence or moving closer to it until it becomes indistinct. The history of reason appears to coincide with the history of philosophy, in a jumble of 'isms': stoicism, cynicism, realism, scepticism, pragmatism, idealism, rationalism, ... and numerous others that have succeeded one another over the years. The research finds a “differential” in the fact that every 'ism' provides a new hypothesis of reality. The research therefore faces the problem of how we acquire knowledge of reality, and how we can retain this reliable knowledge.⁶ Piaget (1937) wrote “*L'intelligence... organise le mond en s'organisant elle meme*”.

5 A/N : To know, *conoscere* in Italian, derives from the Latino *con=cum* meaning a means/tool and the Latin *gnoscere* from the Sanscrit *gnâtàs* meaning the 'name/known';

6 In Ancient Greece, the concept of reason recalls the cause that the world implies, the *Nous*, which can be interpreted as “intellect”. *Nous* is the Greek term that is used for reason, attributing it to a cosmological function. The cosmological order is therefore identified with the *nous*, and the human being is capable of intelligence in the measure in which his knowledge is in synch with that order. Between the late middle ages and the first modern age, there was a prevalent subordination of reason to intellect and the collocation of reason in the midpoint between divine revelation and the world. It was the metaphysical systems of the 17th Century that attributed characteristics of rational knowledge to intellectual knowledge. Then the Enlightenment reduced the production of knowledge to rational knowledge, which was held until the arrival of Kantian criticism: reason is the height of human faculties, as for Kant it is capable of regulating the procedures of an intellectual praxis which is not able to learn intuitively (Kant I., *Kritik der reinen Vernunft*, 1781). The American philosopher of science, Hilary Putnam (Putnam H., *Reason, Truth and History*, 1985, It. Ed. Il Saggiatore, ISBN-13: 9788842800125.) believes that for two millennia, humanity has been cohesive in a concept of reality that is a *metaphysical and not real* concept of objective truth; from the pre-Socratic philosophers to Kant, there has not been a thinker who in his basic principles was not a “*metaphysical realist*”. Putnam's concept becomes a place in this research, since it is traversed by the conceptual persona of the “*metaphysical realist*”: he who maintains that we can only call *truth* what complies with an “objective” reality, conceived as independent. The thesis expressed by Immanuel Kant in *Prolegomena to Any Future Metaphysics That Will Be Able to Present Itself as a Science*, is that intellect prescribes its laws to nature. The thesis, however, was not taken seriously due to intense pressure from the “*metaphysical realists*”. These metaphysical realists still today believe they are the “*discoverers*”, the ones that reveal the secrets of nature and expand the field of human knowledge, while innumerable philosophers dedicate their work to ensuring the irrefutability of truth for this knowledge (the epistemologists in particular). The “*metaphysical realists*” are convinced that knowledge is only knowledge if it knows the world as it is. It was Jacob von Uexkull (Uexküll J. von, Kriszat G. (193:

We have seen therefore, that the definition of reason is not just a cognitive capacity, but also the objective background in relation to which this faculty operates. Knowledge, of any nature, becomes active when it faces “repetitions”, “regularity”; it is only activated based upon a comparison, provided by the background. Knowledge establishes this same thing every time it considers an “existing” unit (object) and what becomes considered as the relationship (between objects), and establishing this, it creates a *structure* in the incessant flux of the experience of the world. In his lifetime work, Roy Ascott proposed a synthesis of domains-backgrounds, which humanity uses to trace reality: his vision is radical because it no longer concerns an objective truth, but rather the order and organisation of experiences. The research supports the cartographic apparatus with a syncretic vision of knowledge, or rather knowledges, which it calls *Magisteria of Reality or Knowledge*, or *Non Overlapping Magisteria*. The research retrieves the work of the English academic artist Roy Ascott, who conceived the idea of a *Vegetal Reality*: the reality of psychotrope cultures of shamans and altered states of consciousness, and which has been with us since the beginning of time.⁷

Then there is *Virtual Reality*, which forms part of the phenomenon of sharing experiences, that peculiar form of objectification/construction of reality that arises through the systematising process of sharing experiences via the technics of each epoch. Text is intended as the content of connections, chains, links and analogies constructed in a shared storey of reality that begins in the oral era as a performed tale, i.e. a storey that is enacted, then comes the liturgical tale, which is participated in; this becomes a recited tale, or rather watched (in the teathron), then with the Gutenberg Galaxy, a linear story that is read, then in the Marconi Galaxy, a linear

Streifzüge durch die Umwelten von Tieren und Menschen: Ein Bilderbuch unsichtbarer Welten. (Sammlung: Verständliche Wissenschaft, Bd. 21.) Berlin: J. Springer, x+102.) who demonstrated that every living being determines their own environment based on their own characteristics. Gregory Bateson (Bateson, G. (1979). *Mind and Nature: A Necessary Unity (Advances in Systems Theory, Complexity, and the Human Sciences)*. Hampton Press. ISBN 1-57273-434-5). remarks that Darwinian theory is a cybernetic theory and is not based on the principles of cause and effect. The knowledge of man is usable and vital if it grants us the capacity, even if it is vague, to cause or avoid given phenomena, that is to make predictions. If knowledge is incapable of this it becomes debatable and is regarded as superstition, which depends on this same vagueness. That is to say that superstition is knowledge that derives its value from its vagueness. Ernst Von Glaserfeld (Glaserfeld, E. von (1995) *Radical constructivism: A way of knowing and learning*. London: Falmer Press) considered ideas and theories as structures that are exposed to experience and which do or do not resist this experience. If an idea resists the experience, it does not mean it is true, but simply that it is functional and it adapts, fit & match, to the reality that we determine and the inhabitant beings of that reality”;

7 It should be specified that a knowledge that was ostracised in Europe is what Ascott identifies as the *Vegetal Reality*: an evocation of a plane of immanence and of conceptual personæ conceived through the use of psychotropic substances, which can be exogenous, that is taken and mostly of a vegetal origin, or they can be synthetic or endogenous, that is they are produced by the body itself, such as the various forms of meditation. By causing a biochemical change in the brain, these substances produce powerful and realistic visions. The shamanistic alteration is to all effects a form of modulation of consciousness and therefore of the production of planes of reality;

electromagnetic story, and then digital and interactive⁸.

A *Validated Reality* follows, a reality of experiments and simulations, that is to say of the referential universes of science.

The point to comprehend is that being that all knowledge is based on the liberation of psychotropic substances in so far as the cerebral neurotransmitters and the chemical complex of the mind are no more than modulators of psychotropic elements (i.e. psycho-neuro-endo-crinology). With this meditation of Ascott's as its starting point, the research creates connections in the dialectic between two great opposites, that is between the theological and creationist doctrine of the Roman Catholic Church and the thinking of evolutionary orthodoxy. In particular, between the content of the encyclical of Pope Pious XII⁹ *Humani Generis* (1950), which introduces a significant change in separating the thematics of the creation of the human body from those of a single truth of the church, and therefore recognising autonomy of truth to different Magisteria of knowledge; and the rielaboration of the evolutionary biologist, Stephen Jay Gould (2002) who argues that: “[...] *science and religion do not glower at each other . . . [but] interdigitate in patterns of complex fingering, and at every fractal scale of self-similarity.*” (Gould, 2002 p. 46)^{vi} Gould picked up the autonomy defined by the papal encyclical of the cultural magisteria when he published an essay in *Natural History* magazine entitled “Non Overlapping Magisteria” (March 1997: 269-283)^{vii}; Gould proposes what he described as a simple and completely conventional resolution. He retrieves the term *Magisterium* from this encyclical, and defines it as: “*a domain where one form of teaching holds the appropriate tools for meaningful discourse and resolution.*” (Gould, 1997: 81) He goes on to define the principle of *Non Overlapping Magisteria*: - “*the magisterium of science covers the empirical realm: what the Universe is made of (fact) and why does it work in this way (theory). The magisterium of religion extends over questions of ultimate meaning and moral value. These two magisteria do not overlap, nor do they encompass all inquiry (consider, for example, the magisterium of art and the meaning of beauty).*” (Gould, 1997: 81) Gould also reveals a diplomatic dimension in the adoption of the concept of NOMA, arguing: - “[...] *the reason why we support that position is that it happens to be right, logically. But we should also be*

8 That breaks the linearity and enters the 'structure', with the passage well described by Wu Ming 1 in the allegory of the linear tale to the 'allegorythm' [Wu Ming, 2009] of video games;

9 Eugenio Maria Giuseppe Giovanni Pacelli (IT, 2 March 1876 – 9 October 1958);

aware that it is very practical as well if we want to prevail." Gould maintains that if it is true that between 80% and 90% of Americans believed in a supreme being, then "we have to keep stressing that religion is a different matter, and science is not in any sense opposed to it," if not, "we're not going to get very far."(Gould, 2000)^{viii}

Later that year he went on to elaborate on this position, describing the role of the scientist in relation to the NOMA: - "Religion is too important to too many people for any dismissal or denigration of the comfort still sought by many folks from theology. I may, for example, privately suspect that papal insistence on divine infusion of the soul represents a sop to our fears, a device for maintaining a belief in human superiority within an evolutionary world offering no privileged position to any creature. But I also know that souls represent a subject outside the magisterium of science. My world cannot prove or disprove such a notion, and the concept of souls cannot threaten or impact my domain. Moreover, while I cannot personally accept the Catholic view of souls, I surely honour the metaphorical value of such a concept both for grounding moral discussion and for expressing what we most value about human potentiality: our decency, care, and all the ethical and intellectual struggles that the evolution of consciousness imposed upon us."(Gould, 1997)^{ix}

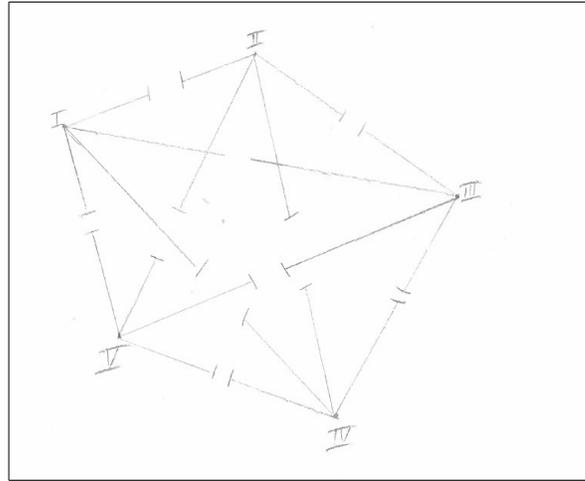
The English zoologist, Richard Dawkins criticised Gould's position on the fact that with the NOMA, religion is set apart from the scientific subjects and the material world, something which cannot and must not happen. According to Dawkins, "it is completely unrealistic to claim, as Gould and many others do, that religion keeps itself away from science's turf, restricting itself to morals and values. A universe with a supernatural presence would be a fundamentally and qualitatively different kind of universe from one without. The difference is, inescapably, a scientific difference. Religions make existence claims, and this means scientific claims."(Dawkins, 1998)^x. Dawkins believes that Gould's view that the Revealed Magisterium (religion) and the Validated Magisterium (science) do not overlap, does not consider the recompense of many religions as mere interpretive systems of the material reality as the effect of supernatural acts and of faith. Dawkins maintains that a religion free from the bind of divine intervention would be very different from our current world religions. Dawkins proposes a more radical criticism of the NOMA, stating that not all questions necessarily deserve an answer.

The concept of the magisterium of knowledge as a coherent system of producing reality and the idea of magisteria not overlapping manages to agree with the complexity of the contemporary, in so far as it accepts the

gnoseological pessimism that is the basis of this research. In this way, it validates the autonomy in the fact that all the magisteria are equally true as much as they are equally false. This position refutes the certainty of any truth as substantial, and imposes itself as atheism in faith, and as hermeneutics in science, implicitly recognising the licitness of worlds defined by a magic line or worlds calculated by a mathematical project in as much as it recognises both of them as neither totally true nor totally false. Rather it identifies the parts of a truth that one only reveals as a process of the relationships that different visions produce and whose normative parts are respectful of all above all, accepting as fact both the hypothesis of Gould and the proud hypothesis of Dawkins. The point that validates the approach of the NOMA in this research is gnoseological pessimism and antisubstantialism (see chapter 3).

At this point, still within and in continuation of this reasoning; the research adds to the three realities of Ascott, the hypothesis of two more realities and knowledges. The *Revealed Reality/Knowledge* which forms part of the phenomenon of Entheogenesis, that is the human conscience's tendency towards the supernatural, and which establishes knowledge on the 'revelation of truth' that is resolved in an identity between knowledge and object, or rather in a faith. Entheogenesis means “[...] what causes a good inspiration of the being between people”; the term refers to the substances and/or practices that trigger spiritual illumination or mystical experiences within a cult, or however, are aimed at the search for new states of awareness.”^{xi}. For religion truth is not the result of reason and its processes; on the contrary, its comprehension presupposes the existence of truth. This form of knowledge, which seems to be the most human form of knowledge alongside the artistic practices, resolves the foundation of the real in the revelation of a plane of immanence which is only justified by its own revelation to the subject and that is created by the subject. Knowledge is deciphered in the Truth of the supernatural, of the divinities. It is no longer an adaptation to an objectivity, a sharing of objective experiences of humanity. Rather it is of reason in a divine objective activity, and cannot come about without Revelation. Knowledge becomes the sharing between the subject and the world and must be established in a system of beliefs and desires that produce it and validate it. The *Logical Reality/Knowledge*, or rather a reality obtained through the formal demonstrative properties of language, and therefore a truth obtained by linguistic demonstration, brings the original three forms of human knowledge to five.

Img 1 Magisteria



These two Realities/Knowledges are the research's addition to Ascott's original three, and retrieving the meditation of Stephen Jay Gould, they are assimilated into the Non Overlapping Magisteria; in this way a circular cybernetic plan of five knowledges is created, of Non Overlapping Magisteria, which does not lead to the consideration of a multiple knowledge – Vegetal, Virtual, Revealed, Logical, Validated-Simulated – as a knowledge of a real world, but rather of a collection of points of view, that is of functional adaptations to the world.¹⁰ The only possibility of knowing therefore coincides with the awareness of a process conditioned by itself and not by another, in which the value of reality is the value of the comprehension of this constructive conditioning.¹¹ Only through the comprehension of the process of relation in process, does life become comprehensible, when at the highest degree of complexity it is reduced and is shown as reason (ratio, i.e.

¹⁰ For more than a century, the luminaries of quantum physics have explained that the forms of knowledge do not show the “things themselves” but things as they appear in the context of the premises, apparatus and contexts of the cognitive forms we use. From this simple and obvious consideration, emerges the fact the only possible strategy is thus that of a syncretic approach: the use of all four forms, in the ways in keeping with psychology, of knowledge and of education, logical and scientific, of each individual, as well as of the sensibility and participation in epic and narrative forms, including interactive forms, of an ideal world that cannot be other than the point at which possible worlds meet and are shared. In this sense then, reason is defined not as a mere cognitive capacity, but above all as the objective order depending on which such a faculty is activated. So knowledge is always relative to a constructive process, and the result of the premises and cognitive forms we accept. Donald Campbell writes: “*The controversial issue is the conceptual inclusion of the real world, defining the problem of knowledge as the fit of data and theory to that real world.*” Campbell D., *Epistemologia Evoluzionistica*, Armando, 1981;

¹¹ The doubt in relation to the agreement between knowledge and reality arises the moment in which a thinking being becomes conscious of its thinking (the end of Eden). Nevertheless, every structure, every background, is what the organism experiments as 'reality', and as long as this has been and is created almost exclusively *involuntarily*, it appears as a fact of an independent world that exists autonomously, operating therefore a limitation of the syncretic capacity of the knowing subject. Facing these limitations, reason must rely upon a constructive syncretic process;

equilibrium between the elements of the process), even though it is established on a physical '*intelligere-understanding*' and even though it remains a falsification.

All the Magisteria establish the knowledge within the limit of the territory that they explore and describe: shamanism in the territory of alteration, virtuality in the forms of mnemonic-narrative, revelation is a limit in itself, logic in the limit of the rules of logos, science is based on a plane of reference made up of all the limits within which it 'informs', it gives form to chaos. - "*The limit is [...] the origin of a system of coordinates made up of at least two independent variables; but these enter into a relation on which a third variable depends as state of affairs or formed matter in the system*" (Deleuze and Guattari, 1994: 121-122)^{xii}.

Such states of limits can be shamanic, virtual, entheogenic, philosophical, scientific. So the meaning of the reference is the form of the proposition, the background informs the figure¹². All knowledge is based on a system of nexuses, always already simplifications and which create a relationship-function that is the meaning; this in turn is a simplification produced by a set of simplifications. A thing is a function that is a variable that depends on at least two other variables. In this sense, here the research deviates from Deleuze and Guattari in the idea that concepts are functions: "*The concept is a form or a function; in no possible sense is it ever a function*" (Deleuze and Guattari, 1994: 144)^{xiii}. To paraphrase the Frenchmen: artistic concepts have experiences for consistency, philosophical concepts have events for consistency, scientific concepts have functions of reference of things for consistency.

Art then, places itself before philosophy and science, if the philosophy in the event sees the 'other without history' and science 'the other as a system of many others', art is the start of all that and is the experience of the experience of the other. So the limit is at the foundation of knowledge, and the Idiot represents an acceptable limit.

The position of the "wise idiot" is that of the Artist who accepts his 'strangeness', his 'peculiarity' and 'uniqueness'. The "idiot-artist" brings into question the certainties of nature, all certainties on time and space, he says God does not exist and knowledge does not exist, it is just an idiotic process, an Eidolon.¹³

12 As in the classical theories of Gestalt;

13 The idiot artist assumes an autopoietic strategy that researches the absurd in order to create; in this sense they behave as idiots, since they cry out loud that 2 plus 2 does not equal 4; they are not bound by reason alone, but by intellect above all else. The artist does not pass through the idiocy of historicism, nor does it traverse any of the other idiocies. The artist assumes the role of the idiot that

In this Research on Pedagogy (see chapter 5), negative knowledge has a 'homeopathic' function. By refuting knowledge and making the student aware of the 'aporia' inscribed in all knowledge, it produces a reaction that forces the student to take on the problem of 'what is knowledge', activating an understanding of the process of truth and generating a counter-environment that enables them to differentiate the *Sein* from the *Seiend*, or rather the technics from the being, and produce the antibodies necessary to activate a healing process for the false knowledge of truth, towards an epiphany that arises from doubt and in the understanding of the tragedy of all knowledge. This is Homeopathic Knowledge.

I-III Concept, art and function

This research sets itself the objective of establishing a Pedagogy that permits art to become 'a form of knowledge', 'objectivisable'. Such a Pedagogy regards the concept as a function that is as a significant account of other experiences, other objects, other concepts. This definition was inspired by the speculation of Deleuze and Guattari, who nevertheless took it upon themselves to specify that -"The concept is a form or a force; in no possible sense is it ever a function." (Deleuze and Guattari, 1994: 144)^{xiv} - The Frenchmen's position is in fact diametrically opposed to that of this research, due to the fact the Deleuze and Guattari view art as an anti-scientific force 'par excellence'. The research, on the other hand, although it observes through the eyes of the 'Critic of Enlightenment', still regards art as a new form of knowledge which is also a knowledge; and although it differs from the philosophy of the sciences, it has many parallels with hermeneutics (therefore vague). The objective is to hypothesise an establishing role of the 'practice of artistic knowledge' through a pedagogy that establishes itself on a knowledge that is syncretic, objective, publishable, and which starting from a philosophy of science retrieves hermeneutics by its own nature. This can also be found in Deleuze and Guattari, when they denounce all criticism and suspicion they have towards the philosophy of science, stating that: "*confusing the concept with the function is ruinous for the philosophical concept in several respects. It makes science the concept par excellence, which is expressed in the scientific proposition*" (Deleuze and Guattari, 1994: 150)^{xv}.

creates knowledge, researches the incomprehensible, the unthinkable, the unimaginable. And he is a person in continual transformation, since he is always in a process that leads him to reject reason in order to retrieve what he had lost: historicism and the rules of ethics, requiring the characters of the Idiot in an infinite cybernetic process (homeostatic);

The greatness of art is evaluated on the nature of the events the artwork calls us to. We must then regard art as the discipline which creates the 21st Century. The concept refers to and precedes the lived, prepares an event to reveal itself within a cartography of living. The concept belongs to art and not just to philosophy. For this reason, this research is not interested in philosophy from the perspective of the discipline, but from the point of view of a research aimed at describing an 'artistic practice of education and knowledge', which departs from a point where the journey of art is a possible form of contemporary philosophy, in as much as it is a form of love of and for knowledge.¹⁴

The main aspect of the research is its pedagogical inspiration, which in a bold neologism becomes Ped-art-gogy with the aim of pointing out the operation of syncretic mestisation between different cultures. The question we should now ask is who is this 'pedartgogist' we find in the text and artwork, like a point of view that from the very first line, shows us the double of the philosopher, the scientist, the pedagogist and the artist? Pedagogy is considered an ugly word.¹⁵ As such, pedagogy appears at the moment in which the question regarding the object of knowledge transforms into a problem aimed at defining the methods of its transmission, because it is this same transmission, in our informational society, that poses a problem. The cause and effect of this anthropological mutation is the passage from a typographical culture to an electronic culture with its networks, its enormous calculating capacity and its new semantic hyper-connections (Castells, 1996)^{xvi}. The machine and the gears, the mechanism of cause-effect, have been replaced by the magnetic with its still unexplored forces and 'passionate attractions' (Fourier-Ascott, 2008)^{xvii}. Knowledge is created along the way, transforming *chaos*, which cannot be regulated, into an *ethos*, regulated by the feedback received along the way; a map, a territory, or better still, a 'plane of immanence' on which to share foresight, visions (Gadda's *gnommeri*, see chapter 3). The pedartgogist positions himself as the thing that is to be constructed, to create on the map or plane of immanence that he himself will draw.¹⁶ But the pedagogical vein of the model (of Deleuze and Guattari) is interesting for this

14 Thus, in the apparatus-research, each question about philosophy is a question also posed about art. And from here, the research educes its paradoxical tone, which for this reason is subversive, since despite researching an objectivity (scientificity?) it cannot help but adopt unorthodox, nomadic and subversive forms in order to find its path;

15 But as we enter the third millennium, many words, too many in fact, are considered malignant, and the time has come to reclaim them;

16 The research owes much to Pasolini (*Lettere Luterane*, 1976). The subversive Italian pedagogis "par excellence", who wrote in Gennariello "how I imagine you", "how you must imagine me". Here, the work of the research is still a work based on imagination. Like all pedagogy, like all hermeneutics;

research for another reason: the fact that it teaches a knowledge 'to do'. It is a pragmatic pedagogy of the 'un-thought', which adapts to this epoch at the frontier, on the edge, where everything is new, where a medium, in order to appeal to the masses, dedicates too little time, only to be de-scribed.

The research uses a multi-pronged approach, one of which is abstract and moves like a probe through examples found within the '*passeurs*', in the libraries, lectures, in the 'conceptual personæ', in the 'demons', in order to signal towards a possible future of Art; and another of which is an empirical 'passing to the act' through ex-periments in education and research, the three year degree in Media Design & New Media Art at the NABA, the post-graduate course in Film & New Technologies for Art, the PhD itself, and artworks like *Is There Love in The Technoetic Narcissus?* (Monico F., 2010)^{xviii} provided the practice that the research experimented during the post graduate course in Film & New Media Art, defining an apparatus that Pedartgogy proposes to the students in order to create concept artworks that assume the value of real research.¹⁷

Yet this research wants the thing itself to be a work of art, the artwork that completes the artistic cycle of the collaboration with Roy Ascott,. This means that the examples included in this research do not constitute an index, but rather produce a vortex effect, imitating the organisation of the contemporary that we inhabit, a vortex that is a sign-limit constantly questioned by other emerging signs that reanimate the velocity of the Maelstrom that we then face. The research contains and re-proposes the same problem that it is exploring in a circular and whirling motion, how to learn to survive the Maelstrom? Rather: how do I learn? How do I teach you?

IV-IV Student's charity and deuterio-learning

As Friedrich Nietzsche writes: - “[...] *behind every cave in him there is not, and must necessarily be, a still deeper cave: an ampler, stranger, richer world beyond the surface, an abyss behind every bottom, beneath every 'foundation'*” (1886: 289)^{xix}. A Maëlstrom permanently in progress, a passing from one vortex to another, because as the work of Deleuze and Guattari (1969) repeatedly states, and of the upturned literature of Plato's Allegory of the Cave, all ontology is hermeneutics and creates new ontologies.^{xx} With his artwork, the artist becomes the pupil in the cave-vortex and descends into the cave in search of a passage that will prolong his journey. Gregory

¹⁷ For this reason, the artwork is usable as an apparatus of research in the practice of Continual Learning and of research that the trans-contemporary demands;

Bateson (an ever under-cited writer) was a prominent pedagogist and the first to use the concept of *deutero-learning*, (1972), where the pupil believes he is learning, but in fact he is learning to learn. This method does not integrate linear input, but 'waves of the vortex' which organise themselves into modular and applicable 'learning curves'. It is, as Deleuze and Guattari state, a chain of pragmatic ideas. We must learn to 'chain together' experiences and ideas, one of the cardinal concepts of the research is precisely this 'concatenation'. We make a chain of the experiences that, when divided, and through the process of metaphorization or metonymization (no one can live the exact same experiences as another, they are all approximated, modulated, to be shared through the use of metaphor and analogy) become concepts, (initially historic, i.e. A-scribed to concrete facts, then with the advent of the Greek vocalic alphabet, they become abstract concepts, i.e. it is not de-scribed by any real succession of facts). The concepts are therefore constructive, or rather; they have an ontological valence, becoming the only possible, self-referential and open territory of art itself.

The concept of 'open' is fundamental (it is a term that we should find frequently in Post humanism). In communication, the pupil should not persist in the essence, but leave the benefit of doubt free according to what is known as the '*principle of charity*: understanding of the meaning must be open and be based on charity towards the other. *The principle of charity* is similar to *the principle of humanity*, which states that we must assume that another speaker's beliefs and desires are connected to each other and to reality in some way, and attribute to him or her "the propositional attitudes one supposes one would have oneself in those circumstances" (Dennet, 1989: 343)^{xxi}. However the research prefer to use the Charity Principle as the Humanity is too human-centred in some way: all interpretations depend on charity; the other uses words in the ordinary way; the other makes true statements; the other makes valid arguments; the other says something interesting. Luckily, the pupil says, since the student does him the charity of believing what he says, during the lessons he charitably believes that he has some meaning. So all knowledge originates from the pupil, and it is the teacher that effectively learns. The pupil behaves as a pupil.

IV-V S for Student

In Deleuze and Guattari we find another Nietzschean instance, that of the world that becomes a fairytale.

Deleuze refutes it as the 'power of the false'^{xxii}: that true-false-true that everyday reality implies and that technological mediations are now revealing. Platonism is turned on its head, abandoning the search for truth in favour of the acceptance of knowledge as an endless process. The problem today, with the contemporary, therefore lies in extricating from the caves-vortexes-thousand plateaus of the world, a single plane, or territory, but no longer in an anthropocentric way, but in the way of those animals for whom the territory does not identify itself with the paths they trace alone, but also, and most importantly, with that interstitial space that exists between one path and another.¹⁸ Pedagogogy assumes that the only foundation of reality is the student and his experiences, the teacher and his experiences, “*In the past man's conclusions about the world were based on the information he had about it [...] Often in fact, the similarity of science and philosophy was so great that scientists and philosophers were one and the same person*” (Kosuth, 1969: 14)^{xxiii}. The misunderstood parts (what is called 'discussion' is not the addressing of a problem, but the solution itself, and what is called the problem is the solution) which seem to impede the conversation, are the branches that support it and punctuate it, revealing unknown and unexpected paths.^{xxiv} For this reason, the research organised four conferences entitled *New Media Art Education & Research*^{xxv}.

A research-vortex is characterised between its components, and as Guattari (1989) describes, it is the concept that: - “[...] never ceases to pass over its components, to climb and descend crossing over them” (Guattari 1989: 10)^{xxvi}. Paraphrasing the Frenchmen: - “*the conceptual persona does not represent the artist. On the contrary, the artist is merely the outer shell of his main conceptual persona and of all the others, who are the intercessors, the true subjects of his philosophy*”. (Guattari 1989: 10)^{xxvii} The conceptual persona is a third person who is defined in text but at the same time is what the text would not be without the conceptual persona. The conceptual persona are those who link together the concepts, they are the artifices of the chain. There is always an authority that precedes the artifice apparatus of the research, an authority that precedes the author, a third person that precedes the first, as the student reveals when he says “ the teacher thinks”, “the teacher wants”, “that author writes,” “that author wants”. The conceptual personæ can be in low definition: in *C'était un Rendezvous* (“It was

18 The interstitial space is that of the process, of Habermas with the ethics of discussion, verified by innumerable students and young artists in academic circles;

a date", Claude Lelouch short film 1976)¹⁹, for example, the artist-director explores a narrative cartography in real time: an eight-minute drive recorded in the early hours of the morning in a single take²⁰. Here this conceptual persona is functional in the construction of a conceptual escape on the plane of immanence of Paris at dawn, of the cinematic experiment of 'Cinéma vérité', of the syntagmatic narration in real time (with dangerous and out of law actions involved). The same thing acts as an apparatus of critical exploration, the artist-student uses the conceptual personæ, however present, defined, or not present, diaphanous, to use a McLuhanian term, the conceptual personæ can be in very high definition, high definition, very low resolution, or low resolution.²¹ It is therefore a research that observes itself, a lever that raises itself, like self-producing knowledge that confirms itself and from itself in the networks of the informational society, such as the Academy that produces its own content and will then judge it in a hermeneutical vortex. The conceptual persona, like the *porteur*, like the teacher, is therefore he who sustains and makes the experience and the word travel; it is not a place but the junction of a great *anarchic and subversive discourse* that guides, presses, stresses and goes beyond the voices of the story itself.²²

From the Pragmatics of Human Communication (Watzlawick, *et al.* 1967), the research retrieves the position that communication is above all behaviour, and this is why the conceptual persona may be a *porteur*, since he

19 "Shot in a single take, it is an example of *cinéma-vérité*. The length of the film was limited by the short capacity of the 1000 foot 35mm film reel, and filmed from a (supposedly) gyro-stabilised camera mounted on the bumper of a Mercedes-Benz 450SEL 6.9 A photo has surfaced that seems to reveal an Eclair cam-flex 35mm camera with a wide angle lens, and a typical "speed rail" hard mount - no gyros - on a Mercedes. This model, which could reach a top speed of 235km/h (146mph), was only available with a 3-speed automatic transmission. Yet, one can hear gear changes up into 5th, as well as heel-and-toe down-shifting with a high-revving engine indicating speeds of well over 200 km/h. Calculations made by several independent groups showed that the car never exceeded 140 km/h (85 mph). Lelouch himself claimed that the top speed achieved was somewhere between 230 km/h and 240 km/h. The soundtrack was later dubbed with the sound of Lelouch's Ferrari 275GTB, which has a corresponding number of gears and a V-12 sound that is quite distinct from that of any V8, including the 6.9 litre V8 of the Mercedes camera car." On line at 14/6/2011 <http://www.youtube.com/watch?v=LDXFvtVIYcM&feature=related>;

20 The car is never seen as the camera seems to be attached below the front bumper. Images are dramatised by sounds of a high-power engine, gear changes and squealing tires. It starts in a tunnel of the Paris Périphérique at Porte Dauphine, to Avenue Foch. Iconic landmarks such as the Arc de Triomphe, Opéra Garnier, and Place de la Concorde with its obelisk are passed, as well as the Champs-Élysées. Pedestrians are passed, pigeons sitting on the streets are scattered, red lights are ignored, one-way streets are driven up the wrong way, centre lines are crossed, the car drives on the sidewalk to avoid a rubbish truck, until at the final destination Montmartre, the driver gets out and embraces a pretty blonde woman as bells ring in the background, with the mass cultural backdrop of the French capital. The vehicle is driven by a persona whom, like the car, we never see;

21 In the texts, there are always a series of references to conceptual personæ that range from very high definition to very low resolution: in the research we have a high definition of Gorgia da Lentini, Martin Heidegger, Marshal McLuhan, Roy Ascott, and a low resolution of Treviranus and Holderlin;

22 A high definition of the artworks used as ex-perimentum and a low definition of the Ph.D research program itself, for which this thesis was written, is nevertheless a fundamental conceptual background for defining and giving value to the meanings of the thesis, since it is constructed and created as an ex-perimentum for researching and confirming the hypotheses of the research;

'behaves' as a *passeur*. The behaviour produces communication²³, it sparks relationships, it connects, or rather chains. Pragmatics is a concatenation (Watzlawick, *et al.* 1967), established on three chained axioms: 1st axiom, It is impossible not to communicate; 2nd axiom: Every communication is followed by feedback; 3rd axiom: The feedback (after a lapse of time) generates the common norms.

Communication is thus pragmatics and a concatenation that creates the ethos. In the empirical observations that the research carried out during the numerous hours of teaching at the School, from the students to the artist and teacher colleagues, the pragmatic actions, even verbal, were chained together giving rise to a meaning necessitated by the chaining itself. The research uses the communication of thoughts, it is pragmatic and is established on the chain as a strategy of research, chaining that produces the maelstrom of the terrifying truth that nothing exists if not within the same vortex, at the centre of which is an empty space, and at the edge of which is a recursive space.

IV-VI De-territorialisation and syncretism

In seeking to ascribe an image to their main conceptual persona, Deleuze and Guattari conjure up the character of Mallarmé: the mime.^{xxviii} He is the author of dominating and involuntary gestures that then become thought and writing. Deleuze and Guattari use the mime to construct concepts, like the soloist voice in the thousand planes of immanence. Marshall McLuhan constructs his own conceptual persona in the Joker, the jester who, using Witts' strategy, can allow himself to explore and search for the truth, since the authority permits him to. It is a strategy based on what Deleuze and Guattari define as 'de-territorialisation,' which refers to the experimental force of the processes of reorganisation following movements from one territory to another. In this sense then, it becomes the central strategy refined by Roy Ascott in the CAiiA research program and now the Planetary Collegium and that the research has seen develop and establish itself in Italy in the M-Node, reterritorialising a neo-community of artists, researchers and professors. This apparatus uses re-territorialisation as a strategy of research and for this reason uses mcluhanean syncretism in its comprehensivism, and Ascott's

23 Karl Von Frisch (A, 1886–1982)) reveals that the bee has communicative behaviour, communicative pragmatics (Frisch, 1923). Nikolass Tinbergen (NL, 1907-1988) found the same in his tireless observations in the field, and in this pragmatic sense, Konrad Lorenz (A, 1903-1989) talks about *King Solomon's Ring* (1949), a mythical object that allowed the wearer to speak with the alterity;

syncretism as the friction between different cultures, models and forms. For this reason, it is founded on the Internet and on composite sessions that seek other places, to branch out from a single academic environment.

IV-VII Distributed paternity and connections

The research uses art as an apparatus that is best used to govern the vortex. The whirling of this vortex is accelerated exponentially by technics (the acceleration was introduced by information technology); the artistic apparatus becomes a refuge where an artist can defend himself against alienation (telenoia). It becomes pure sociability like an area of immanence, like knowledge (philosophy in Deleuze and Guattari), this is - “*the 'intrinsic nature of association', which is opposed to imperial sovereignty and implies no prior interest [...]*” (Deleuze and Guattari, 1994: 80)^{xxix} Digital art is based on what Roy Ascott defines as 'distributed paternity', that is on the collaboration between many individuals. Ascott's artwork meets the work “Connected Intelligence” by the Canadian critic and professor Derrick de Kerckhove, and clarifies the question of post-individualism, i.e. the formation of a connective intelligence distributed in a context (network) in which the development/strengthening and autonomy of every singly creative individuality originates from a level of cooperation and exchange.^{xxx} Roy Ascott coined the term “distributed paternity” because, in his opinion, telematic art enables collaborative and cooperative creativity: art is seen as a continual and integrated process where each element is called to interact with the whole in an associative dimension²⁴. And this is what the research does, it unveils a plane of immanence that is able to absorb the pedagogical and educational experience, to establish, plan and implement a faculty of Media & Art in which the artistic experience frees itself from aesthetics to draw out a new plane of thought, on which the references and projections change in nature, becoming an apparatus of research and knowledge. In Deleuze and Guattari, “*the three figures of philosophy are objectivity of contemplation, subject of reflection, and intersubjectivity of communication*” (Deleuze and Guattari, 1994: 92)^{xxxi}. Interactive New Media Art places the observer, the user, in the prime position; he initiates a sort of transformation of the images, he is at the centre of the perceptive experience of an interactive system. Interactive art also modifies the statute of the artist, who must be a researcher and in a certain sense a philosopher, since the field of interactive art is a sector emerging from

24 But also contemplates the possibility of breaking the association, of creating rivalry;

artistic practice that, like other forms of art, does not yet have well defined boundaries. Deleuze and Guattari go on to say - *“It should be noted that religions do not arrive at the concept without denying themselves, just as philosophers do not arrive at the figure without betraying themselves”* (Deleuze and Guattari, 1994: 92)^{xxxii}. The research moves this towards art, assuming that art in all cases, is a sophistication and a virtualisation, one cannot be art otherwise art would be life itself. This is a phenomenon of human life (it does not appear that artists exist in the animal kingdom), a phenomenon of 'virtualisation', and 'sophistication'.

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Chapter II : The Game of Truth

“The goal of science and the arts and of education for the next generation must be to decipher not the genetic but the perceptual code. In a global information environment, the old pattern of education in answer-finding is no of no avail: one is surrounded by answers, millions of them, moving and mutating at electric speed. Survival and control will depend on the ability to probe and to question in the proper way and place. As the information that constitutes the environment is perpetually in flux, so the need is not for fixed concepts but rather for the ancient skill of reading that book, for navigating through an ever uncharted and unchartable milieu.” (McLuhan H.M., McLuhan E., 1988: 239)^{xxxiii}

Over the years of PhD research with the students, I have had the opportunity to successfully test the *Tetradic Game*, which uses the apparatus we have called '*Tetrad*'^{xxxiv}; this game is 'connectionist', and adapts to the theories of complexity that form the backdrop to the theory of Pedartgogy; what is interesting is the capacity of the *Tetradic Game* to generate multipolar functions of representation and meaning between the objects and individuals. According to functionalist theories, in a certain state of the apparatus certain output is created. The classic example is the homeostatic valve of the steam engine (This consists of two weights ties to a gyroscopic mechanism moved by steam power generated by the same machine. When the machine produces too much steam, the weights rotating and using the centrifugal force, move the mechanism they are connected to, opening a steam release valve, therefore reducing the power of the steam.). The homeostasis achieves stability through a casual research of its combinations and continues until it finds a suitable internal configuration. According to the functionalist theory, the mind creates functional states, like the homeostatic states. This is probably true, but the complexity of the system leads the brain/language system to complexify the homeostasis in the mind: that is in the meeting with language the student can be seen as the emerging phenomenon of a homeostatic system on several planes. The individual then, is not in the mind, but rather in the representation of the missing parts that the individual shares with the other members of the species; in fact it is in the missing parts that the homeostasis is bypassed, in the comprehension as identification (we must remember the paths of intelligence as biochemical phenomena, the system of cerebral return and surrenal capsules.) (Intelligence) in a virtual and shared (social) model. So we can imagine that the mind of the student as well as the mind of the teacher, all the more so today, is the common part of what we do not have, so we could say that we are in the non-being (anatta-anatman). But in the 'absence', it happens that the functional states of a physical system can have meanings only if they 'stand

for something'; that is to say that functionalism without representation is meaningless. The grammatical structure of language represents semantic contents and the neurological states of the brain represent determined mental states. In both cases, signification is responsible for establishing a connection between the states of the system and some individual experience. The meaning can be seen as the common part of individual experience. That is it is what allows us to share the experiences.

II.I : A retrieval

One of the intuitions of the rarely studied *Laws of Media – The New Science (1988)*, the work of Marshall McLuhan and his son Eric, is that “[...] *each of man's artefacts is in fact a kind of word, a metaphor that translates experience from one form into another.*”(McLuhan H.M., McLuhan E., 1988: 3)^{xxxv} This is a position that transforms the words of the individuals-students into pragmatic acts. The emphasis is on the term pragmatic. Marshall and Eric McLuhan declare -”A second fundamental discovery: it makes no difference whatever whether one considers as artefacts or as media things of a tangible 'hardware' nature such as bowls and clubs or forks and spoons, or tools and devices and engines, railways, spacecraft, radios, computers, and so on; or things of a 'software' nature such as theories or laws of science, philosophical systems, remedies or even the diseases in medicine, forms or styles in painting or poetry or drama or music, and so on. All are equally artefacts, all equally human, all equally susceptible to analysis, all equally verbal in structure.”(McLuhan H.M., McLuhan E., 1988: 3)^{xxxvi}

This view informs Pedartgogy and its making education in a new dimension and retraces a predefined path. “*A New Science replaces the current Old Science of media and artefacts, which is too narrow and too rigid, having drawn its techniques from the abstract Method used since the Renaissance.[...]*”(McLuhan H.M., McLuhan E., 1988: 3)^{xxxvii} Making education always means dealing with the immanence of the body¹, and the method that it seeks to isolate, although it is open, must be and remain anchored to the human aspects of the media and technologies.² Here then is the start of the method and its medium: art as though that always implies a practice (Kosuth, 1969).^{xxxviii} The McLuhans retrieve a technique of knowledge from the renaissance and although it may appear strange to many, there are many things that the renaissance and the current informational age have in common (Castells, 1996): in fact the technological acceleration in progress today is due to the mnemotechnic acceleration of information technology.

1 The transforming of every meditation, all metaphysics, into pragmatics takes form, for the fact that behind it there is a body so that each thought and each artefact is an action of an individual and it is therefore possible to give it a value of immanence and truth (immanent to that body in the context);

2 i.e. the 'making' part of art itself.;

1. Printing with moveable characters is a mnemotechnic and in the renaissance such an invention accelerated the cultural codification of the society. Today, electricity and Aristotelian logic reduced to bots of 0 and 1³ have created the informational revolution, which has produced a new mnemotechnic acceleration;

2. As in the renaissance, we do not know more than 95% of the world in which we live, and we do not yet have the technologies to show what we hypothesise. We have technologies and energies deriving from the 19th century, but the 'visions' we have thanks to information technology, to its capacity for calculation, simulation and the unexpected semantic connections of the hypertexts, have produced a 'Cultural Cybernation';

3. Everything is complexified by the globalisation of the phenomena; like in the renaissance, the Global Village has transformed into a multiverse of linguistic, entheological and narrative practices. Also, as during the renaissance, what governs is a 'politics of equilibrium' that aims to balance the relationships between quite different realities. All this produces a dialectic that cannot deposit any truth, but only hypotheses and points of view that belong to one culture after another (Bey, 1994)^{xxxix}; coherence passes to contingency (Ascott, 2004)^{xl}.

4. If during the renaissance the society reacted to the impact of technology with a reinvigorated cultural production (and with the Inquisition, Counter-reform and the Thirty Year War), today due to the impact of technological innovation, post-modern society has reacted in a confused way. The limit of the Test Society (Zielinsky, 2012)^{xli} is that everything becomes a Test, or the words, with their meaning and verification, 'are no longer in time' and nothing can become fixed; the traditional retroaesthetics does not work in the informational age.

For this reason, what the research sought was a heuristic tool that was:

1. suitable for the anthropocene;
2. sufficiently dynamic for the test society;
3. that answered the need for ontological openness of our age (Recombinatory Blast);
4. that allowed the practice of the 'care of the meaning';

3 George Boole (UK, 1815-1864) applies Aristotelian logic to the mathematical principles; this intuition, according to Shannon, defines a coincidence between the functioning of the commutator circuits and the propositional logic. This would later be applied to give the origins of the operating logic of the bit.

5. that was functional to the centrality Pedartgogy gives to alethurgy and to the practice of parrhesia in an educational setting; (corollary): that was functional to the 'game of truth' at the centre of magisterial knowledge.

For this reason, the Tetrads, an instrument of renaissance origin, have been identified to be taken into consideration as an alethurgical apparatus.⁴ Tetrads builds on the meditations of Francis Bacon and of the *Novus Organum* (1620),- '*my object being to open a new way for the understanding, way by [the Ancients] tried an unknown – the case is altered; party zeal an emulation are at an end; and I appear merely as a guide to point out the road; an office of small authority, and depending more upon a kind of luck than upon any ability or excellency*'^{xlii}, and of the Italian professor of rhetoric Giovan Battista Vico; he uses exegesis to mobilise a real 'poetic knowledge' and uses etymology in his work *La Scienza Nuova* (1725).

For all these thinkers, visual space juxtaposes acoustic space. This position is central to the meditation of Pedartgogy since the visual space creates a gestalt of objects, while the acoustic space creates a gestalt of processes and relations. This simple but subversive observation leads the hermeneutical axis towards an idea of production and construction of a reality that is bound to the process it uses to construct itself: anthropogenesis. The truth therefore lies in the territory of the subjects involved. In the BA in Media Design and Multimedia Arts, the course of History of Media (2003-2011) lead by Professor Martino Giudici and the course in Theory and Method of Mass Media (1996-2011) taught by myself, both explain western visual space as “...*an artefact, a side effect of using a phonetic alphabet.*”(McLuhan H.M., McLuhan E., 1988: 4)^{xliii} The introduction of the vowel, as seen as the passage from a reality founded on acoustic space to one founded on visual space, occurred in Greece between the 9th and 3rd century B.C. and its impact on western thinking.^{xliv} The process was also evident throughout the medieval period, and was emphasised by the invention of the moveable type printing system around 1439. As the McLuhans correctly observe: “*During our research we found that there had been great confusion for many centuries over certain matters crucial to an understanding of acoustic space; for example the nature of logos, of mimesis and of formal causality.*”(McLuhan H.M., McLuhan E., 1988: 4)^{xlv}

II.II : The Logos

Marshall McLuhan's method is rooted in the meditation of the *Logos*. This term could be shortly defined as rational-discursive intelligence; this theory, although open, was expounded by Heraclitus of Ephesus (Ἡράκλειτος ὁ Ἐφέσιος—*Hērákleitōs ho Ephésios*; c. 535– c. 475 BCE), a pre-Socratic Greek philosopher in the 5th century BC, by Plato, (Πλάτων, 424/423 BC – 348/347 BC) founder of the first institution of higher learning in the Western world: the Academy in Athens. By the Plato's pupil Aristotle (Ἀριστοτέλης, *Aristotélēs* -

4 i.e. 'a process and game of truth' for a processual pedagogy of second order;

384 BC– 322 BC). By the Stoics school of Athens and later by St. Thomas Aquinas who used it to explain causality. *Logos* presents the universe as a divine utterance with an order, or pattern, analogized in the 'rationality through speech' of humankind. Its development over the centuries is sketched out in McLuhan's doctoral thesis of 1943 on the Tomas Nashe methodology. We owe one definition of the *logos* to Heraclitus, who states that: as the meanings are complete contrasts of each other, knowledge is obtained through a re-mediation' of the sensory information, initiated through the translation-reduction of the sensory information (heterogeneous with each other) into another type of information (intrinsically homogenous) by quality and by quality... the *logos*, i.e. a rational-discursive intelligence.^{xlvi} This *Logos* works with a trend establishing anthropogenesis: the *Mimesis* [from the Greek μίμησις (*mīmēsis*), μίμεῖσθαι (*mīmeisthai*), "to imitate," μῖμος (*mimos*), "imitator, actor"] is a shared common natural behaviour whereby an individual observes and replicates another's. The word can be applied in many contexts, ranging from animals to machines.

It is clear to the research then that the 'formal cause' is the anthropotechnics that translates the sensory information into a *logos*, whichever it is.

Behind everything there is the (a) *Formal Cause*, i.e. what in-forms, creates the model and thus defines the hypothesis of the essence of a thing. The western alphabet has acted as a 'formal cause' for thousands of years; it processes the imitations (recurrent pattern) in a visual *logos*. It was a matter of decades for this historical situation to be completely upturned, starting in the early 20th century with the invention of the thermoionic valve, then in the 1920s came the opening of radio transmissions and the 1950s saw the diffusion of tele-vision; yet starting in the 1970s with the microprocessor and with the presentation of Apple's first Macintosh in 1984, a 'liquid world' was created, which has many links with the acoustic world, in as much as it substitutes the objects with processes and relations, and for this reason is always already unstable.

The *Mimesis* is very important. In fact the pragmatic model at the foundation of this research is created precisely because it is created from this posture. The pragmatic model of communication sees meanings in the occurrence of feedback; at the base of the feedback-meanings relationship there is an imitative process. We could argue that what we propose as 'pre-norm', and then we make become norm when we share it, is imitation, or rather it is what we can imitate of the other and the others, or that part of the other or others that we can imitate (for this reason then we see only a part of all the 'other' animals). So what we place at the foundation of a meaning are the things that we have in common with the other and the others, i.e. the similarities, the 'analogies'. At the basis of intelligence then, there is a process founded on analogies. I.A. Richards understood this and states that: "[...] *Thinking is radically metaphoric. Linkage by analogy is its constituent law or principle, its causal nexus, since meaning only arises through the causal contexts by which a sign stands for (takes the place of) an instance of a sort. To think of anything is to take it as of a sort (as a such and such) and that "as" brings*

in (openly or in disguise) the analogy, the parallel, the metaphoric grapple or ground or grasp or draw by which alone the mind takes hold. It takes no hold if there is nothing for it to haul from, for its thinking is the haul, the attraction of likes.” (Kosuth J. 1991: 16)^{xlvii}.

The research retraced the paths introduced by the romantics and discovered that in the twilight of the 19th century, memetic and oral forms of knowledge were still appearing: in Gottfried Reinhold Treviranus (DE, 1776-1837) who created Biology without the distinction between the animate and the inanimate, i.e. the living and not living (the problem was the definition of the concept of life itself), Gustav Theodor Fechner (DE, 1801–1887) who stated the discovery and reasoning for *analogy* (including *Nanna oder über das Seelenleben der Pflanzen, Leipzig, 1848*, which is a clear example of it), and the *absolute aphorism* of the physiologist Dietrich Georg von Kieser (DE, 1779-1862) and the botanical explorer Friedrich Heinrich Alexander Freiherr von Humboldt (DE, 1769– 1859). These paths were then marginalised by the establishment of forms and methods of knowledge linked to formal visual causes. In fact, of the two forms of *mimesis*, of the *logos*, and of the *formal cause*, the one with the oral structure was last used in the German Naturphilosophie and in the romantic period. But today we live in a 'test society' of such velocity that it is natural to accept the Chaos Theory and the Complexity Theory. This theory brings the cultural discourse back to a *mimesis*, *logos* and oral formal cause. From here we can retrieve Naturphilosophie and Romanticism as history and models, since, as the research has seen: complex system self-learn from the past since- Self-organisation is impossible without some form of memory. In a self-organising system like Pedartgogy, the previous conditions of the culture are vital for the present behaviour of the same culture. The path of a knowledge in constant evolution, must be compatible with a 'singularity of meaning', i.e. with the current impossibility that words are fixed in time: it suggests the model of complex systems as an alternative model; this way the context created is a Gestalt.

II.III : The message

For the individuals-student, the contemporary includes an infinite area of dis-attention which is the electromagnetically materialised back-ground, a fluid reality that surrounds them in a way that is unaware, and an area of cultural attention, called the figure-object. The idea of Gestalt has its roots in the naturphilosophie theories of Johann Wolfgang von Goethe (DE, 1749-1832). He introduced the Gestalt concept to nineteenth-century German thought to refer to the self-actualizing wholeness of organic forms. But the Gestalt is broadly represented through the idea of the standard complex theory: *the whole is greater than the sum of the parts*. First comes the background and the figures emerge later. The area of cultural attention is inhabited by 'cultural objects', i.e. those configurations of 'signs for nexuses' that are acquired through the liminal academic experience

and that represent knowledge.

Nature makes the new areas interact, which then influence each other, “[...] *across a common outline or boundary or interval that serves to define both simultaneously. The shape of one conforms exactly to the shape of the other.*” (McLuhan H.M., McLuhan E., (1988): 5)^{xlviii} The sign becomes a trace and takes meaning from the context-background, the name emerges from the culture that is configurational. Nature provides the structure or style of awareness, the way of seeing’ as in Edward Abbey (1989): - “*Alone in the silence, I understand for a moment the dread which many feel in the presence of primeval desert, the unconscious fear which compels them to tame, alter or destroy what they cannot understand, to reduce the wild and prehuman to human dimensions. Anything rather than confront directly the antehuman, that other world which frightens not through danger or hostility but in something far worse—its implacable indifference.*” (Abbey, 1989)^{xlix} Nature is the background (transcendentalism) that provides the “‘terms on which’ a figure is perceived”, to which we now add a second and third nature.¹

In the context of the research, the Academy is the background, and the con-text is the hermeneutical meditation conducted with an artistic apparatus (Pedartgogy). As the background and figures are part of the same process, it is impossible to separate them since it is a complex system.⁵ And such is the specificity of the artist: the individual who dedicates himself to the re-education and updating of sensitivity. This is why the individuals-students of the Academy are artists, because it is the only possible strategy for processing and anthropogenesis that positions sets itself as a continual re-tuning of sensitivities. The artist is aware that the background of any technology or artefact is both the situation that created it, and the internal environment (medium) of forms of use that is put into action. In this sense, the ‘medium is the message,’ as Harold Innis and then Marshall McLuhan said, which tunes the observation, specifying that each time the old background becomes the content of a new situation (the television becomes the background of the internet), then it is presented to the normal attention as an aesthetic figure (television in front of internet).

As a consequence of the modulations of the minds and ways of life triggered by the new media technics, Pedartgogy tasks the student with exploring the new forms of sensitivity that become available, giving him the task of reporting on the current state of the anthropogenetic background, i.e. the student is given the role of understanding the contemporary. By transforming all the individuals-students into processes of awareness, Pedartgogy forces them to constantly explore, find words for the unarticulated to capture those feelings that people barely perceive, since they do not possess the means to express them. Pedartgogy retrieves the complexity theory and the figure and the background are seen in a dynamic equilibrium, in which the two terms

5 But man, as a symbolic being, has left nature, left the Garden of Eden, and has created his own counter-environments; and herein lies the specificity of his species;

exert a reciprocal action on each other: the Student<>Teacher dyad. In this way, the image of an interval is created, a threshold, a limen between the two S<>T elements, which is resonant and not static, in a dynamic non-linear process.

II.IV : the Tetrad explained

In the work of Marshall and Eric McLuhan (1988) – *The Laws of Media – The New Science*, the research has found the presentation of an apparatus that has taken on the characteristics that have made it become content and instrument, alethiometre for an alethurgy and the 'game of truth', for meditation within the Faculty of Media Design and New Media Arts. This 'game of truth' is the Tetrad and represents the Pedartgogy's complex model of knowledge for the following characteristics:

1. It is a dynamic system that reflects complex systems and is thus useful for generating a complex mimesis that can approximate a de-scription of the contemporary;
2. It is a complex instrument that with its openness, can interface with a highly entropic apparatus like an academy of higher education;
3. Since a complex system is open, it allows it to continually adapt to the transformation of the contemporary.;
4. Since a dynamic system is not static, it allows it to adapt to the continual transformation of the contemporary.

According to the McLuhans, the Tetrad does not propose any “ [...] *underlying theory to attack or defend, but rather a heuristic device* [...].”(McLuhan H.M., McLuhan E., 1988: 7)^{li} It is an instrument-system (an apparatus) composed of a dynamic system of four questions, called the Tetrad. Since in Pedartgogy, the truth is positioned in the pragmatics of the postures of any individual, whether student or teacher, the four questions that form the dynamic system - “[...] *can be asked (and the answer checked) by anyone, anywhere, at any time, about any (human) artefact.*”^{lii} At the base of the system, the McLuhans pose the a question: “*What general, verifiable (that is, testable) statements can be made about all media?*”^{liii}

In response, they found a dynamic system of four questions on the media⁶:

- What does it enhance or intensify?
- What does it render obsolete or displace?
- What does it retrieve that was previously obsolesced?
- What does it produce or become when pressed to an extreme?

These four questions constitute the 'game of truth' that is the mechanism of knowledge proposed by Pedartgogy; it is important to assume that the 'tetradic game of truth' is an apparatus of both critical knowledge (analysis), and creative practice (production-creation), and is in its practice, an alethurgy and in its grammar, an alethiometer.

According to Eric McLuhan “*The 'four' pattern has a special resonance and relation to language.*” (McLuhan H.M., McLuhan E.1988: 8)^{liv} Furthermore, it “[...] *fulfils one of the two great criteria demanded of any law of science: can it be verified and tested? Does it allow prediction? Simply knowing in advance which transformations to expect, knowing where and how to look, lets you predict the effects of any new device or technique before they actually appear in time and experience.*”^{lv}

Explained in this way, it seems the perfect objective for the research: to define an open and dynamic apparatus that allows us to know where to look to predict the effect of new media, on always already new anthropotechnics, and to do it through the new interpreters of the contemporary: the students, and ensure that what they do is verifiable to some degree.

II.V : Ecotones between the West and the East

The research notices that the four rules are part of a path that was revived in the West with Bacon's Idols, but that started almost one thousand years in India with Siddhartha Gautama Sakyamuni (Devanāgarī सिद्धार्थ गौतम;

6 The research see medium/media as anthropotechnic/anthropotechnics;

Śākyamuni, Ancient India, 566 B.C.– 486 B.C.). It is a path consisting of a first negative “cathartic” phase, aimed at avoiding some means, an instrument of knowledge named *pars destruens*, and a second positive, headed to suggest a correct means, an instrument of knowledge, named *pars costruens*. While retrieving the meditations of Siddhartha Gautama Sakyamuni, this pathway became dangerous for Bacon's *idola fori*: the “whispers”, “tales”, “words”, “hearsay”; Bacon's *idola theatri*: the “logic”, “inference”, “speculative thought”, “traditions”, “religious texts”; Bacon's *idola tribus* on the “appearances”, the “verisimilar” as superficial understandings; and on the idea that “this is my instructor” which for Siddhartha Gautama Sakyamuni was in danger of being obsessive behaviour similar to the Baconian *idola specus* throughout books and authority of them.

Throughout their work, Marshall and Eric McLuhan retrieve similar positions in Donald Philip Verene's analysis of Vico's *Science of Imagination*: “the first four axioms constitute the basis of Vico's elements and, says Vico, 'give us the basis for refuting all opinions hitherto held about the principles of humanity' (New Science, 163). 'These four axioms express a theory of ignorance which we need in order to acquire a doctrine of truth concerning the nature of humanity'.”^{lvi}

As we have seen, there is an affinity in the *pars costruens*: for Siddhartha and for Francis Bacon, as for every pragmatic approach, the unique principle to meet or not to meet “Nature” is given by direct experience, as for Buddha's “experience”, for Bacon's “experiment” and for William James's “praxis”. Every single tetrad must break through experience, experiment and praxis, for Buddha only once having experienced that some things are not healthy, rather only after having suspended prejudice, preconception, negative preconceived ideas and negative bias, we can be authorized to avoid them; likewise, once having experienced that other things are “wealthy and good”, rather only after having removed prejudice, preconception, positive preconceived ideas, positive bias, we can be authorized to take and follow them.

Experience assumes the role of the “being in this world,” oh Heidegger's Da-sein. The only pure fact is the impact between us and Nature. And only experience as facts are something that give us the idea of reality: Tetrads are truths because they are actions, part of our world.

II.VI : the Tetrad explained: the visual meaning

The acoustic space reappeared with the physics of the 20th century and the avant-garde. Cornford's analysis in *From Religion to Philosophy* (1912)^{lvii}, foresees how the space of knowledge in classical Greek culture was built on a pre-literate acoustic knowledge. Erick Havelock in *Preface to Plato* (1963) describes how the corpus of epic poetry of Greek oral tradition was a real tribal encyclopaedia, i.e. a system of knowledge. According to

Marshall McLuhan, the Global Village re-proposes these forms, and Walter J. Ong in *Orality and Literacy: The Technologizing of the Word*, (1982) calls this return 'Secondary or electronic orality'. The point is understanding how the system of an oral knowledge is based on patterns of the recognition of meaning that use time to determine themselves, which for this reason, cannot be less than their dimension of processes. Unlike a visual system of knowledge, based on patterns of visual recognition that can become fixed in fixed and rigid forms and configurations, the meanings of an oral culture are always alive, unwritable in a system of reference like that of non-linear systems. The system of meanings of a visual culture, on the other hand, is unwritable in a system of reference reduced to fixed and linear signs. Whereas visual space is Euclidian and linear. Visual space is created and perceived by the sense of sight, when this is separated and abstracted from the activity of the other senses. This 'dictatorship' of the sense of sight is probably an effect of the use of the phonetic alphabet (Innis CA 1950, Havelock USA 1963, McLuhan CA 1964, Ong USA 1982, De Kerckhove CA 1991); i.e. this technic has unbalanced the sensory ratio towards sight, making the characteristics of this sense become 'efficient cause' of our description and creation of the world. Greek meditation highlighted in the 'Gutenberg Galaxy' (CA, 1962); this is an effect of the technique of 'moveable type' printing and retrieves the 'visual' approach of the Greeks in emphasising it. - *“With the advent of Gutenberg technology the components and features of visual space were greatly enhanced. The intensification of visual space in the experience of the readers of the printed word appears closely in the work of Descartes and Galileo and Hobbes and Locke.”*(McLuhan H.M., McLuhan E., 1988: 23-24)^{lviii} - Western knowledge is linked to visual space and seeks continuity, connection, homogeneity, stability, linearity, a knowledge that is abstracted by the interaction of all the senses with the other senses in the perception of the information, the 'efficient cause' is visual space. So there is a movement against the needs of complexity; i.e. a reduction in the depth of the environmental information that emerges in the characteristics of the sense of sight. According to the McLuhans – *“This abstraction occurs by the agency of the phonetic alphabet alone: it does not occur in any culture lacking the phonetic alphabet. The alphabet is the hidden ground of the figure of visual space. Any continuum presents a situation that is a figure minus a ground, such as a Euclidean straight line or plane. A continuum as such is infinite and featureless. Actually, there can be no such thing as a continuum. In nature there are no figures-minus-ground. In fact, in nature there are no figures at all – only a dynamic environmental mosaic that is discontinuous and diverse.”*(McLuhan H.M., McLuhan E., 1988: 22)^{lix}

II.VII : the Tetrad explained: complex space

Knowledge in the world of new media becomes mere process, the meanings are environmental ecotones, dynamic and non-linear processes; ecotones of an acoustic, immersive, networked knowledge, which is nature and which retrieves its complexity and indefiniteness: a knowledge that is acoustic, liquid. This knowledge is

more similar to oriental Taoist and Buddhist thinking and it cannot be a coincidence that Greek thinking emigrated to the East but, not 'processed' by moveable type printing, it maintained the liquid and acoustic subtleties, maintains the Heraclitic flow in Taoism and Socratic maieutics in Buddhism; yet if there was once a division between the Gutenbergian, Cartesian, Galilean, monotheistic West and the oral, dynamic, polytheistic and pluriform East, today, with the Global Village, there is a mestisation. Globalisation (Nayan Chanda, *Qu'est-ce que la mondialisation?*)^{lx} lays everything on the same plane, and the oriental world becomes the model of a revived philosophy where Mahayana Buddhism seems to be the most applicable philosophy for the informational anthropocene, the test society, the liquid society, the society of new media.⁷

'The tetradic game of truth', with its intrinsic complexity and indefiniteness, is 'oriental' in a certain sense, as much as the pre-Gutenbergian era was in drawing no distinction between east and west. The game of truth can also resolve the problem of "Recombinatory Blast". In fact, if today students can no longer entrust themselves to the authority of an author in the space of a system of typographical texts, in the current informational society, only an open but scientific model can become a critical apparatus for the construction of the necessary indexes of knowledge as a dynamic system. And it does this while still demanding objectivity:- "Sir Karl Popper's (right-brain) statement that scientific law is one so stated as to be capable of falsification made it both possible and necessary to formulate the laws of media [Tetrads]." (McLuhan H.M., McLuhan E., 1988: 93)^{lxi} Since the Tetrads are based on language, they can be traced and falsified, and this makes them 'scientifically' acceptable. This makes them ideal candidates for experimentation in Faculties of Fine Arts and Humanities. In 2004, the Faculty of Media Design and New Media Arts began teaching the Tetrads as a heuristic model to analyse the phenomena, artefacts, things, objects and experiences of the informational society (and more) and as a heuristic model for the construction of knowledge. Art of the lessons was dedicated to teaching the 'Tetradic Game of Truth'. They were received with great interest by the students, who began to use them as a critical-creative method. The difficulty was in communicating the model to an audience of students who were unreceptive to the idea that creativity, thought, and art might need and/or are founded on a methodology. But this critical resistance was always overcome by explaining the tetrads and their intrinsic and complex openness. The courses were held in three lessons per academic year: during the second semester^{lxii} of which a series of workshops were added in which the immediate results could be verified, *Water Constitution, December 2011*. To this was added a practice of the tetrads in the world of work *Raiclick, Alessi, H3G*, and of art *TAFKAV (Monico, 2007), Is There Love in The Technoetic Narcissus? (Monico, 2010) The Hybrid Constitution (Monico, 2011)*; all these experiences have given results that have shown the effectiveness of the proposed apparatus and have consolidated the assumption

7 In the summer of 2010 I visited the largest Buddhist centre in Italy, in Pomaia, Tuscany, for a meeting with the director. My intention was to open a dialogue, in order to bring to the Faculty of Media Design & New Media Art NABA a course of Mahayana Buddhist philosophy taught over all three years. This project arose from the conviction of the validity of Mahayana philosophy in the description, management and understanding of the contemporary. Unfortunately the project did not come to fruition, although I remain convinced of the possibilities of this idea;

within the Faculty of Media Design and New Media Art, both for the B A in Media Design & New Media (2004 →) and the MA in Film & New Media Art (2010 →).

II.VIII : the Tetrad explained: theories and things

Edward T. Hall (*The Silent Language*, 1959) stated that all human artefacts can be seen as extensions of man. He argues that man has developed extensions of the things he did with his own body. Hall sees clothes and houses as extensions of man's biological mechanisms for controlling the homeostasis of the environment, temperature, and circadian cycles, climatic conditions in general. Furniture replaces the actions of crouching or sitting on the ground. Tools like the rake or knife give man the claws of a mole or the tiger. Tools that involve energy, whether passive like glasses, or active like televisions, are examples of material extensions of the senses. Other tools are immaterial, such as money, a medium that dislocates the value in space and time, and allows us to overcome the strict reciprocity of bartering. For Hall, it is a way of extending the work of storing (for Bernard Stiegler it is a real form of memory, i.e. *Epiphylogenesis*)^{lxiii}. For Hall (1959) - “*In fact, all man-made material things can be treated as extensions of what man once did with his body or some specialized part of his body.*”^{lxiv} - This approach reveals to students how theories and methods too, are no more than extensions of the things that cognitive activity can do. They are ingenious extensions that allow us to strengthen critical and creative analysis and to optimise the energy needed to complete the mental work one has set as an objective. Through E.T. Hall we are shown a utilitarian and instrumental view of methodology, allowing the students to accept this approach as they can see its advantages and limitations. It is pragmatic, and as the McLuhans state: - “*All of man's artefacts – whether language, or laws, or ideas and hypotheses, or tools, or clothing, or computers – are extensions of the physical human body or the mind. Man the tool-making animal has long been engaged in extending one or another of his sense organs in such a manner as to disturb all of his other senses and faculties. [...]*” (McLuhan H.M., McLuhan E., 1988' page 93)^{lxv} This ingenuity is explained in evolutionary terms, maintaining that it confers to the human animal an evolutionary advantage, since thanks to this faculty, he is able to accelerate his response to environmental transformations, determining a particular anthropogenesis.⁸ The McLuhans go on to say that Hans Hass (1972) sees this power to create additional prosthetic organs - “*as an enormity from the evolutionary standpoint ... an advance laden with unfathomable consequences.*”^{lxvi} Karl Popper talks about 'exosomatic evolution', i.e. man's capacity to evolve in his life using a space that is not the traditional space of the phenotype. Bernard Stiegler (2001)^{lxvii} argues that technics are at the origins of epiphylogenesis of memory, the starting point of every cultural process. This accelerated evolutionary response nevertheless has two

8 It appears to be advantageous, even if it makes man lose his identification with the environment, which seems to be one of the primary sources of his happiness;

effects:

1. The mismatch between the mental environment and the real environment;
2. The lack of biological tools to face the environmental ingenuity.

Point 1 refers to the fact that man has to live in two environments simultaneously, that of Nature and that of Knowledge (Timothy Leary for this reason described man as an amphibian)^{lxviii}. One is material and immanent (Natura) and the other is the product of the magisteria and is not immanent. In fact, when man embarked on the evolutionary path of the cultural context, he fell into an always already new situation; it was an exit from Eden towards a world where autopoeisis reigns, and the cost was the loss of destiny⁹.

The second point is linked to the first, i.e. it is the problem of the fact that man does not have tools to face mental development and the always already new construction of environments triggered by anthropogenesis. This has led man to a point where he no longer trusts himself when he crosses the territories he himself created. In *Die fröhliche Wissenschaft* (1882-1887) Frederic Nietzsche warns us of the dangerousness of having abandoned the knowledge of the transcendent. The 'God is dead' in the thinker resonates as a dangerous change of paradigm that would have shown the entire crowd of Human Cultural Narcissism, that without Leviathan (Hobbes, 1651) it would have transformed into a terrible executioner of itself, the environment and of life. The prophecy was sadly confirmed by the two world wars, and by industrialisation. The wonderful work of Eric Hobsbawm "*The second brief*" confirms this. As written in UNO di UNO *Esiste una New Italian (Media) Epic? da una narrazione letteraria a una narrazione mediatica, versione 1.0, - Today the human gene pool faces the greatest mixing that it has in two million years (if we identify Adam with the Homo Habilis), thanks to the technological means of communication, the populations hybridise and mestize. According to geneticists, the mobility of people is at the origin of a homogenisation of the characters of our species. Contemporaneously, natural selection is inhibited by technology. In fact, many individuals naturally destined to succumb to serious functional deficits, live successful lives and reproduce, while natural predators no longer have an effect on the rules of survival. [...] We could argue that today, the factor that selects, the factor that decides who lives and dies, is no longer hereditary genetics, but culture. Today, evolution could be 'memetic', that is to say that it has to do with ideas, not genes. But then we see that the individual, being memetically evolved, falls into the field of non-adaptive evolution, he delays the phase of procreation, while companions who have not developed an*

9 In this sense Ananke;

interest in culture have already begun to start a family. So from an evolutionary point of view, culture (and the type of intelligence connected to it), would be an evolutionary disadvantage.”(Monico 2010: 40)^{lxix} Rather, the new electric and artistic mind has no biological tools that allow it to alter the effects. “Any new service environment, such as those created by the alphabet or railways or motor cars or telegraph or radio, deeply modifies the very nature and image people who use it. As electric media proliferate, whole societies at a time become discarnate, detached from mere bodily or physical 'reality' and relieved of any allegiance to or sense of responsibility to or for it.” (McLuhan H.M., McLuhan E., 1988, pp. 96-97)^{lxx}

II.IX : 'Second Order Evolution'

What emerges is that individuals-students must be directed towards the comprehension of the transformations induced by our extended organs. The tetrad presents itself as the ideal tool to make this possible, since:

- it is a verifiable instrument that meets the criteria of publicity;
- it respects the rules of complex systems as it is dynamic and open;
- it can be made into a method without deep specialisation (since with the varying of the media varies the equilibrium of the senses and consequently our description of reality).

Subsequently, according to the *Pragmatics of Human Communication* (Watzlawick *et al.*, 1967), ethical norms come out of the exchange of actions in the environment between two subject as a consequence of a variation in the de-scription, new feedback is generated, which when inserted in time generate new ethical norms. The McLuhans quote Peter Medawar's essay entitled “*What's Human About Man Is His Technology*”, in which the author draws a distinction between accessories like the microscope and the telescope as accessories of the senses, while he sees knives, hammers and auto-mobiles as motors. Both categories receive orders from us. - “*The man characteristic of man is not so much the invention of tools, but more the communication from one human being to another of the knowledge to make them.*” (McLuhan H.M., McLuhan E., 1988: 98)^{lxxi} From an evolutionary point of view, man cannot transfer his organs or motors through biological heredity; to do this we would require geological scales of time. But what man does is to transfer the information necessary to recreate

these accessories and motors in the form of culture. The processes through which man passes on the information required to create the practices and objects are an alternative to classic genetic evolution, or rather they are the evolution of evolution, a biological stratagem. In this sense we can call it a Second Order Evolution. The epistemologist Karl Popper talks of *exosomatic evolution* (1979), stating that the defining characteristic of humanity is that it triggers an evolution in its lifespan^{lxxii}. This evolution is not genetic but cultural (even if Roy Ascott questions whether our tendency to communicate everything might be a genetic tendency, bearing similarities to the ideas of Richard Dawkins. 1976).^{lxxiii}

The research then, sees man from the pragmatic point of view, and identifies with the assumption of the McLuhans that – *The transformations induced by our artificial organs, which generate completely new situations in the systems of services and in the system of life, constitute the object of the Laws of Media.*”(McLuhan H.M., McLuhan E., 1988: 98)^{lxxiv} i.e. the tetrads that define that 'game of truth' as the operative nucleus of Pedartgogy.

II.X : the Tetrad and the position of the Artist

The tetrad is the alethurgical apparatus experimented by the Pedartgogy of the Faculty of Media Design & New Media Arts at the NABA (2004-2012). It is based on a posture that is radically different to that adopted by the 20th century 'philosopher'. The new posture of the artist emerged repeatedly in the research, seen as a central character in the informational age, the only ones with the ability to maintain the velocity of the Test Society.

The society in which the individuals-students are immersed is in constant and continual transformation. The problem of the Informational Society (Castells M., 1996), of the Anthropocene (Crutzen P., 2000), is that of the Test Society (Zielinsky S., 2010). Retrieving McLuhan, the research defines it as a 'vortex' that cannot verify the 'experiences in time' and thus cannot generate shared signs for nexuses. This is what makes the construction of a rigorous method like the Western philosophical method impossible, and in contrast, retrieves and attributes much importance to the artistic and Oriental methods. The artist, seen an individual who lives in the present and refutes the cultural codifications referred to the past, assumes the posture of an Oriental monk that replaces (or retrieves) the philosopher. In this sense, art today is a hermeneutical practice.¹⁰

The individual-student of Pedartgogy must assume the identity of an artist since without the posture of the artist, the student would be limited to adapting to his technological extensions, emphasising his Cultural

¹⁰ Since the times of Homer, art has represented a form of knowledge based on the simultaneity of knowledge and experience; in artistic practice, knowledge is incessantly motivated, renewed and retrieved from experiences;

Narcissism and becoming a servomechanism of these very extensions. The individual-student of Pedartgogy must assume the awareness of the tragedy of knowledge and, through Francis Bacon's *Pars Destruens*, understand how the idols of tribal culture, of caves and of the forum are adored.^{lxv} In addition, the McLuhans write that “*Media, that is, the ground-configurations of effects, the service environments of technologies, [...]*” (McLuhan H.M., McLuhan E., 1988: 99)^{lxvii} in this phrase we can see the similarity of this theory to the theories of dynamic systems and complexity. In fact, the typical background concept of the Gestalt and the concept of effects reconstruct a scenario of interlaced actions, an entanglement, typical of dynamic systems. For this reason, in the previous chapter, Pedartgogy is compiled as a complex methodology.

The systems of reaction and counter-reaction created by technology, as sensory extensions, accessories and motors, cannot be reduced and linearised for scientific observation. They create and provoke reactions and counter-reactions not only on a level of the known language, but also on a sub-liminal level, i.e. they act by opening connections that are simultaneously yes, no, maybe.

Each connection between the nodes has a certain 'strength' created in the relation (within the node and between nodes), and in the theory of neural networks (to which this modelling refers) this 'strength' is called 'weight'.

These 'weights' can be Yes/+1 (exciters), No/-1 (inhibitors) or Maybe/0.¹¹

The Tetrads, therefore are the nucleus of the operative system of the pedartgogical framework, a way and method of analysis that directs its attention not towards the quantitative but towards the qualitative and that operates a syncretic system, where the heterogeneous truths of the magisteria coexist, to map the dynamics of the anthropotechnics. For this reason the value of the tetrads does not lie in an objective semantic clarity, but rather:

- in shifting the gaze of scientific method, without abandoning it;
- in acting qualitatively, without sacrificing quantity;
- in creating a truth while denying 'the truth'.

11 Ferdinand de Saussure (1974) affirms a similar concept in his theory on the idea of a distributed semiotics maintaining that the signs condition each other;

In short, it is closer to a fuzzy method than to the classical linear method. But for precisely this reason, it is well suited for use in Pedartgogy, in that evolutionary phase in which the student is a liminoid (Turner, 1982)^{lxxvii} that does not allow categorisation, by its very definition.

The tetrads are a heuristic tool, a game of truth that allows us to identify the properties and effects of technics, media, artefacts; they do it in a pragmatic way, creating a natural language that in its imprecision manages to address the objective. The tetrads are not based on ideas or theories but are a game of a pragmatic nature, which identifies the action and the effects caused by the accessories and motors that second order evolution gives to man. This game of truth applies to all human artefacts, hardware or software, philosophical theories and aesthetic styles.

II.XI : The tetradic game of truth as posture

The tetrads are always already behaviour and postures performed by the individuals-students who become the content of them, and so the meaning of the analysis implemented is the always already new product of a gesture, an action and a will.¹² In fact, retrieving the third axiom of communication that more or less states: 'After a determined lapse of time, the set of feedback generates shared norms', a view of the meaning emerges as the result of a communicative syntax and not semantics. i.e. as the product of gravitational forces between objects-processes that create, between actions and emotions (will) the context of the S<>T dyad and by extension, the human context.

The tetrads are framed as four pragmatic actions driven by queries:

- *“What does the artefact enhance or intensify or make possible or accelerate? This can be asked concerning a waste basket, a painting, a steamroller, or a zipper, as well as about a proposition in Euclid or a law of physics. It can be asked about any word or phrase in any language;*
- *If some aspect of a situation is enlarged or enhanced, simultaneously the old condition or unenhanced situation is displaced thereby. What is pushed aside or obsolesced by the new 'organ'?*
- *What recurrence or retrieval of earlier actions and services is brought into play simultaneously by the*

¹² This point of view derives from the acceptance of the meanings as the product of feedback inserted in time, and thus as the mere result of a pragmatic process between subjects and participants in a communicative context;

new form? What older, previously obsolesced ground is brought back and inheres in the new form?

- *When pushed to the limits of its potential (another complementary action), the new form will tend to reverse what had been its original characteristics. What is the reversal potential of the new form?*

This tetrad of the effects of technologies and artefacts presents not a sequential process, but rather four simultaneous ones. All four aspects are inherent in each artefact from the start. The four aspects are complementary, and require careful observation of the artefact in relation to its ground, rather than consideration in the abstract.”(McLuhan H.M., McLuhan E., 1988: 99)^{lxxviii}

The Test Society causes technologies of visual communication and technologies of oral communication to appear contemporaneously, thus activating different and opposing efficient causes, i.e. visual technology for describing reality (print, painting, photography, cinema,...) defines a world populated by finite objects that fluctuate in a space, and thus are identified by themselves, while acoustic technology (hypermedia, 3D, videogames) for describing reality defines a liquid world populated by infinite processes connected in time, and can only be identified as dynamic processes. Again, the McLuhans specify that: *“In tetrad form, the artefact is seen to be not neutral or passive, but an active logos or utterance of the human mind or body that transforms the user and his ground.”(McLuhan H.M., McLuhan E., 1988: 99)^{lxxix}*

McLuhan uses the Aristotelian/Thomist notion of *Logos* to describe the 'formal cause' as that which is 'duly proportioned' to the senses. However he extends this concept of 'rational utterance' to technologies. That the speech and artefacts of humankind exist as forms proportionate to the *Logos*, McLuhan accepts as a matter of belief, (as Entheogenetic faith). However the Research from one side, does not believe in any truth, from another side it retrieves the Peirce theory about pragmatism: *“I will also take the liberty of substituting "reality" for "existence,"^{lxxx}* retrieving the passage from semantics to syntax, i.e. the idea that the meaning is feedback in action, and that the accumulation of the feedback in time verifies the actions. Remains that one of Peirce's most important philosophical assertions was his definition of belief as the final end of any investigation, which thus is defined and re-defined incessantly in a system of feedback of existence.

In line with the Theories of Complexity, the method is a dynamic system, the method is a process: the tetrad pays attention to *“[...] to situations that are still in process, situations that are structuring new perception and shaping new environments [...]”* because *“[...] the structures of (new) media dynamics are inseparable from performance.”* (McLuhan H.M., McLuhan E., 1988: 116)^{lxxxii}

The research, in the background of an ontological pessimism, transforms and proposes the pragmatized logos (tetrads) of the McLuhans in an apparatus of knowledge for the individuals-students of the Test Society. In a system of beliefs and desires in which the individual-student is fallen, it invests faith in the academic apparatus as a territory and praxis of 'learning', which generates a 'learning' and a knowledge that are always already new, and that therefore reflect the need for continual innovation of this absolute present, where everything is triggered and spawned by beliefs about things and the world, regardless of whether they are 'altered', 'virtual', 'revealed-entheogenetic', 'logical', 'experimental'.

The tetrads are pragmatic actions: observe, try, perceive. To construct a tetrad, an individual must implement empirical actions, must have observed, tried, perceived. What they create is starting from the immanence of every subject of providing models on which faculties and actions are expanded or reinforced or relieved by our artefacts. This happens in two phases, a reflective-creative phase and a phase in which etymology explains “[...] *the analogical ratios that constitute our being and our cultures*” (McLuhan H.M., McLuhan E., 1988: 117)^{lxxxii}

II.XII : The 'motors' of the Tetrad

Etymology as practice of structuring the relationships and objectivisation of proximity becomes the term for indicating the sharing of the meaning.

Etymology is the science that studies the origin and history of words. It comes from the Greek *ἔτυμον* (*ètymon*) = "true, real, intimate meaning of the word" and *λόγος* (*lògos*) = "study, discourse". It allows us to visibly reveal the content of the words by listing the meanings and functions associated with the word as a sign. In this way it is possible to specify a chain of nexuses that reveal the hidden meaning of the signs and draws out the gestaltic relation, the background figure of the word. Etymology was first developed in the Orient. it was particularly relevant in India, with the name *nirukta* (one of the six disciplines in the study of the Veda, alongside metrics, grammar, phonetics etc.). As early as the 5th century B.C. (perhaps even the 6th), the grammarian Yaska wrote a text called *Nirukta*, which sought to explain how the meaning of certain words was formed, mainly in the context of the interpretation of the Veda. Yaska's work was continued by other grammarian; of particular importance in the field of etymology was *Mahābhāṣya* (2nd century B.C.), attributed to Patañjali. In the West it was Plato (ca. 360 B.C.) in the *Cratylus* dialogue who first proposed a number of etymologies. Plutarch 46–127 A.D. includes etymologies, sometimes ingenuous, in a number of works. The *Golden Legend*, probably from the 13th century, achieved great notability: in recounting the lives of the saints, this text proposed etymologies, often invented, for the names of the saints. In Europe it was in the 17th century that philologists first became interested

in the affinities that linked the Indo-European languages, laying down the foundations of the comparative method: the reconstruction of the history of words through comparison with other similar languages, both contemporary and ancient. From the action of structuring the relations, emerges the term of the sharing of meanings

For this reason we develop a 'resonant interval' between the structure and meaning, an interval in which neither of the two terms has priority over the other since they are co-creators of both.

The words are signs for nexuses resulting from the praxis of a social animal; we clearly see the passage between praxis and meaning in the words of the McLuhans - “*Technology – second nature – recapitulates first nature in new forms; that is, it translates from one nature to another; the user is the content and the utterer; technology, as extension/outering, is speech.*” (McLuhan H.M., McLuhan E., 1988: 117).^{lxxxiii} The practice of etymology plays a central role in Pedartgogy; each time we use a tetrad to analyse an object, context, or problem, we employ etymology to explode the hidden meanings and place them in a dynamic relation between them. At this point, new relations emerge; we find new dynamic connections that are the meaning of the tetrads. The entire body of work of Herbert Marshall McLuhan, as well as his method and the Tetrads, are founded on language. - “*Language is one resource and, as Joyce found, infallible when handled properly.*”(McLuhan H.M., McLuhan E., 1988: 117)^{lxxxiv} This is a definite sentence, in no way vague, it is clear how language is a phenomenon of vast phenomenology: the alphabetic language is a real structure of communication that the individual and society operates in and, as Claude Levy Strauss (BE, 1908-2009) states, it determines their conscience. However the McLuhans were well aware of this: - “*The task confronting contemporary man is to live with the hidden ground of his activities as familiarly as our literate predecessors lived with the figure minus ground.*”(McLuhan H.M., McLuhan E., 1988: 114)^{lxxxv}

Replacing contemporary man with the individual-student, the linguistic operation must be perceived as an apparatus suitable to operate in an open and 'scientific' regime, but must not be seen as the only practice, and must be backed up by other artistic, oral, musical and visual practices.

Once perceived, the form as apparatus then, like this thesis, the form remains linguistic; i.e. Pedartgogy must enable the individual-student to understand the language as an apparatus and simultaneously how the same language, as an apparatus, processes and directs the truth and the production of reality. Above all it is evident in the 'Virtual' magisterium. But this is because the whole media themselves “*[...] are forms of language and what Bacon termed “Idola Fori”*” (McLuhan H.M., McLuhan E., 1988: 115)^{lxxxvi}, and what is revealed by the “Kalama's discourse” of Buddha in the *Anguttara Nijikāya (I, 171) Anguttara Nijikāya (I, 171), Discorso ai Kalama*; so we could say that Pedartgogy is rooted on the apparatus of artistic practices (pragmatics) and the

transformative power of language (hermeneutics) and the scientific power of language (sharing-verification).

Rationality expresses a control of the conscience, which is an effect of the tendency of the language, and the magical the mythical, are imprisoned, while living on the edge requires freedom of intelligence.

The hermeneutical power of language is a power that includes a limit. In fact this limit structures the conscience in a Babel of discourses and meanings, more or less defined and confused, indistinct and manifold, which are founded on the difficulty of assuming the meaning as a network of resonant meanings. For this reason, man's rationality is confusing, indistinct and manifold. Rationality expropriates us by harmonising us with those around us, in a gravitational field of proximity, where everything is far and near at the same time. Rationality models use according to a common meter. But it is not only due to rationality, it is the fruit of the development of the logos, of an equilibrium in the discourses, which existed prior to and which is the true author of what we can call 'objectivisation of proximity', it is the language that defines us, completes us, finishes us and determines us. But this is also a language that contrasts this exasperation of the logos as a rational language. This language is a praxis, it is the fruit of an autopoiesis generated by the biochemical regularities and irregularities of the body, i.e. of the praxis of 'binding ourselves' to objects. This 'linking' derives from the activity of the surrenal glands (and of the mineral and dietetic precursors), i.e. a fact of the passionate attractions is an interesting argument emerging from this research. Things, experiences for the biochemical drifts of my own experiences, of the mechanisms of cerebral return, of what Freud called super-ego. Probably, if the mind, or rather the brain, works on sugar, the pancreas and surrenal capsules, glycemic and insulinic curves, the liver and the glucagon, controlled by hormone, have an important role in the understanding of the world, because I do not understand but I live.

Many meditations maintain that the use of the word is one of the causes of the unhappy destiny of anthropogenesis, it is an evolutionary accelerator that will destroy mankind that technics brought Homo Sapiens to evolutionary innovation: a innovation evolutive: the alteration of cerebral structures; abstract thought and the elaboration of technics, values, opinions, beliefs as pure memotechnics. The behaviour derived from it have created a singularity and made man a species in which language has eliminated the distance between biological evolutions and cultural evolution. Pennisi and Falzone^{lxxxvii}, work syncretically between biology, ecology, cognitive science and philosophy of language, to support the hypothesis of a cultural price than man pays to language as the product of natural selection: the extinction of the technological species. Nevertheless this 'technical singularity' is also one of the principal devices of anthropogenesis and until we pass a post-human phase, we must meet and perhaps try to exorcise this pain with the use of other forms of communication. The McLuhans write - *“To date, linguistics, philosophy, and semiotics have all stopped short of etymology (relation between figure and ground), at the limits of denotation or connotation – content and concept.”* (McLuhan H.M.,

We have a metaphor, from the Greek *μεταφορά*, from *metaphérō*, «I transport», is a *topos*, a rhetorical figure that implies a transfer of meaning from one sign to another sign. Aristotle (Stagira, 384 B.C. or 383 B.C.–Chalcis, 322 B.C.), in his work *Poetics*, defines the metaphor as "*the application of an alien name by transference either from genus to species, or from species to genus, or from species to species, or by analogy, that is, proportion.*"^{lxxxix} The term that would usually occupy a place in a phrase is replaced by another whose 'essence' or function superimposes that of the original term, thus creating expressive connections where there was no term, or rather enriching the sign with always already new meanings. As the metaphor transfers the meaning and/or meanings, it has huge value in art, and any innovation. In pragmatic terms, where we lack the terms, the signs for nexuses, we can use a metaphorical approach. For example, the word *papillationage* indicates the characteristic movement of the *papillion* by analogy with the insect *papillion* (in the similarity between the movement of the thought and the motion of the *papillion*). Often these mechanisms are fossilised in the lexicon and are not noticed by the speaker, yet they can be reconstructed through etymological study.

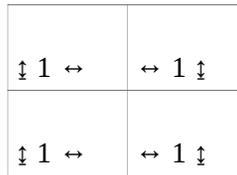
For Marshall and Eric McLuhan, the metaphor is a technique of perception linked to the right hemisphere, i.e. it forms part of perception. For the McLuhans "*All words, in every language, are metaphors.*" (McLuhan H.M., McLuhan E., 1988: 120)^{xc} The two Canadians write that "*[...] a metaphor is a technique of presenting or of observing one situation in terms of another situation.*" (Ibidem)^{xcii} It is not the fruit of a conceptualisation typical of the left, rational part of the brain. Even the metaphor as etymology, realises juxtaposed relations of figure and background, which can be seen as dynamic relations and that therefore make a real 'motor' of the pragmatic creation of a meaning. - "*All metaphors have four components in analogical ratio. 'Cats are the crabgrass of life', presents 'cats are to (my) life as crabgrass is to an otherwise beautiful lawn.' [...] the basic mode of metaphor is resonance and interval – the audible-tactile.*"(Ibidem)^{xciii} This quadripartite relationship - "*relates to all human artefacts (verbal and non-verbal), its existence is certainly not deliberate or intentional. Rather, it is a testimony to the fact that the mind of man is structurally active in all human artefacts and hypotheses.*"(Ibidem)^{xciii} And this quadripartition can be found in the tetradic game of truth, as the dynamic putting in order-relation of a sufficient number of elements to manage a complexity. The tetrad is a dynamic metaphorical system, which can therefore be seen as a complex instrument (motor) that can adapt, by analogy, to being use with a complex method (Pedartgogy) that describes a complex territory, the anthropocene of the information society and the test society.

A method that assumes pedartgogical value the moment in which one accepts ontological openness and the magisterial form of knowledge, in the sense that the product of the tetrad is the human species' own territorialisation, which is also and above all always already new; "*That these appositional ratios are not also*

present in the structure of the 'natural' world raises an entirely separate question. It is perhaps relevant to point out that the Greeks made no entelechies or observations of the effects of man-made technology, but only of what they considered the objects of the natural world.” (McLuhan H.M., McLuhan E.,1988: 120)^{xciiv 13.}

Nevertheless, the classic view of the metaphor is purely verbal, i.e. it is confined to the figures alone and not in fact to an operative-structural approach that consider the dynamic relation of the figure with the background. We must be clear in this distinction between the verbal metaphor and the structural metaphor if we are to understand the tetrad, which must never be just verbal, but always already structural and operative. Although there are links and mutual dependencies, the tetrad is not a sequential process. It is a simultaneous process; although it is a process divided into four questions, there is no single correct way to read the tetrad,

Img 2 Multidirectional reading



II.XIII : The structure of the Tetrad

Marshall McLuhan departs from his Cambridge PhD thesis *The Place of Thomas Nashe in the Learning of his Time*^{xcv} and from his mentor Harold Innis in suggesting a 'dynamic of effects' in media relationships; that a medium "overheats", or reverses into an opposing form, when taken to its extreme. After a lifetime of work he systematized his method with his son Eric. Tetrad is a polysemic word, for the research a tetrad is any set of four entities: Greek *tetra-*, archaic form of *téssara-* 'four', often used to form compound words like *tetra-de*, where the prefix *tetra-* has proved to be particularly productive in the terminology describing a property that repeat four times. The McLuhans summarized their ideas about media in a tetradic apparatus of media effects.

The tetrad is a means of examining the effects on individual/society of any technology/medium (whether software or hardware). In another sense, it is a means of recognizing the new ideas as pragmatic behaviours introduced or deleted by technics (whether software or hardware), by dividing its effects into four categories and

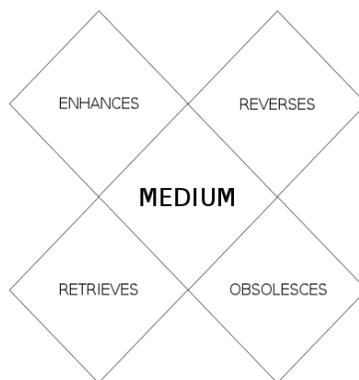
13 The argument of the value as mere product of the human imagination, even of an objective and therefore scientifically valid imagination, opens the field up to interesting meditation on the concept of species, genus, but this is a line of meditation that I would like to address after this methodological research.

displaying them simultaneously. The McLuhans conceived their tetrads as a pedagogical tool, phrasing their laws as questions with which to consider any relations between technics and anthropogenesis (considered as an effect of the relation between technics/media and the human phenomenon):

The four questions are:

1. What does the technics-medium enhance?
2. What does the technics-medium make obsolete?
3. What does the technics-medium retrieve that had been obsolesced earlier?
4. What does the technics-medium turn into when pushed to extremes?

Img 3: Tetrad



The laws of the tetrad exist not successively or chronologically but only simultaneously, and allow the questioner to explore the "grammar and syntax" of the "language" of media. Language is seen as pragmatic behaviours or effects, in the dynamic relationships between anthropogenesis and technics. The tetrad is a visual apparatus, displayed as four diamonds forming an X, with the term of a medium in the centre. On the left there are figures, on the right there are the grounds. The two diamonds on the left are the *Enhancement* and *Retrieval* qualities of the medium, both *Figure* qualities. The two diamonds on the right of a tetrad are the *Obsolescence* and *Reversal* qualities, both *Ground* qualities.

↔ Enhancement (figure): What the medium amplifies or intensifies. *For example, Pedagogy amplifies power and control via culture.*

↔ Obsolescence (ground): What the medium drives out of prominence. *Pedagogy reduces the importance of spontaneity and dreams.*

↔ Retrieval (figure): What the medium recovers which was previously lost. *Pedagogy returns the memory to the culture.*

↔ Reversal (ground): What the medium does when pushed to its limits. *Pedagogy flips into codified-Academicism.*

II.XIV : The Tetrad: Contrary relation between ENH and OBS

"Enhancement and obsolescence are obviously complementary actions. Any new technique or idea or tool, while enabling a new range of activities by the user, pushes aside the older ways of doing things." (McLuhan H.M., McLuhan E., 1988: 99)^{xcvi}

It is very important for this rational and discursive understanding/intelligere to be seen and understood as a pragmatic action. - *"Obsolescence is not the end of anything; it's the beginning of aesthetics, the cradle of taste, of art, of eloquence and of slang. [...] Petrarch's Ruins of Rome was the fount of a new humanistic culture. Gutenberg technology retrieved the entire ancient world, while obsolescing the scriptoria and scholasticism of the Middle Ages."* (McLuhan H.M., McLuhan E., 1988: 100).^{xcvii}

As the research repeatedly states, what the culture of this age needs is to propose forms of knowledge with the capacity to react to the technological forward produced by information technology. And so this Cultural Cybernation, which consists of becoming aware of the "Rear View Syndrome" (McLuhan, 1962), overcoming it and assuming the figure of the artist as a Voyager of the new immense spaces of complexity. This theory, exactly like the work of Marshall McLuhan, is to enter the coordinates of the Theories of Complexity. The accelerated technological impact generates a continual negotiation of the meanings of the manageable meanings only as a dynamic process.

In this territory, enhancement and obsolescence are to be seen as dynamic processes, where each

obsolescence entails a retrieval and each retrieval entails and obsolescence; in a system of interlaced processes like this, no element is replaced, rather it is a process of overlapping; throughout his work, Marshall McLuhan repeatedly states that one medium does not replace another, but it incorporates it.

And so Pedartgogy does not eliminate the paths of the ideas and forms of the 20th century, rather it traces a new map - *“The needs of poet, musician, and artist for ever-new means of probing and exploring experience send them back again and again to the rag-and-bone shop of the abandoned cliché.”* (Ibidem)^{xcviii}

One example of retrieval is shown by the first artistic anti-modern movement: The Pre-Raphaelites. William Holman Hunt (1827 – 1910), John Everett Millais (1829 – 1896), Dante Gabriel Rossetti (1828 – 1882) founded in John Millais's parents' house in 1848, the Pre-Raphaelite Brotherhood aimed to return to the complex compositions of Quattrocento Italian and Flemish art, and wished to develop the links between poetry and art. For this reason The Pre-Raphaelites could be considered the first anti-modern and avant-garde movement in art. They were particularly fascinated by medieval culture as a pre-technological era, looking for an integrity that had been lost in the 19th century, when Humankind and technology met in steam and electricity, energy and mechanics. This emphasis, in more spiritual and non technologically mediated culture, was to clash with certain principles of realism, which stress the independent observation of nature as real experience place. - The operation initiated by these British artists involved a modernisation of medieval sensibilities through an anti-modern tension.

The Pre-Raphaelites of the 19th century created an anti-environment that allowed them to enter into a dialectic relation with the contemporary and highlight their experiences of it. A conceptual art movement that, like the first movement of the artistic avant-gardes, bequeathed the first experience of criticism of the technological background that man went on to construct.

Today in the Test Society, we experience a return to that type of prospective; “[...] *technological breakthroughs have become so massive as to bring one environment into collision with another, from telephone to radio to TV satellite to computer.*” (Ibidem)^{xcix}

Today computers have accelerated the impact, denying culture the capacity to transform the signs into nexuses, and initiated a retrieval of a 'Secondary orality' (Ong W.J., 1982) and as for ancient, tribal and medieval man, the individuals-students today are immersed in acoustic spaces, where the past or history does not exist: there are only continuous eternal presents.

And for this reason Pedartgogy sees the tetradic game of truth that produces counter-environments, as a potential candidate for an instrument that can manage the new dynamic knowledge to be inserted in the cultural

cybernation; “*Neo-acoustic space give us simultaneous access to all pasts. As for tribal man, for us there is no history. All is present, and the mundane becomes mythic [...]*” (McLuhan H.M., McLuhan E., 1988: 102)^{c 14}, “*Electrically, knowing is now from all directions at once in a 360-degree sphere, so that knowing itself has been recast or retrieved in acoustic form, as it were.*” (McLuhan H.M., McLuhan E., 1988: 102)^{ci}

Nevertheless this passage does not occur naturally since the apparatus of human meanings, in a large part, is not yet typographical and visual. - “*Western man is torn between the claims of visual and auditory cultures or structures.*”(McLuhan H.M., McLuhan E., 1988: 102)^{cii} And again: - “*The left-hemisphere paradigm of quantitative measurement and of precision depends on a hidden ground, which has never been discussed by scientists in any field. That hidden ground is the acceptance of visual space as the norm of science and of rational endeavour. The implementers and users of visual space had, and have, the hidden phonemic ground of their discoveries or of their left-hemisphere preferences in the organisation of thought and exploration.*” (McLuhan H.M., McLuhan E., 1988: 110)^{ciii} So it happens that digital electronic technology is producing a cultural mestisation, the individual-student passes from a 'complicated' culture, decomposable into all of its parts, to a 'complex' culture, analogical and which cannot be decomposed since the whole of the parts is greater than the sum of these same parts; “[...] *Electronic technology displaces visual space and retrieves acoustic space in a new form, as the ground now includes the detritus of alphabetic civilisation.*” (McLuhan H.M., McLuhan E., 1988: 110)^{civ} 'Globalisation' goes hand in hand with a 'mediatisation' that unites the cultural galaxies in a cultural cybernation; Oriental cultures become very interesting, since they are open to observation in their non-alphabetical and more analogical and holistic background: “[...] *the effect in the East is quite different, to the degree that its culture does not include a ground of phonetic literacy and industrial hardware.*” (McLuhan H.M., McLuhan E., 1988: 106)^{cv} The, so called, Toronto School of Communication, Harold A. Innis (CA, 1894-1952), Erick A. Havelock (UK, 1903-1988), Herbert M. McLuhan (CA, 1911-1980), Derrick de Kerckhove (BE-CA, 1944), has meditated on how a technological transformation of communication like the stone, clay tablets, and papyrus, lead to the substitution of the sacerdotal caste with a military caste. In this mestisation there seems to appear a direct relation between velocity/space and static/time in the technologies of communication. The light media, linked to space, such as stone and the hieroglyphs, release centripetal forces that cause the culture to fold over on itself.

The same meditation warns of the fact that any medium or structure substantiates a breaking point in which the system transforms into another. The McLuhans write: - “*Any word or process or form, pushed to the limits of its potential, reverses its characteristics and becomes a complementary form [...]*” (McLuhan H.M., McLuhan E., 1988: 107)^{cvi}; i.e. a technology taken to its extremes transforms into another. They go on to say:

14 One of the problems of contemporary artistic higher education derives from the contradiction between the experience of the alphabetised Western man (in 2011 students still arrived from 15 years of alphabetical and typographical compulsory education).

“Enhancement and obsolescence are obviously complementary actions. Any new technique or idea or tool, while enabling a new range of activities by the user, pushes aside the older ways of doing things.” (McLuhan H.M., McLuhan E., 1988: 99)^{cvi}

It's important to note that the McLuhans declare that *“Obsolescence is not the end of anything; it's the beginning of aesthetics, the cradle of taste, of art, of eloquence and of slang.”* (McLuhan H.M., McLuhan E., 1988: 100)^{cvi} According to the Canadian literary critics, man lives immersed in “Rear-View Mirror Syndrome”. This occurs because of a psychological mechanism that anaesthetises the ability to perceive the new technological backgrounds. The research adds the consideration that due to the immense technological acceleration induced by information technology, today we no longer have time to settle a concept, i.e. share it socially as a sign for nexuses and so we cannot produce stable cultural meanings. This is enhanced by the Test Society (Zielinsky, 2010) that produces an incessant flux of new relationships between the individual and New Media, in such a fast rhythm that it allows no reflection or settling, that is to say it prevents the meanings from being in time. Where the radio took 36 years to reach a public of 50 million listeners, Facebook took 6 months to reach the same number of users. Consequently, what humanity processed in 36 years, it now must process in 6 months; so it's easy to see that the situation is critical.

Do we live in a new eternal present?

We certainly live in a culture that cannot reflect and must explore and produce mobile states of observation. But to do this we have no choice but to refer to the nexuses objectively shared and thus refer to the past. As for the senses, we hear only what we say, as part of the amplitude of the frequencies we can emit and receive: one hears what one says, so we assign the condition of objective truth only to what we share with other members of our species, and the paradox is that in making truth objective, we shift it into the specific dimension of anthropogenesis: the symbolic virtual dimension, making the unreal more true than the real. We give the value of the truth only to what we share, and what is true is what exists, so we give existence only to the experiences we share. Truth and reality seem to be the product of a convention produced by the incessant balancing of feedback, which produces a regulated system by recognising and drawing out a *'selective forgetfulness'*, according to the rules of neural networks and complexity of the configurations, patterns, melodies, which are therefore always already linked to the past. And it is for this reason that man observes the world through a rear-view mirror; *“[...] is not simply a matter of hauling the old thing back onto stage, holus-bolus. Some translation or metamorphosis is necessary to place it into relation to the new ground [...]”* (McLuhan H.M., McLuhan E., 1988: 101)^{cix}

Nevertheless, the Test-society renews an archaic man - *“For archaic or tribal man, in acoustic space, there is no past, no history – always present.”* (McLuhan H.M., McLuhan E., 1988: 101)^{cx} Today, the individuals-

students are part of the Test Society, a society characterised by making the individual itself a test; “[...] technological breakthroughs have become so massive as to bring one environment into collision with another, from telephone to radio to TV to satellite to computer.” (McLuhan H.M., McLuhan E., 1988: 101)^{cxv}

The hermeneutical process of the Test Society must then face the contradiction of needing the past without being able to see it. And here we play the cultural challenge of the contemporary: and eternal present and a normative past (the complex system learns from its history); “*Since electronic man lives in a world of simultaneous information, he find himself increasingly excluded from his traditional (visual) world, in which space and reason seem to be uniform, connected and stable.*” (McLuhan H.M., McLuhan E., 1988: 102)^{cxvii} Instead, Western (the visual and left-hemisphere) individuals-students now find themselves habitually relating to information structures that are simultaneous, discontinuous, and dynamic.^{cxviii} “*Electrically, knowing is now from all directions at once in a 360-degree sphere [...]*”. (McLuhan H.M., McLuhan E., 1988: 102)^{cxix}

The question that arises is of whether to completely abandon an 'alphabetical prospective' and embrace the idea “*that knowing itself has been recast or retrieved in acoustic form, as it were,*” (McLuhan H.M., McLuhan E., 1988: 102)^{cxv} or whether to search for a 'third path' that maintains awareness of the efficient alphabetic cause. Since these transformations occur by sedimentation and scaffolding of new knowledge, Pedartgogy is a mixed method that retrieves critical capacity and these uses different visual methods to deal with the acoustic; “*Neo-acoustic space gives us simultaneous access to all pasts. As for tribal man, for us there is no history. All is present, and the mundane becomes mythic [...]*.” (McLuhan H.M., McLuhan E., 1988: 102)^{cxvi} The problem of the individual-student derives naturally from the contradiction between the alphabetised experience of man, on one side, and his environment-con-text of simultaneous technologies and of processes of the other. The individual-student lives the contradiction of being in a society that is still split between adhesion to a visual culture, or background, and an acoustic one. For Pedartgogy, therefore, there is no history, since everything is a mythic present; it uses archetypal 'conceptual personæ, *passeurs*, and images' to explore the contemporary consciousness; archetypal in the sense of belonging to history, and thus culturally codified, but transformed by the eternal present into mythic processes.¹⁵

¹⁵ Like the re-Raphaelites, like Joyce's Ulysees, like the characters of video games acted by the individuals-students, video games like *Ico* (Fumito Ueda, Sony 2001), *Shadow of the Colossus - Wander to Kyojō*, (Fumito Ueda, Sony 2005) and *The Last Guardian - Hitokui no Ōwashi Tric* (Fumito Ueda, Sony Fall 2011), mythical characters like the horned boy and a princess of light, like a hero who defeats giants, like “the fellow of the man-eating eagle”.

II.XV : The Tetrad as analogy: RET and REV

*"The tetrad illumines the borderline between acoustic and visual space as an arena of spiralling repetition and replay, both of input and feedback, interlace and interface in the area of an imploded circle of rebirth and metamorphosis. The action of any artefact (or its corresponding idea) is **diachronic** as it undergoes a progressive history and development from enhancement--which should be regarded as a form of amplification--to obsolescence (A to B to D to C). It is **synchronic** if one were to view the artefact mythically as a configuration ($A/D = C/B$ and $B/D = C/A$). (The Global Village: 9)*

RET : OBS = ENH : REV

RET : ENH = OBS : REV

(The Global Village: 28)

RET : REV = OBS : ENH

ENH REV

RET OBS

II.XVI : What is new in McLuhan's tetrad?

"A new science replaces the current Old Science of media and artefacts, which is too narrow and too rigid, having drawn its techniques from the abstract Method used since the Renaissance. It is a science of content and messages only."

(Laws of Media: 3-4)

"If one question is eliminated, if the tetrad is reduced to a triad, then, as will be discussed, we have merely Old Science tricked out in new clothes, a not formal but efficient cause, and familiar Method. If five questions apply, we are in other, but again new, territory. The 'four' pattern has a special resonance and relation to language."

((Laws of Media: 8)

II.XVII : The Tetrad as a dynamic process

"Enhancement and obsolescence are obviously complementary actions" (Laws of Media: 99)" (McLuhan H.M., McLuhan E., 1988: 100)^{cxvii}. As mentioned in the previous paragraph (Conclusion I.4 : The Tetrad: Contrary relation between ENH and OBS) a new idea or a new technology, a new concept and a new tool, simultaneously puts aside some old procedures. The New Media create a perpetual and instantaneous connection between teachers, researchers, and students, putting aside the centrality of the university library. Digital graphic technologies put aside the skill of drawing. New digital support puts aside the impression of light on the film, rendering developing processes and care useless.

According to the McLuhans: - "Instant information, as an environment, has the effect of pushing all other subliminal effects up into consciousness. That is, it has this effect with regard to all forms except itself, since the effect of an electric environment is to turn people inward and to substitute the inner trip for outer exploration, being for becoming." (McLuhan H.M., McLuhan E., 1988: 110)^{cxviii} The globalisation triggered by the electronic and digital technologies of communication has created a 'global village' in which we break down the backgrounds of Eastern and Western, visual and acoustic. What is sequential conflicts with what is simultaneous, generating confusion in the cultural routines of Western artistic higher education, and an acceptance imposed by the Western market by the new Eastern artistic generations. The routines are mixed.

The use of the tetrad allows us to turn our attention to situations and objects that are not so much in progress, but rather dynamic relations. - "In presenting the Laws of Media in Tetrad form, our object is to draw attention to situations that are still in process, situations that are structuring new perception and shaping new environments, even while they are restructuring old ones: the structures of media dynamics are inseparable from performance." (McLuhan H.M., McLuhan E., 1988: 116)^{cxix} The tetrads of Pedartgogy form a direct part of an attempt to construct an objective pedagogy of complex systems, and they rely on observation, experience, and

elements of perception. The tetrads in their empiricism, and above all as pragmatic operations, provide the tools for critical meditation, prediction, and reinforcing creativity.¹⁶

II.XVIII: The Tetrad is based on two moments:

Observation and Meditation

“[...] all human artefacts are extensions of man [...]” (McLuhan H.M., McLuhan E., 1988: 116)^{cxix}, of any artist-poet, in this case man, and in Pedagogogy the individual-student, “[...] utterings or utterings of the human body or psyche, private or corporate.” (McLuhan H.M., McLuhan E., 1988: 116)^{cxxi} These constitute a pragmatic meditation in the form of observation, which translates the S<>T dyad into a discourse. This allows the sharing of human experiences to be metaphorically processed, also and above all those that are not yet culturally codified. Once the pragmatic meditation (observation) has begun, the etymological analysis is determining, as it “[...] reveals a process of transformation of culture and sensibility [...] At and beyond this level lies the structure of experience of the utterer; so grammatical flips into rhetorical investigation.” (McLuhan H.M., McLuhan E., 1988: 116)^{cxixii} The etymology reveals the hidden (incarnate) meanings and relations in the words and is validated in the of the reader of the etymology that is the author in the discourse of the tetrads. The individual-student provides the 'plane of immanence' that gives the value of truth to everything; i.e. an truth immanent to that individual-student, or to that group of individuals-students, in relation to the S<>T dyad, to the social and cultural group to which it or they refer/s. “In tetrad form, the artefact is seen to be not neutral or passive, but an active logos or utterance of the human mind or body that transforms the user and his ground.” (McLuhan H.M., McLuhan E., 1988: 99)^{cxixiii}

Students today require a new education; it is now evident that there is a relation between the phenomenon of anthropogenesis and technics, and also that there is a limit to the single scientific and/or religious knowledge. The students must know how to move within the vortex of media and in a complex and pluriverse world to which magisterial and homeopathic knowledge is most suitable. In this sense, the first tool proposed is the 'Tetradic Game of Truth.'

The tetrad is a 'game of truth' that allows us to identify the influences that technics have over us. The game of truth consists of gathering to together more than three individuals, choosing an argument, and analysing it where the aim is: “[...] to draw attention to situations that are still in process, situations that are structuring new

¹⁶ It is by following and relating to the tradition of American pragmatism, and by basing itself on a phenomenological rereading of the Pragmatics of Communication (1967) that it establishes its ultimate meaning;

perception and shaping new environments, even while they are restructuring old ones: the structures of the dynamic processes of the media are inseparable from their implementation.” (McLuhan H.M., McLuhan E., 1988, pag 116)^{cxixv} Scientific practice explains the events observed in a linear way; the tetradic game of truth is not based on a theory but on a set of concepts; it relies on the facts of the perception, on observation and on the experience of the players. The tetradic game of truth, even in its empiricism, provides a tool for making predictions, with foresight; i.e. generating an *ex ante* knowledge.

In *The Theory of Games and Economic Behaviour*, von Neumann and Morgenstern (1944) introduced the generalised use of the expected value as the fundamental operator within the theory of the expected utility. Traditionally, statistical roots (Fishburn and Wakker, 1995) are attributed to this operator, but there is a common element between mathematical economy and contemporary physics: the quantum element. Thus there is a greater concept, a single cognitive modus that we use in difference fields. This equates to saying, paraphrasing the text, that they construct a discourse, and translate the students from one form to another: metaphor. The game uses the students as metaphorical agents of the contemporary, retrieving their 'un-mediated and direct' experience of the present.

II.XIX: The tetradic game of truth and the 3 natures

We can talk of the tetradic game of truth as a form for investigating the relations between first and second nature in man. The McLuhans wrote “*Aristotle first noted that the Greek invention of Nature was made possible when they had left behind a savage or barbaric state (first nature) by putting on an individualized and civilized one (second nature).*” (McLuhan H.M., McLuhan E., 1988, pag 116)^{cxixv} Today in the anthropocene the phenomenon of anthropogenesis faces a digital de-materialisation and the consequent creation of a third nature, while at the same time, the Earth has the time and energy to corrode, dissolve, melt, break and absorb. “*And the damage? The ecosystems we have ruined? The species we have annihilated? Those are our problems, not the planet's. ... We, however, are in danger. We are dispensable.*” (Wu Ming 1, *New Italian Epic* 0.2-2008, pag 28)^{cxixvi} Anthropocentrism is stronger than ever today – even though it is an ideology or paradigm that is against us. In this situation, of great interest is the McLuhans' intuition that “*As our second nature consists entirely in our artefacts and extensions and the ground and narcotics they impose, their etymologies are all to be found in first nature, the wild body. They have no hierarchy or orderly sequence; they subsume, obsolesce, retrieve, extend each other, burrow on each other, hybridize, and miscegenate endlessly*”: [...] *clothing extends the skin // writing extends the eye // the saw, knife, bullet extends the teeth // satellite extends the entire culture [...]*. (McLuhan H.M., McLuhan E., 1988: 116)^{cxixvii}

“Whereas mechanical forms extend the limbs and organs, electric technologies beginning with the telegraph extend the nervous system and the conscious and unconscious in one or another manner and degree.” (McLuhan H.M., McLuhan E., 1988: 117)^{cxviii} Today we have before us a third nature.

The term first appeared in 1541 when Jacopo Bonfadio (IT, c.1508–1550), among others, coined the term *una terza natura*, meaning nature improved by art, and subsequently many designers conceived it in this way. From this definition, 'third nature' became the fully virtual nature, the first being phenomenological nature, the second, symbolic nature, and the third, virtual nature that today we could experience as an extended-expanded reality experience. Views of the Medici villas, the grand vistas of Louis XIV, and the planning of 16th century and later English country houses show how this term was incorporated; “*The first is wilderness, the undomesticated wild that was common in the age of hunter-gatherers; the second is made up of productive fields, orchards and farmyards, among many Neolithic inventions; and the third consists in what is historically-speaking relatively recent: gardens, pleasurable places where art and thought are brought to bear on nature. 'Nature thinking about nature' the last type might be called, in so far as we consider ourselves a part of it. Christians might consider themselves separate from this realm for obvious reasons: Darwinian nature can be cruel and wasteful; sunsets, flowers and crystals can be vulgar and kitsch. But, on the whole, Homo sapiens since the first cave paintings has tried to relate itself to the cosmos, and understand it. Nature worship, 'biophilia' as E. O. Wilson calls it, and curiosity about the universe, are hard-wired into our species even as we know that natural selection is 'red in tooth and claw'*”^{cxix}.

This virtuality is relational; i.e. linked to the relation that exists between real nature and imagined nature recreated by technics. The third culture is in the relation.

For this reason, paraphrasing the McLuhans, what remains to be done is to: “*identify with maximum precision, the relation between the first, second, and third nature: what organs or faculties are extended or reinforced or implemented, and in which form and on what scale, by each of our technics.*”^{cxix} According to the McLuhans, “*This is to make explicit, via etymology, the analogical ratios that constitute our being and our cultures.*” (McLuhan H.M., McLuhan E., 1988: 117)^{cxix} The two Canadian thinkers appear to be right when they state that “*media study remains restricted to content and moralism*” (McLuhan H.M., McLuhan E., 1988: 118)^{cxix}. Where the media, by extension, includes technics, what interests the research is how the technics are an efficient cause of the being in the world and of anthropogenesis; how these are part of the being in a Heideggerian sense; i.e. inseparable on one side from the being, on the other side from the world.

The intuition of the McLuhans continues with the idea that “*Technology – second nature – recapitulates first nature in new forms; that is, it translates from one nature to another; the user is the content and the utterer; technology, as extension/outring, is speech,*” (McLuhan H.M., McLuhan E., 1988: 118)^{cxixiii} where the user in the research is replaced by the student, or more precisely, by the S<>T dyad, as they are both users of the new technics.

Recapitulating the research, we can argue that the phenomenon of anthropogenesis is art, i.e. the pigments; that is to say that during the ice age, in cave dwellings of early man, there was a symbolic division caused by the pigments and re-presentation on another plane of the image-simulacrum of the buffalo other-than-self. Subsequently, probably towards the end of the ice age (as yet there is no proof), there was the explosive discovery (blast) according to which language is a doing and redoing, that the affirmations can be independent of the fact and utility. The symbolic affinities between the words and the buffalo on the walls of the cave illuminated by contortions of the flame are immemorially archaic and are represented as hypotheses. And it can be considered as acceptable correct and coherent that a pedagogy for the Academy of Fine Arts in the age of technics, in the new faculty of New Technologies for Art, we create a new dynamic scheme as such:

first nature → art/anthropogenesis =language/anthropogenesis → second nature →
technics/anthropogenesis=mnemotechnics → third nature

It is an axis that begins with art and reaches a formal symbolic language that organised in technics, provides the mnemotechnics we need for the cultural blast. It is an axis that in maturity produces a third nature, as a virtual place in which the anthropogenesis produces its effect, based on a symbolic transcendent second nature that accelerates the evolutionary response of the first nature, and so on.



IMG 4: Moebius Ring

II.XX: The tetradic game of truth as a technopoetic apparatus

The *Tetradic Game* is presented in a poetic form, an appositive form. It proposes a topic that is marked in the top right corner. Each tetrad is a probe, it is written in bold in a single side within a cross that divides space into four; around each tetrad there are notes on the same tetrad. With the motor of etymology, the notes create 'chains' of notes of various lengths. The chains work through one tetrad or another. There is no correct way to follow the 'game of truth', since it is a simultaneous game; it can be played from left to right, from right to left.

The *Tetradic Game* poses questions, and uses the motors of the etym and the metaphor. Language activates an always already new interaction, which is substantiated in a dynamic relation between experience and perception, and verifies their repetition through the regularities emerging from expression. We can consider the *Tetradic Game* as a poetic apparatus, from which we get *technopoetics*, which uses language as a store tank for experience, causing *ex post* and *ex ante* knowledge to collapse. The *Tetradic Game* belongs to the environment of rhetoric and grammar, not to philosophy, but to art; what interests the research is the exegesis of the relations between the S<>T dyad and (their) world. The environment represented by the student is contradicted by the counter-environment represented by the teacher. This is at the foundation, and the ontological pre-eminence of the counter-environment of the teacher is traditional, given as real; yet today, and this is the radical aspect of Pedartgogy, the environment represented by the teaching body is not merely normative, but it is procedural in the relation that it starts, since the student must contrast the environment represented by the teacher, in the sense of the phenomenon of the present in progress. In this way, the academic institution enters a perpetual state of research, which is functional to the 'cultural singularity' of the anthropocene and to magisterial knowledge, allowing the possibility to propose a Pedartgogy suited to the new century, which after the modern era, retrieves the pre-eminence of the study of anthropotechnics of the artefacts of the sciences of the spirit (anthropogenesis) over the sciences of nature.

II.XXI: Why the tetrad?

Throughout history, also and above all before the modern age, man found himself immersed in an immeasurable world; and today he is again in a period in which the capacities of anthropogenesis exceed man's capacities to observe: it is as the man could imagine the singularity but cannot see it, not measure it: the problem is the psi function Ψ . A characteristic of the anthropogenesis is art, then technics with the subsequent triggering of the mnemotechnics up to the construction of cultural processes, for which every truth has the possibility to

verify itself if it belongs to at least one of these three elements of anthropogenesis. The common denominator is language, intended as translator and verifying agent; for this reason the interpretation of the logos was considered by the ancients as a possible path to knowledge. The logos is a metabolic phenomenon of anthropogenesis itself and is immanent to any truth that pertains to it.

James Joyce (IRL, 1882-1941) wrote in *Ulysses* (1922) of the “*Ineluctable modality of the visible: at least that if no more, thought through my eyes. Signatures of all things I am here to read, seaspawn and seawrack, the nearing tide, that rusty boot. Snotgreen, bluesilver, rust: coloured signs. Limits of the diaphane. But he adds: in bodies. Then he was aware of them bodies before of them coloured. How? By knocking his sconce against them, sure. Go easy. Bald he was and a millionaire, maestro di color che sanno. Limit of the diaphane in. Why in? Diaphane, adiaphane. If you can put your five fingers through it, it is a gate, if not a door. Shut your eyes and see.*” (Joyce J., 1922– *The 1922 text*: 37)^{cxixiv} According to Marshall and Erick McLuhan, the Irish author retrieves the work of the Italian philosopher, historian and jurist, Giambattista Vico (ITA 1668 –1744), who refuted the science of his age and developed the method of the *Novum Organum* (lat. "New Instrument") by Francis Bacon (UK, 1561-1626). The research notes the significant similarities between this method and Mahayana Buddhism. The interpretation of Western knowledge derives also and above all from a pre-Socratic tradition in which the principle 'conceptual persona' was Homer, as a symbolic representation of intellectual and moral states; the pre-Socratic Metrodòrus of Lampsacus (Μητρόδωρος Λαμψακηνός, *Mētrodōros Lampsakēnos*) (ANCIENT GREECE, ... – 464 B.C.) conceived of an interpretive system whose characteristic consisted of treating the stories of Homer and of the gods as symbolic representation of physical phenomena and forces: the gods were forces of nature, transcendental and fateful. The human personæ were psychosomatic types to recount as models and possibilities.

This tradition continued with Marcus Terentius Varro (ANCIENT ITA, 116 B.C., – 27 B.C.) and his *De antiquitate litterarum*, Priscian (ANCIENT ALGERIA, 5th Century B.C.), Aelius Donatus (ANCIENT ITA, 4th Century B.C.) and his *Ars grammatica*, followed by the Fathers of the Christian Church: Sofronio Eusebio Girolamo, San Geronimo (Latin: *Sofronius Eusebius Hieronymus*); (ANCIENT CROATIA/ITA 347 – 419/420), Agostino d'Ippona, Sant'Agostino (Latino: *Aurelius Augustinus Hipponensis*; ANCIENT ALGERIA, 354 – 430). The science of religion became a sort of philology, and the study of oral tales and later written text, became an apparatus, a motor, from which meanings can be deduced. The philosophers of the patristics, as well as the medieval philosophers, had no other tools of knowledge than language, and therefore continued in the ancient tradition, giving their own form of their own time to the intuitions and inspirations of the ancient pre-Socratic physicists. Aristotle proposed a quadruple causal physics as the exegetical science of nature, while the grammarians cited above preferred to work with etymology and an ecological interpretation on several levels.

Now, the portentous declaration of Marshall and Eric McLuhan is that: - “*The simultaneity of all levels in ancient grammatica coincides with twentieth-century quantum mechanics, which is concerned with the physical and chemical bond of nature as the 'resonant interval'*” (McLuhan H.M., McLuhan E., 1988: 218)^{cxxxv}; i.e., today in the age of quantum physics, it appears that our technological devices (as tools of observation/measurement/simulation, computers) of knowledge do not provide us with an answer to complexity, and that in contrast, the retrieval of language (grammatica) as an apparatus of knowledge can represent a possibility. Again, Marshall and Eric McLuhan write: “*The acoustic simultaneity of the new physics coexists with 'synchrony' and structuralism in language and literature and anthropology [...]*.” (McLuhan H.M., McLuhan E., 1988: 218)^{cxxxvi}

The galaxy of new media of the anthropocene emphasises the centrality of technics, which from the point of view of the research and education, forces the centrality of a grammatical posture of language: language is metaphor, in the sense that it is not only the first mnemotechnic, but also an isomorphic translator of sensorial and individual experiences. It has two movements: one internal when it translates the experiences of the senses of an individual, and one external when it translates this result of the individual’s sensorial translation into behaviour in the social group. The McLuhans write: “*The strategy to which any modern culture must resort was indicated by Wilhelm von Humboldt: 'Man lives with his objects chiefly - in fact, since his feeling and acting depends on his perceptions, one may say exclusively - as language presents them to him by the same process whereby he spins language out of his own being, he ensnares himself in it; and each language draws a magic circle round the people to which it belongs, a circle from which there is no escape save by stepping out of it into another.'*” (McLuhan M, McLuhan E., 1988: 226)^{cxxxvii} If we replace language with technics, we get: «*he spins technics out of his own being, he ensnares himself in it; and each technics draws a magic circle round the people to which it belongs, a circle from which there is no escape save by stepping out of it into another* ».

The always already new technical backgrounds that surround the student in his life, remould the student (and in a pedartgogical scheme, the culture in general). Technics like Facebook which in just six months can reach 50 million users, are always already new extensions but that conserve the power of transformation the 'grammarians' assigned to the logos (Pedartgogy sees technics as logos), and the only way out, the McLuhans' antidote, is the work of art. - “*All authentic art, to use the words of Pound, works in a satirical way like a mirror or counter-environment that frees the uses from the tyranny of the environment that he has set himself [...]*.” (McLuhan M, McLuhan E., 1988: 226)^{cxxxviii} Today, art candidates itself to be a new philosophy, a 'retrieval' of ancient practices, of its 'spiritual exercises'^{cxxxix}, and in its 'alethurgical practices'^{cxl}. Art is a counter-environmental response, and at the same time is the very phenomenon of anthropogenesis: every truth is art, every history is art,

every representation is art.

Thus in a system of negative knowledge, what occurs is an explosion of truth, and the process that the research proposed to the students of the Faculty of Media Design and Multimedia Arts is founded on the idea that the technics always already transfers a formal cause, which is a logos, which incorporates the models of the effects. It is useful to provide the students and the S<>T dyad with an apparatus that returns these models to them: and it is the tetradic game of truth that can give this creative process back.

II.XXI : The four movements of the tetradic game of truth

The Tetradic Game of Truth consists of four independent movements, which must be regarded as processes interacting with each other;

– *Enhancement*: the new technics, and or configuration of technics, extends a meaning, and/or configuration of meanings; it changes the 'sensory ratio' and an element of the background becomes the figure, or a pre-existing figure emerges dominant;

– *Obsolescence*: the new technics, and/or configuration of technics, extends a meaning, and/or configuration of meanings, eliminates previous configurations and a past situation is removed: the figure is reabsorbed by the background;

– *Recovery*: the new technics, and/or configuration of technics, extends a meaning, and/or configuration of meanings; the background becomes a figure through the new technics and something that had become archaic, obsolete and outdated, is retrieved and updated;

– *Reversal*: the new technics, and/or configuration of technics, extends a meaning, and/or configuration of meanings; they change the weights on the figure and/or background, through an overloading or unloading and a double simultaneous action it initiated because the figure/background changes position assuming a complementary position – Figure \square Background.

Keeping the following diagram in mind

ENH REV

RET OBS

The tetradic game of truth of Pedartgogy proposes itself as a dynamic complex system in which, “*as in an hologram*” (McLuhan M, McLuhan E., 1988: 228)^{cxli}, everything is reflected in every part: the recovery is the most crucial to discover, since it provides the dominant note of the game, and the observing subject must take care that there can be more recoveries and thus more dominant notes; the dominant note is what enables the *reversal*, *enhancement* and *obsolescence* to take place. The tetradic game of truth in Pedartgogy presents the formal structure of its argument, without distinction of whether it belongs to the category of hardware or software. It produces a simultaneous visual configuration of meanings, and since every artefact is a human enunciation, it uses etymology to trace the meanings to behavioural nexuses that reveal which senses, practices, forms and behaviours the artefact is an extension of. In the tetrads, language is mere metaphor in the sense that it accumulates and translates the experiential nexuses¹⁷ into signs. It is a synonym for a link and relation that connects the gravitational relations of attraction and interdependency between of the events for how they surface out of the mnemotechnics (language too is technics), creating a coherence of successions of meaning, a continual territory connected (and created) by the same process of meaning of the nexus.

The sign is an “*element of any nature, visible or in some way perceivable, that is the indication or manifestation of something else: tyre marks on asphalt; premonitory signs of a storm||*” But also *premonitory signs of love*. But in semiology too, the minimum unit of communication, which consists of a signifying and a meaning connected by a conventional nexus; a graphic symbol that represents an object, a concept, a phenomenon: *s. alphabetical, algebraic*, up to the sign of the cross, a ritual sign that Christians make with the right hand, drawing a cross across the chest.^{cxlii}

The nexus is pragmatically translated by the instinct to communicate in language (Pinker, 1994)^{cxliii}, or rather in sign, in something that can be exchanged and shared also and above all because it is ambiguous; i.e. because it

17 The nexus can be defined as '*a logical or syntactic connection; a relation between two or more elements.*'. Sabatini-Coletti, *Italian Dictionary*; nesso [nès-so] s.m. 2010.

maintains the duality of being and experience of an individual that must be able to be interpreted by another individual.

That is to say the nexus between one individual and another individual of a social, socio-cultural species. The McLuhans' intuition is that: “[...] *the price we pay for special technological extensions, whether whell of alphabet or computer, is that these massive extensions of sense become closed systems.*” (McLuhan M, McLuhan E., 1988: 226)^{cxliv} Which brings us to the fact that “*Private senses are not closed systems but endlessly translated into each other in that experience which we call consciousness.*” (McLuhan M, McLuhan E., 1988: 226)^{cxlv} Anthropotechnics and mnemotechnics tend to create closed systems, and today in the information society (Castells, 2000) the simultaneous and isomorphic coexistence of the new digital mnemotechnics has produced an unprecedented situation in the anthropogenesis.

Roy Ascott seems to collide with the McLuhans when he argues throughout his life's work that the extensions of the faculty and the senses produced by entheogenetic practices [ayahuasca, 2-(1*H*-indol-3-yl)-*N*, *N*-dimethylethanamine; LSD, acid 7-Methyl- 4,6,6*a*, 7,8,9- hexahydro-indole [4,3-*fg*] quinoline- 9-carboxylic acid], by the virtualising practices [performance, liturgy, epic, poetry, prose, novel, photography, cinema, hypertext, video games], by the validating practices of science [experimentation and simulation], “[...] *now constitute a single field of experience that demands that they become collectively conscious.*” (McLuhan M, McLuhan E., 1988: 226)^{cxlvi}

And the value of the tetrad as an instrument of truth and knowledge is that: “ *Every tetrad presents in Gestalt form the logos or formal structure of its subject, whether hardware or software artefact. In so doing, and because every artefact as a human utterance has its etymology in the body it extends, the tetrad forms and icon of the verbal nature of the artefact.*” (McLuhan M, McLuhan E., 1988: 229)^{cxlvii}

The tetradic game of truth is the proposal of a dialectic apparatus between pupil and teacher.

II.XXII : The four motors of the tetrad

The tetradic game of truth is based on four mnemotechnics that we could call 'motors'. They are four rhetorical figures in the form of tropes, or rather of figures of meaning, thus 'motors of meaning'. The assumption is that each motor of meaning alters the sensibility of who uses it, in applying it to the content.

The first motor-figure is the **Metaphor**, the matrix and the model of the motors; i.e. a figure of meaning that

'consists of transferring to an object the term of another according to a relationship of analogy' (av. 1375, G. Boccaccio). (McLuhan M, McLuhan E., 1988: 229)^{cxlviii} According to Giovan Battista Vico, the metaphor is the most important of the figures of meaning or tropes that concern the change of meaning of words; "*The most luminous and therefore the most necessary and frequent is metaphor. It is most praised when it gives sense and passion to insensate things [...]*" (Vico 1977: 404).

The second motor-figure of meaning is the **Synecdoche**; in Latin, *synecdoche(n)*, from the Greek *synecdoche*, from *συνεκδοχή* - *synechdéchesthai* 'receive together', composed of *syn-* and *déchesthai* 'receive' (of Indo European origin).^{cxlix} It involves the substitution of one term with another, having a quantitative relation with the first, of greater or lesser extension. It is a figure of meaning that consists of expressing an idea with one word in place of another via the expansion or restriction of the meaning. It is therefore founded on a relationship of the extension of the meaning of the word that, according to the case, produces: the part for the whole (course rather than the faculty); the whole for the part (an artwork, to indicate a work completed by artistic technique); the singular for the plural and vice versa (the student is very receptive); the genus for the species (poetic for the artist).

The third motor-figure of meaning is **Metonymy**. From late Latin (in the grammarians) *metonymia(m)*, transcription from the Greek *metonymía* 'change that goes beyond (metà) the name (ónoma)'.^{cl} It is a motor of meaning that consists of transferring a term from the concept it applies to, to another with which it has a relation of dependency. It is a motor that substitutes one word with another, that has a certain relation with the first, for example of logical or material contiguity, for example the author for his works - *Today I must study McLuhan / the works of McLuhan-*, the cause for the effect - *Hear the speakers / the music emitted by the speakers. -*, the effect for the cause - *Understand with intelligence / with identification -*, the material for the object - *Write a lot of ink / text-*, the container for the content - *Read a library / the books of the library -*, the abstract for the concrete - *Trust in the teaching / in the teachers -*, the concrete for the abstract - *Listen to your brain / intelligence*. Thus with metonymy we have the substitution of one term with another that has a relation of contiguity with the first. It will happen that in the position the cause is replaced by the effect and vice versa; the concept replaced by the abstract and vice versa, material with the object; content with the container; the author takes the place of his/her work. The examples explain much, take the statement: 'study a book'. The term 'book' in the phrase is used in place of another (words, signs ideas, etc.) that has an evident relation to it. "I've bought a Duchamp": it is obvious that the art lover has not bought the artist, but a work of his. Here again, the term "Duchamp" is used in place of another (work). "*At times leaving the hard-won cards*": the phrase of Italian poet Giacomo Leopardi exemplifies the substitution of the effect with its cause. Leopardi G., *A Silvia*. -

The fourth motor of meaning is **Irony**. The modern term derives from the Latin *ironia(m)*, from the Greek

εἰρωνεία -*ironéia*, the term does not have a convincing etymology, although we can argue: hypocrisy, falsity, false ignorance; but in late Latin Fulgenzio (Old North Africa, late 5th – early 6th century) it assumed from the Greek (*eiironikós*) also the derivative adjective *ironicu(m)*.^{cli} The history of this Greek word was marked by the importance of 'irony' in Socratic methodology. The meaning is that of “*a trope, which is called 'irony', for an opposite term showing what he intends to say*” (av. 1375, G. Boccaccio)^{clii} that is to say a 'figure of meaning that consists of saying the opposite of what one is thinking.' **Irony**, in literature, is a rhetorical figure in which there is incongruity, disagreement, or an involuntary connection with the true, which goes beyond the simple and evident meaning of the word. As a motor of meaning it concerns the relationship of the subject with extra-human reality. It is often 'self-irony' since the subject being ironic is also directly the object of the irony. Philosophical irony is divided into four main identifiable orientations (Socratic, illuminist, romantic, existential). For Socrates, irony was located within a *dià logos*, a word that *crossed* the two speakers. As opposed to *macròs logos*, a great and unitary discourse that left no space for objections, it materialised in a dialogue with brief questions and responses – the so-called *brachylogy* (literally 'brief speech') Socratic in that it offers the possibility of interjecting and objecting to a speaker, that, in order not to discourage the speaker and so that he may be convinced without impositions, pretends not to know what will be the outcome of the dialogue, accepts the theory of the speaker and takes it into consideration, leading it then to the limits of the absurd so that the speaker himself realises that his hypothesis is incorrect. Another characteristic of Socratic dialogue was the continuous questioning of what the speaker was affirming; it seemed almost as though he went in search of a precise definition of the object of the dialogue. «*Ti estì*» , "what is it" [what you are talking about]? This is *Socratic irony*, a disruptive force with the power to undo texts and readers alike.^{cliii} Who dialogues with Socrates will attempt over and over again to give a precise response, but will eventually give up and will be forced to admit his ignorance. And it is this that the *Tetradic Game* was aware of and wanted from the beginning: the demonstration that the presumed wisdom of the apparatus is in actual fact impossible. The tetradic game is Socratic in its pretence to place itself in a position of ignorance in regards to any question that is to be addressed, what forces the player to justify their position down to the finest details (which leads him to reveal the unfoundedness and characteristic of mere belief, desire and opinion, but also social character of his belief). In cohesion with a method, it guides the player (student<>teacher) to find the answers to their question by themselves, rather than trusting retroaethetics that offers only obsolete answers. Tetradic irony succumbs to the assumption of a sceptical position, an attitude of refusal of the retroaethetics, of meanings in time, and of any conviction that does not base its validity on a constant process of anthropogenesis.

In Illuminism (FR, EU, XVIII), irony assume the role of sarcasm towards false and misinterpreted ideas, the faith that things cannot be different from how they are: noses are made to support spectacles and legs to wear trousers. In *Candide, or Optimism (Candide, ou l'Optimisme, 1759)*, Voltaire (FR, 1694-1778) aims to confute

the optimistic doctrines such as that of Leibniz that states that this is 'the best of the possible worlds.' The illuminist incarnates the figure of the educator Pangloss the German philosopher, intent of instructing the young Candide to see the world around him with optimism. And this so-called Panglossian paradigm. Irony assumes the subversive role that is so important in the education of the student that it can depart from the opinion of the masses without being accused of pessimism. In romanticism (GR, EU, USA, XIX), irony becomes the awareness of the fiction of the things that surround mankind and that man himself creates. Irony translates into man being aware of his limited nature. Irony is a concealing attitude. It is the same irony that Socrates used to belittle himself when he discoursed with his speakers (*Socratic irony*).

In existentialism (EU, XVII-XX) irony becomes an attitude towards the world that can become a style of life, a self-controlling and lucid way of seeking the truth.^{cliv}

In the tetradic game of truth irony is the motor of meaning, trope:

- in being subversive and incessantly bringing use to see things from alternative points of view (Socrates);
- in refuting the Panglossian Paradigm;
- in the conscious abandonment of any ontological faith of meanings towards what the research defines as second blast .

The four motors of truth are in an analogical relationship with each other according to the cliché

METAP IRONY

METON SYNEC

As the McLuhans write: - "*Though indeed the complementarities are present, this quartet or grouping is not a tetrad. That is, it does not analyse some artefact of which synecdoche is the obsolescence phase, irony the*

reversal, and so on. Yet the ratios are present. The left side of the group is integral or right-brain in structure; metaphor uses two figures and two brain: metonymy uses qualities, which do not admit of fragmenting or measurement but are pervasive, aspects of ground, as it were. The right side of the group is fragmentary or left-brain in structure: synecdoche is part-whole quantifiable, irony 'splits' in another way. Irony splits figure from ground and splits the consciousness of the knowers.” (McLuhan M, McLuhan E., 1988: 232)^{clv}

Figure/ground

figure/two ground

figure/ground

METAP IRONY

METON SYNEC

ground/ground

figure/figure

The tetradic game of truth produces transformations and offers a hermeneutical apparatus for a second order pedagogy; i.e. an apparatus of analysis and generation of meanings.

The S<>T dyad in the tetradic game of truth produces chains and sequences of tetrads that then generate quadripartite bunches of etymologies, which reveal overlaps, analogies, connections, and parallelisms of meaning of the subjects dealt with. From here the tetrads generate additional terms that can be subjected to other tetradic games of truth, and so on. In fact, each tetrad can originate two, three or more tetrads to ask which is right is meaningless. Every argument, theme, thing and procedure subjected to the tetradic game of truth reveals a series of its possible and complex natures that have a direct relation with those who observe and practice the tetrads. These natures are linked to the anthropotechnics and to the time in which they are implemented, but seen from diverging perspectives so that the artefact analysed will present a plane of different aspects that must be hologrammatically implemented. That is to say the understanding of reality and the truths of the artefact analysed can only be seen between the various parts analysed by the tetrads, both in how it resonates between

emphasisation/retrieval/transformation/obsolescence, and in how it resonates between subjectivity and different individual experiences (pragmatics). The truth is a process and what the knower must do is follow the path of knowledge without fixing it in a form, yet remaining within the theories of complexity.

II.XXIII: The Tetradic Game of Truth conclusion

The figures of truth generated by the tetrads could be seen as vortices of Intelligence as energy, of experience as pragmatics and of knowledge as sensibility.

▣ INTL ▣ EXPR ▣ KNOW ▣

▣ ENER ▣ PRAG ▣ SENS ▣

The objective of Pedartgogy of the information society (Castells, 2000) and of the Test Society (Zielinsky, 2010) and of the next generations focuses on deciphering the forms of knowledge and must explore the relationships between knowledge and knowing in an information society and anthropocene. In the information society, the meanings are no longer in time, retroaethetics are no longer valid, in fact the old pedagogical method based on fixed notions becomes less suitable since: “[...] *one is surrounded by answers, millions of them, moving and mutating at electric speed.*” (McLuhan M, McLuhan E., 1988: 238)^{clvi} The construction of the individual depend on a process in which the individual is replaced by a perennial anthropogenesis, by an individual whose survival and the control of the situation (for example a banal thing like finding and/or adapting a work) will depend on his capacity to transform and probe and question, on his capacity to create counter-environments through which he can analyse the old backgrounds, on his capacity to take us a position of experimentation via the position of the artist. In fact, since the information that substitutes the reality are no longer in time, since the realities and truths are magisterial and have no coherency, rather contingency, what Pedartgogy introduces with its vision and with its tetradic apparatus (game) of truth is not a system of fixed notions, but the capacity to learn to navigate, according to the ancient art of cybernetics, through a territory that has not been marked.

Today the student does not need notions. He needs methodologies of orientation, and this is what Pedartgogy

and its Tetradic Game of Truth propose.

This methodology of orientation is provided to all lecturers of the School of Media Design & Multimedia Arts through a Lexicon, that is a formal reduction map of the Pedagogogy.^{clvii}

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Chapter III - The 'passeurs' that lead us into new territory

The awareness of what a student can be leads to the possibility of exploration; an environment must first be explored; exploration constitutes an inspection of the territory, and it uses guides, the 'passeurs'. This Research views knowledge as a map that adapts to and describes the contemporary and uses Raymond Queneau¹ and Carlo Emilio Gadda² as its 'passeurs'.

III.I Raymond Queneau, a radical ontological pessimism

The 'passeur' Raymond Queneau is a writer, mathematician, dramatist and philosopher; his work stems from the substance of studies and reflection based on observations of reality and of reading in all directions, in his essay *Le voyage en Grèce* (1973) he addresses the issue of the spoken language and the written language, and explores the tragic consequence that things that are thought, which are not necessarily true, end up exercising a strong influence on man and his actions.

Queneau equips the research with a map entitled *Le Chiendent* (1933)^{clviii}: a multitude of individuals without depth, silhouettes without form or substance.³ Queneau takes us into a territory punctuated by illiterates, incapable of observing their daily lives and whose aspirations are vulgar. They are 'flat' men, who have no depth and who are incapable of any action that might remove them from the materiality of their bodies. They are not natural beings; they are never anything other than culture produced by the technology of language: territory that once uncovered, is leapt over, because the tales and paths must not be left incomplete⁴; an absurd diatribe of banality induced by the technological emphasis of the language and the technology afferent to it.

In this 'vulgar' territory, it is the character of Queneau himself to refuse abandonment through his own

1 (FR, 1903-1976);

2 (IT, 1893-1973);

3 This map describes the end of the labouring masses and the advent of the television masses, anticipating/pre-empting the vulgates of the digital worlds: evil triumphs in Madame Cloche, the midwife of evil, avidity and ambition. It is an evil that is embodied by a person who seeks no knowledge and is distracted by visions that will fulfil themselves as prophecies. This not-seeking an awareness is the evil in the territory of Queneau, as it permits no crossing, no knowledge;

4 Queneau the 'passeur' describes the vulgar joy of witnessing an accident, of returning to the scene in hopes that the event might repeat itself, simply because, and this is the point, it is an 'extraordinary event' in the banality of this life, made of a mirrored reality with no greater value. It is a society of individuals who buy newspapers and don't read them, who tirelessly repeat exclamations that it's raining when it rains and that it's hot when it's hot, that the nature around them isn't like it used to be and young people aren't like they used to be;

existential operation; in the exploration-description of life, Queneau the 'passeur' exercises a 'poetic and counter-environmental' action that allows him to process 'other' meanings. Like all explorers, he knows he must in some way 'trace' his path, and Queneau the passeur himself writes: - “*One [...] idea circulating at this time despite the fact that it is utterly false (amongst the surrealists), is the equivalence established between inspiration, exploration of the subconscious and liberation; between chance, automatism and liberty. Now this aspiration that involves blind submission to every impulse is, in reality, a form of slavery. The classical artist who writes his tragedy in observance of the rules he is familiar with, is freer than the poet who writes whatever comes into his head yet is a slave to other rules he ignores.*” (Queneau R., 1981: 207)^{clix} The foundation of Queneau-nian cartography is ontological pessimism, or rather the map is less than a simulacrum of the real environment; and without method we are alone in the language that communicates to us, inversely if we apply a method, whether it works or not, that we understand that a truth doesn't exist, and that the only thing that counts is the process that constitutes the method and gives meaning to our humanity. Thus, knowledge is behaviour, and technology permits mnemonic retention and therefore, language.

In this sense, research is a map drawn from the exploration of a territory that we learn by experience, a project that aims to define a path of knowledge, limited and contained within the types of technology seen as efficient cause. This research explores Pedartgogy as the invention of a new correspondence between art and word; Pedartgogy as a particular case of the need that research has to insert an order that is just an invention, that only literary and poetic invention can create, in the certainty that what is real cannot be ordered, nor described, nor fixed. The research aims to pose new questions for higher education and must begin by targeting the destruction of the 'ossified' forms that are passed down, whilst it must 'ossify' the new forms that are formed.

This then, is what the passeur Raymond Queneau suggests to this research: the capacity to explore a territory in an apparently casual and free way, beneath which a clear path-method of exploration is nevertheless ordered in advance. “*Nothing in these works (Ulysses, 1922, Work in progress, 1939 as Finnegans Wake, by James Joyce N/A) is left to chance. [...]; freedom is not composed of chance. Everything is determined, the whole as well as each episode that comprises it, and nothing shows limitation. In Work in Progress (1939, Finnegans Wake) each word has the precise meaning intended by the author; it is not the result of free invention, which acquires*

meanings by pure coincidence.” (Queneau R., 1981: 230-231)^{clx}

Queneau's area of problems corresponds perfectly with the problems of arts higher education. At the end of the first decade of the new century “[...] *it is becoming ever clearer that the system of sciences is not linear (Mathematics-Physics-Biology-Anthropology) but rather circular; human sciences connects back up to mathematics. We see therefore, that nothing prevents poetry from locating itself at the centre, losing none of its specificity.*” (Queneau R., 1981: 303)^{clxi}, we must consider the question of 'false knowledge': that of the identity between what we are and what we truly know, really; of the difference between what we are and what we believe we know and that in reality we don't know. A central problem in the student-artist, in a research that is, all things considered, about hermeneutics. “*It follows that one can be talented, well educated, highly skilled, excellent in all respects, yet have nothing with which to identify oneself, be nothing, or almost nothing: reduced to one's own natural atavism; yet one can be uncultured and even 'innocent' and know more than a professional academic. [...] The natural being is what is given, hereditary, physiological, subconscious; it is what requires no effort [...]. This natural being is only a starting point and not something to which one has to limit oneself.*” (Queneau R., 1981: 22)^{clxii}

In a syncretic world, knowledge has little value if it is not identified with an essential necessity: an experiential, radically empirical event. This empirical foundation coincides with the founding of the NABA Faculty of Media Design & Multimedia Arts/Film & New Media⁵ and the use of as an apparatus for research. A contingent necessity, which provides experience and the sense of acting of the teacher and the pupil, and which concerns the responsibility of the lives of the research's 'collaborators', or rather all the real characters that have inter-acted with it.

Raymond Queneau has been ever present in the founding of the Faculty of Media Design and Multimedia Arts/Film & New Media, since there has always been the necessity for a method that involves the sense of limitation and measure. At times, this method can appear rather illogical “*But logic is an art too; it is the axiomatization of a game. The ideal that scientists have constructed at the beginning of this century (previous, A/N) has been a presentation of science, not as knowledge, but as rules and method. [...] Everything that we*

5 Academic Diploma 1° level MIUR, Diploma 2° Level MIUR, Dottorato di Ricerca 3° level Ph.D, University of Plymouth.

know is a method that is accepted (allowed) as truth by the scientific community, a method which also has the advantage that it can be joined with manufacturing techniques. Yet this method is also a game; more precisely it is what is know as 'jeu d'esprit'. Therefore the whole of science, in its accomplished form, presents itself as technics and as play. That is no more and no less than how the other human activity presents itself: Art." (Queneau R., 1981: XIV-XV)^{clxiii}

A problem for students is the "failure to conclude" and "false knowledge". But if it is true that the search for truth can be seen as a resolution of the map that will never arrive at a conclusion, then the search for knowledge can be seen as an adventure without a destination, whose outcome will always be disastrous. So the problem that remains is false knowledge, but the problem becomes how the knowledge is produced and with what awareness students accept this falsity.

Yet if the foundation of the search is gnoseological pessimism, if the search explores and describes 'negative/homeopathic knowledge' (see further), then the problem is no longer that knowledge is false, because everything that we know is false.

In the years it has taken to plan, test and establish a new BA in Media Design & New Media and an MA in Film and New Media Art, and in understanding the model of a PhD ideated by Roy Ascott, there has been the omniscient presence of the possible knowledge of the student: "*who learns only at dawn after a night in 'dubious' haunts [...]; a knowledge of a man that shows an incessant and voracious curiosity for literary costumes and food shops, for mystical religions and for ghost stories, for the administration of Roman colonies and for inheritance legislations in various countries [...], a knowledge of man which is expressed with grace, lucidity, a 'species simplicitas' as Tacitus says, that truly seems to belong to an ex-proconsul of Bithynia.*" (Queneau R., 1981: 98)^{clxiv}

Queneau's territory is that of Research and of Pedartgogy, that of Art and Fine Art Academies. This is revealed through the retracing of a humanity of "*fuos litteraries*" and of "*fous de l'esprit.*"

Art creates systems of reality beyond any logic or classification; thus the maps of meaning explored by Queneau are a model for attempting to explore a method of Pedartgogy with knowledge in the Fine Art Academy, since these represent a delusion of truth in the convergence of cognition and paradox.

III.II Carlo Emilio Gadda and the “Grama sostanza” (Wretched substance)

Another author to have entered the fortification between art and knowledge is the Italian Carlo Emilio Gadda⁶, a “*passeur*” of one of today's fundamental themes: the relationalistic, systemic and syncretic conception that goes by the name of *antisubstantialism*.

Carlo Emilio Gadda, talks about 'wretched substance', an expression which lent its name to the second chapter of his philosophy degree thesis, entitled “*Meditazione Milanese*”^{clxv} 7. Gadda is well known in Italy as a writer, but only after his degree in Engineering, did he enrol at the Scientific-Literary Academy of Milan in 1921, which would soon after change its name to the Faculty of Literature and Philosophy of the University of Milan. In 1923 he began work on his degree thesis for the Scientific-Literary Academy of Milan, entitled: *La teoria della conoscenza nei nuovi saggi di Leibniz* (The theory of knowledge in the new essays of Leibniz). Gadda read modern philosophy to provide a contribution towards the theory of knowledge. The thesis was in its final draft in 1929, but would never be discussed since Gadda abandoned his philosophical studies to dedicate himself entirely to his literary pursuits.

In *Meditazione milanese*, he maintains that the 20th century must break down “[...] *the prejudice that has a name – 'person' or thing*” (Gadda C.E., 1974: 11)^{clxvi}, that is to say the classic conception of the aware subject, which is (another) expression of the idea of substance. Gadda produces a cartography of meaning which is meta-descriptive since there are no isolated entities of maps and cartographers, but rather systems where the maps create the cartographers who create the maps. A functionalist and relationist view, which harmonises (In a musical sense) with the realities of 'non overlapping magisteria' (see chapter 2) and harmonises the truths to the syncretism of Roy Ascott (see chapter 2).

Only within this creation of a fluid cartography can you find a role for the concept of substance, through an operation that relativises it, making it something *placed*, constructed, something given in a process and no longer pre-existing, subsisting, already present. In fact, these systems are in continuous movement, they imply

6 (IT, 1893-1973);

7 For many Italian academics, Gadda's *Meditazione milanese* is an oddity, yet if we broaden our perspective to a wider horizon and we look at European culture, Gadda is seen for what he is: one of the few Italian-Europeans.

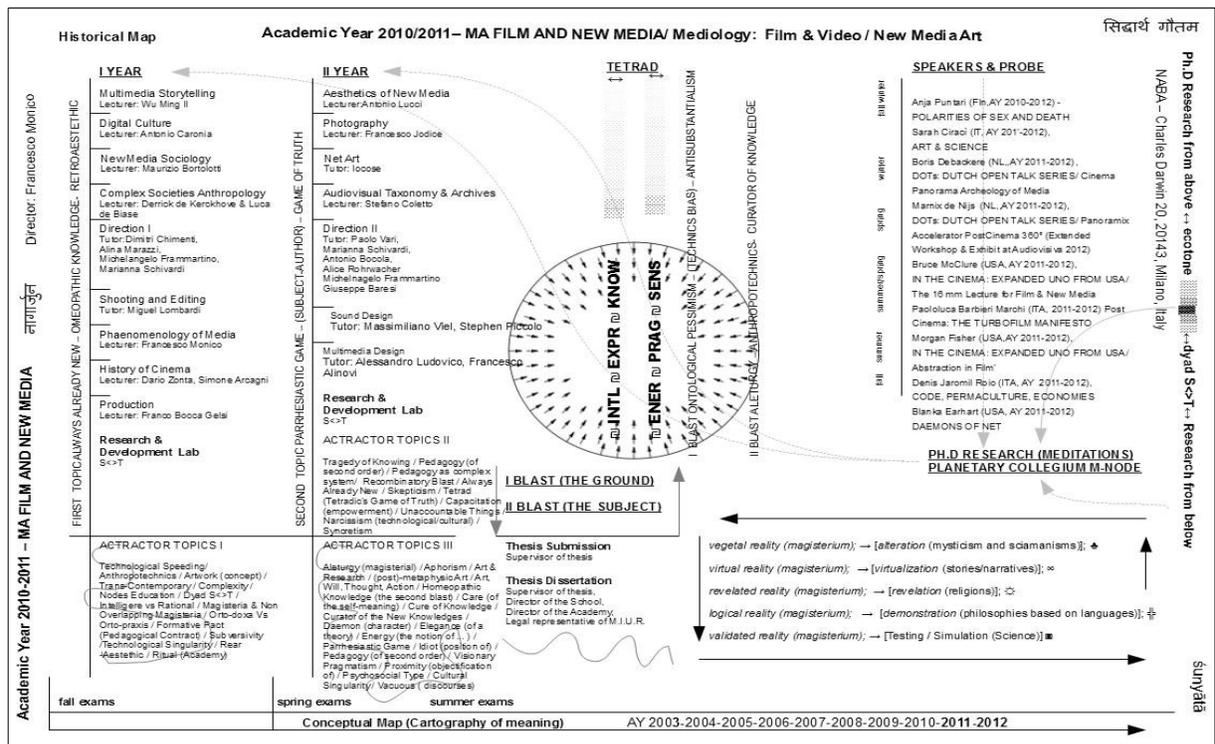
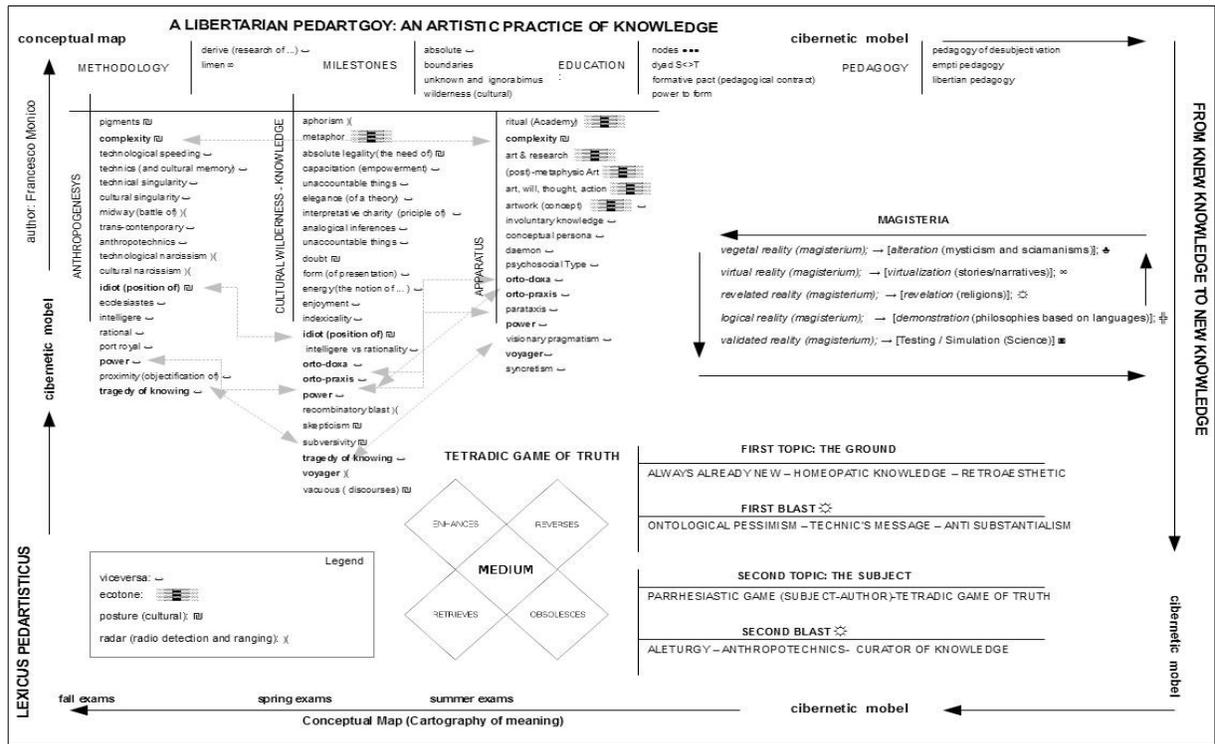
continuous procedures, homoeostatic processes and variations: Carlo Emilio Gadda describes these as *deformations*. According to Gadda, in this continuous stream, a moment of substantiality is found in the polarity between being and becoming, between the stability and change that makes up any territory.

“The fact exposes in reality a 'persistence' as well as a 'becoming': but what is this 'persistence'? I interpret it as a 'lingering', almost without alteration, of a number of elements of a system, whilst other elements undergo more intense deformation. It is these elements, apparently, temporarily unaltered, that allow us to observe a continuity of the system, a unity and consecution of time, a being, a substantial nucleus: if everything were movable and moved, no form or figure would be conceived.” (Gadda C.E., 1974: 11)^{clxvii}

The substance is therefore *wretched*, since we perceive it only with an act of falsification, that of assuming a moment of substantiality⁸ in the incessant definition of the subject and of things. This view brings us to observe how the concept of system adapts to define a pedagogical field which is a system of gravitational fields, of notions, of knowledge, mental images, concepts, precepts, apperceptions in perennial interaction with these. For this reason and in this sense, in the practice of the Faculty of Media Design and Multimedia Arts, a 'node' based didactic approach has been experimented, and subsequently adopted in light of its success.

⁸ It is important to recognise the similarity of Gadda's position to that of Heidegger when he writes that our being [Sein] is only revealed by its dissolution into existence [Seiend].

IMG 5: [SCHOOL OF MEDIA DESIGN & MULTIMEDIA ARTS/FILM & NEW MEDIA – NABA HISTORICAL MAPS]



This idea was described by Gadda in the territory of his *Meditations*: if a system is “deformed”, all the elements of it change, since they are diacritical entities, relationships; “*My wretched substance exists in as much as one effects mutations and 'corruptions' [...] Logical deformation... therefore implies the necessity of permanence, of a being, where this latter must implement and bring about itself.*” (Gadda C.E., 1974: 14)^{clxviii}

Gadda describes a territory constructed of the inevitability of (relatively) stable points where one can discover that the analytical, decompositional, static moment is not something which is merely negative, but the other side of what he calls *heurism*, the transformative process that animates the world.

This is the direction that the research has retrieved from Gadda: not wishing to conflict with the classical theory of being or of substance as a permanence of pure becoming, but rather to proceed retrieving a certain level of foundation, solidity, a little 'substance', even if Gadda tells us it is 'wretched': if thought is founded in thinking 'the real', unreality is founded in all things. Because the substratum is such only in relation to an incessant transforming activity which supports itself on this temporarily stable foundation in order to develop its own action of reality; therefore the idea itself of a substance establishes the same unreality.

In this territory, the *pause*, the *delay*, and even the *limit* (these are the terms used by Gadda) are an inevitable *condition* of the heuristic process. It is as if truth were narcissistic. That is to say, as if it didn't see that the content is the effect of the constant interaction between the thinking subject and the environment, thus the content is never a reality, but an effect of reality. If the creative moment wants to cast off this truth, it ends up as a form of sterile narcissism.

Gadda calls this 'thickening' of the systemic process: *gnomo* (*meaning knot or tangle*) or *gnommero* (*in Roman dialect*), and he sees it as the limit of the process of idealisation; the academic subject, history, institutions and traditions all come under '*gnommeri*'. These are contemporaneously limits and resources in the process of knowledge.

In this scenario, the theme of “wretched substance” stimulates a reflection that deviates from the strictly theoretical-metaphysical character, but assumes important educational implications.

Gadda itself writes: - *“The vertebra of the imperial aqueducts are the substance or the permanence or the remnants of a logical 'heurism' which processed and manipulated the natural resources available: lime, bricks, chemical reactions, stone, mechanical operations. And the forms extracted from the earth in this way, became the co-necessary permanence of technical, economic and political 'becoming': and this becoming was the fountains and the baths and the people that drank there and bathed there, and the empire and the fortunes and life and sanitation and evil and idleness and fasting and infinite relations.”* (Gadda C.E., 1974: 17)^{clxxix} and still: *“The historic reality that always assumes a 'consequi' obstructed by constraints of every kind and by attrition.”* (Gadda C.E., 1974: 89)^{clxxx} ⁹ In Gadda's sense, the machine is an adjustment and an improvised adaptation between idealism and substance. Pedagogogy is an adjustment-adaptation between ideas and visions and daily pedagogical practice both on a micro level, that is in the single course, and on a macro level, that is throughout the whole Arts Higher Education Institute; in art it is an adjustment-adaptation between the ideas of art, artist and the practice of the artworks. Consulting Gadda's territory, this research has identified other expressions that recall this theme: *“[...] the machine-thought [...] that [...] must reckon with delay and cover itself with flesh and bone”* (Gadda C.E., 1974: 88)^{clxxxi}. In Gadda's territory¹⁰ a machine is like a calm eddy along a raging torrent, a pause in the impetuous wild current of magical, narrative and historical, religious, philosophical and scientific factors, and today mainly digital and hypertextual factors too.

“The real machines reach [...] a form that is different and distant from what finalistic fantasy had led us to hope for: these are saturated with expedients and large gnocchi, demanded by the ugly delay of reality: like the stem of a plant, which has grown in the turbulence of a storm, it is contorted and appears the image of an obstinate resistance: and like the soul of man too, born pure in the morning, but which is a clot of deformity and perverse pain before the night. And the call of the pre-existing logic or material is at times so brutal and intense that the empire of ends vanishes, in the way that the peaks of far off mountains deliquesce into the mist.” (Gadda C.E., 1974: 21)^{clxxxii}

The Research retrieves another feature of the Gaddian cartography: the non conflict between nature, culture

9 One can't fail to notice the incredible similarity to the philosophy of Harold A. Innis (CA, 1894-1952) in *Empire and Communications* (1950), and to his follower Marshall McLuhan in *War and Peace in the Global Village* (1968);

10 As in the territory opened up by *War and Peace in the Global Village* (1968) by Marshall McLuhan, or the territory created by the papyrus-space of *Empire* (1950) by Harold A. Innis;

and technics; the author of *Meditazione Milanese* drew inspiration with indifference from the natural and historic worlds, from natural glades and machine concretions. This feature is subsumed by Pedartoggy, which assumes an egocentric position and poses the substantial ideal equality between nature, humankind and technology, observing the eschatology of the 'Technological singularity', and exploring the substantial language of it through the artwork *The Hybrid Constitution/Melez Anayasa* (2011) (see chapter 2). This artwork explores a mobile and 'self-deforming' system, in Gaddian terms, for which it is impossible to reach complete isolation of the elements of the system; the system is free of precise extremities, of auto-identity, or permanence; it is not *closed*; it is *open*.

“[...] *I'm not able to conceive them without thinking of tangles or nodes or balls of relations, without any clear boundaries, and that is contrary to what is depicted by the lazy normalcy of common thought. So just as from then, each element is in turn a node or figure or system, so too a part of its own elements remains uncorrupted by that initial mutation from which we descended and that part works in it as the current substance.*” (Gadda C.E., 1974: 15)^{clxxiii}

In fact, in the territory illustrated by the artwork, the substance-support on which it is drawn is *wretched* because only relations and conventions exist between its signs and no atoms or simple elements exist that can define parts of the map, which is therefore a map without defined boundaries, as if it were a musical composition made of carrier waves and modulating signals.

Gadda represents a map where identity and difference, in relation to themselves and each other, are indistinguishable. Therefore *The Hybrid Constitution / Melez Anayasa* (2011) realises this vision and proposes it to the students and those who pause to reflect on it.

In fact, each element is 'inhabited' by the other: the animal is inhabited by the man who in turn inhabits technology.

The determination comes about through the perspective and the language it uses, the cultural determination of the 'elements' is therefore technological. For this reason the margin or boundary between one and the other is not 'polished', but is rather a turbid place of confusion, of the marriage of the identical with the not identical, according to a mestisation which opens up to an identity that is inhabited by the relation with the other, with the

different.

The Research has found this mestisation in Gadda's cartography of meaning and today it is one of the elements observable in the experiences of the world, such as the problems existing between the different faculties of the Fine Art Academy, just as in any Higher Education Institution.

At this point the research identifies a relationship between Gadda's *Meditazione milanese* and a movement from the second half of the 20th Century: structuralism, deriving from Ferdinand de Saussure's *Course of general linguistics* (1916), and the work *Structural Anthropology* (1958) by Claude Levy Strauss¹¹. As a matter of fact, Gadda does not 'structure' a closed system, a pure system with net boundaries, rather he goes beyond the lessons of De Saussure, not limiting himself to counter synchrony and diachrony, and 'structure' a *turbid* system, in final in-decidable analysis, whose limits are like shore lines, immeasurable, fractal frontiers, *moist zones*, which one cannot assign definitively to either one of the territories that delineate their boundaries and define them.

The Research identifies itself in this *murk*. Is it research in contemporary art, or in philosophy, or pedagogy or hermeneutics? It is *turbid* research that coalesces the ideas of Gadda and Jacques Derrida¹², yet whose boundaries of its own system are not clear like those of the *Margins of Philosophy* (1972): here the margin is that frontier territory, of relation that is prior to terms that it poses in relation and that it is both inside and out (as opposed to neither inside nor out) in relation to the systems that it delimits.

The research seeks to explore a Pedagogy that is neither philosophy nor art, inside of it outside of it, but that *is* inside of it and it *is* outside of it, and the possibility to affirm and deny, at the same time, something of a same reality in a syncretic perspective linked to the philosophies of technics.

In *Meditazione milanese*, Gadda describes a territory in which the '*mile stones*' of the territory of Pedagogy are already present:

- an idea of knowledge rooted in the phenomenon of life (W. James¹³, G. Bateson¹⁴, M. Merleau-Ponty¹⁵),

11 (BE, 1908-2009);

12 (FR, 1930-2004);

13 (USA, 1842-1910);

14 (USA, 1904-1980);

15 (FR,1908–1961);

for which there are no simple cognitive systems, but only vital-cognitive systems;

- a conception of the functional identity of each vital-cognitive system, which forces Pedartgogy to exclude the oppositional signs of the subjects and the objects and to represent the different living-perceptive systems as 'fields', (Jakob Johann von Uexküll¹⁶); but also what Maurice Merleau-Ponty defined as the *chiasm*, and what Francisco Varela¹⁷ calls *a structural link between organism and environment*^{clxxiv};
- a conception of the 'sensory ratio' as a 'perceptive system' (J.J.Von Uexkull, H. M. McLuhan¹⁸);
- a view of life as behaviour-information, creator and creature of a generated and self-generating complexity, (L. von Bertalanffy¹⁹);
- a cartography as a 'system of systems', which from the simple are complexified (G. Deleuze²⁰, F. Guattari²¹).

16 (EE, 1864-1944);

17 (CL, 1946-2001);

18 (CA, 1911 – 1980);

19 (AU, 1902-1972)

20 (FR, 1925-1995);

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Chapter IV – A plane of immanence: connections in the age of technics

Bruno Latour observed that science also exists as an environment of social and cultural relationships. This view allows us to think that art, with particular reference to New Media Art, explores the same territory. In fact, like science, art generates an environment of social and cultural relationships. According to Latour, science is created in the overlapping of heterogeneous elements – colleagues, texts, experiments, presentations, workshops, classrooms, libraries, festivals, conferences, symposiums, university bursaries, exams – which must be continually managed. What scientists do is a continual simultaneous reconstruction of social and cultural contexts. In much the same way, New Media Art is created in the overlapping of discourses, texts, workshops, classrooms, experimental installations, symposiums, festivals, colleagues and libraries, and according to Joseph Kosuth, what artists do is continually and simultaneously reconstruct social and cultural contexts; [...] *the artist [...] is operating within the same socio-cultural context from which he evolved. [...] His activity embody the culture*“[...] (Kosuth J., 1991: 119)^{clxxv}.

As Marshall and Eric McLuhan state: - “*When the environment of instant information becomes the hidden ground of all perception, choice, and preference, the ground that underlays the world of precise and quantifiable scientific study is pushed aside or dissolved.*” (McLuhan H.M., McLuhan E., 1988: 110)^{clxxvi}

The Research observed the similarity to Harold A. Innis's insights that 'The medium is the message', (*Empire and Communication*, USA, 1950), which was more widely diffused by Marshall McLuhan, (*The Gutenberg Galaxy*, CA, 1962): the meaning of the information lies in the *remnant* of the communication itself after it has become a hybrid with the technics to which it assigns itself.

Today, in the 'Informational Age' (Castells, 2000)^{clxxvii}, the internet has formed a space of mestisation shared by science, art and economics, and this is the first time in history that this has happened: the telematics distends the display in an arena of discussion and comparison, in a synchronous and asynchronous possibility of commenting 'to and about' the artwork.

Telematic presentation makes the work accessible from any place at any time; the World Wide Web display means that the project texts are presented alongside the images. The artwork therefore mestises further, assuming characteristics of social-art, political-art, and concept-art and creating a new territory.

This new territory is comparable to the ecotone^{clxxviii}: the concept is of ecological derivation and means an environment of transition between two ecosystems, and more generally, between two homogeneous environments. In the classical concept of ecotone, this transition is actually a tension, or rather an interval that negotiates and mestises the environments, the spaces where concepts reside and are formed. The ecotones contain their own species of adjoining communities and species exclusive to the ecotone area itself. They therefore possess a high level of biodiversity and richness. These peculiarities make the ecotone indispensable since it is through these very structures that the connection between very different environments is established (woods-clearings, lakes-forests, fresh water-salt water). The research instigates an identity between species and cultural species; in the model previously proposed by Latour.

The 'social relationships' and therefore the intraspecifics, can be seen as a classic product of the species, hence the analogy proposed by the research - galleries-artworks, festivals-lectures, artworks-experiments, presentations, workshops, colleagues, libraries, conferences, symposiums -.

In this new digital ecotone (eco-net), New Media art becomes a praxis of research whose artworks and the critical texts that accompany them, negotiate, in a dynamic tension, a global sharing of cultural updating. In this way, it generates a set of experiences referred to concepts, and concepts referred to experiences, from which emerges an environment of statements/propositions/terms that reify a shared discourse.

The research retrieves Joseph Kosuth's view of the artist as an anthropologist, enforcing therefore a mestisation between the artistic-humanistic culture and the scientific-technical culture: “[...] *its growth as a cultural reality is necessitated by a dialectic relationship with the acticity's historicity (cultural memory) and the present social fabric of present-day reality.*” (Kosuth J., 1991: 117)^{clxxix}

It was Kosuth again who foresaw this phenomenon when he wrote: - “*Art in our time is an extension by implication into another world which consists of a social reality, in the sense that it is a believable system. It is this holding up what is often said to be a 'mirror' to the social reality which attempt to be believable and real.*” (Kosuth J., 1991: 117)^{clxxx}- A telematic environment of propositions emerges, which reify the intuitions of art and of scientific research in a globally shared discourse.

Yet there was no shortage of criticism: Geert Lovink reflects on the question of the telematic debates

between art and science (Lovink G., 2007)^{clxxxii} and, quoting the Anna Munster media theory, states that the problem is no longer if or why, but how art and science can relate with each other: *'science and art do not speak the same language, so what do we mean by collaboration? What is this mythology created using a 'language of collaboration'? Is it a communicative paradigm we can use to describe the approaches of art-science, or is it only useful for avoiding problems in translation, semantic shifts and praxis?'* (Lovink G. 2007: 59)^{clxxxiii}

Kosuth tells us that – *“For the artist, obtaining cultural fluency is a dialectical process which, simply put, consists of attempting to affect the culture, while he his simultaneously learning from (and seeking the acceptance of) that same culture which is affecting him.”* (Kosuth J., 1991: 120)^{clxxxiii}.

Furthermore, according to Roger Malina^{clxxxiv}, today we live in an age of 'Crowd Science', and it is important to hypothesize a common plane of mestisation between art and science.

Another plane to consider is the capacity of the World Wide Web to generate a bottom-up ethic; for its characteristic of instantly and globally connecting people and thus generating a dialectic validation that can unmask what is fraudulent and deceptive.

By turning the perspective on its head, we observe that the reason why the critic, the art historian and the *tout court* historian, as well as the biologist and the mathematician, are not considered artists *“[...] it's that, because of modernism (scientism) the art critic and art historian have always maintained a position outside of praxis (the attempt to find objectivity has necessitated that).”* (Kosuth J., 1991: 120)^{clxxxv}

Kosuth maintains that scientific methodology has transformed the world into an object outside of us and therefore observable. From this an 'ethical' problem has arisen, that of absolute objectivity. The fields of anthropology and sociology, the least 'scientific' of the sciences, i.e., Anthropology and sociology, tried to work within the world and cultures; according to Kosuth: - *“The artist-as-anthropologist may be able to accomplish what the anthropologist has always failed at. A non-static 'depiction' of art's (and thereby culture's) operational infrastructure is the aim of an anthropologized art.”* (Kosuth J., 1991: 121)^{clxxxvi} - Such a description is a cultural operation carried out from within, and consequently the artist is forced to become politically aware, because he works within society, re-establishing an ethical osmosis.

This “Telematic Ecotone” where art and science mestise, faces the problem of *epistemology*, and it is no

coincidence that one of the most prominent of the New Media Art installations is the *Telegarden*,¹ C^{created in 1995 and} unveiled at the Ars Electronica Center of Linz, in Austria, by Ken Goldberg, an artist and professor of engineering at the University of Berkeley, is an 'interactive telematic sculpture' in which an online public fertilises and waters a robotic arm in a garden located only on the internet. This remote activity inevitably leads to the question of whether the technologically mediated actions really contribute to the growth and flowering of the plants visible on the website, or whether in fact the entire work is nothing more than a pretence/fiction created by technology.

With this artwork, Ken Goldberg contributes to the media theory. In fact, uniting the term 'tele', means remote, distant. With the term "epistemology, indicates the discipline of the exact value, the nature of exact knowledge, he defines a new field of knowledge: 'tele-epistemology', which relates to a nature of certain knowledge mediated from remote sources. From this, we derive the idea that it is necessary to draw comparison between the certain knowledge of epistemology and the possible knowledge of hermeneutics in our Fine Arts Academies. Knowledge is a product of the tertiarisation (epifilogenesis: Stiegler B., 1994; 1996; 2001)^{clxxxvii} of memory triggered by technics, and tertiarisation leads to a process of mediatisation of experiences, in the sense of a 'tertiarisation' or rather objectivisation and sharing of experiences; tertiarisation becomes an aspect that, as social creatures, is central to psychology and behaviour. This permits the subjective experience to be correlated with the objective experience through the re-mediatisation performed by technology. Therefore, a large portion of the world consists of the common parts of the experience. In order to be common, these parts must be objectivised through a process of generalisation and abstraction that occurs through mnemonic retention created/caused by technological tertiarisation, and a subsequent process of mediatisation of the meanings; the World then, consists of mnemonic tertiarisation, and of the mediatisation of experience, in a cybernetic/hermeneutical circle.

With the appearance of the vowel, around 8th-7th century B.C., western humanity entered a world that is created and is shared in the abstraction of experiences. We can deduce then, how the West was pervaded by a tertiarising and mediatising system, which possesses its own spin that constantly informs the construction of

1 It is an artwork that generates reflection through public participation; once seeing the work on the website <http://www.usc.edu/dept/garden/>, the observer registers and takes care of the plants in the garden remotely, becoming part of an experiential telematic community. <http://www.youtube.com/watch?v=gbyy5vSg8w8>;

reality of what it can and must create.

With a reasoning of the evolutionary transcendentalism we can imagine that: the more a culture becomes technologically mediated, the more it becomes adaptable to the environment, abstraction, creating infinite, and therefore the more its capacity for self-perpetuation increases. In tertiarising memory, the *Technics of Man* produces a 'technological use-time,' which substitutes nature with a 'second nature.' The relationship with a 'second nature' supports the punctuation of cultural life, giving it a meaning that destiny assumes as its own meaning, in imponderable forces, spaces, moments and times that create a cartography of meaning inhabited by what we could call: *conceptual personae, dramatis personae, and demons*.

Also since the end of last century, technology and art have once again begun to share the laboratory, thanks to open-hardware devices that have managed to reduce the costs and introduce an experimentation that is spread amongst non-experts.

The most know of these devices, named Arduino, was developed at the Interactive Institute of Ivrea^{clxxxviii} by a group of Italians, including Massimo Banzi, who once the centre closed, was invited into the teaching body of the Faculty of Media Design & Multimedia Arts at the NABA in Milan. The Arduino device “[...] *is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments. [...] Arduino can sense the environment by receiving input from a variety of sensors and can affect its surroundings by controlling lights, motors, and other actuators.*”^{clxxxix}. Massimo Banzi was interviewed on why he felt the need for such an apparatus, and he replied: “*At the Interaction institute of Ivrea, we saw the need for a prototyping and research device for working with technology. We thought of an actuator that worked with a simple and open programming language, and we found the processing program of the MIT. So in order to meet new pedagogical and research needs, we conceived, designed and created Arduino. Our aim was to allow students at Design Schools and Fine Art Academies to develop their artistic programming works on the borderline between art-technology and science.*”^{cxc} (Monico F., 2007)^{cxc} Arduino became an international event and spread throughout the world as a didactic and research device. The project received an Honorary Mention in the Digital Communities section of the 2006 Ars Electronica Prix, whilst Massimo Banzi was interviewed by Wired magazine as the

author of the most interesting 'open hardware' project of the time.

Open Hardware reduces costs to a minimum and makes it possible to work on artworks and phenomena of a different scale to classical art.²

Two cultures are described by Percy Snow³ in his work *The Two Cultures and the Scientific Revolution* published in 1959^{cxci}. Snow described the *first culture* as that of literary men and humanists and the *second culture* as that of scientists; this dissociation had two causes: first of all, that men with a scientific education are not taught to be aware of the cultural implications of their work, while men with education in the humanities are educated in total scientific ignorance. In a second edition of his book, published in 1964^{cxcii}, Percy Snow added a new chapter, in which he prefigured the birth of a *third culture* that would piece together the dissociation between scholars and scientists; “*There seems then to be no place where the cultures meet ...the heart of thought and creation we are letting some of our best chances go by default. The clashing point of two subjects, two disciplines, two cultures – of two galaxies, so far as that goes – ought to produce creative chances. In the history of mental activity that has been where some of the breakthroughs came*” (Snow C.P., 1964: 21-22)^{cxiii} 4

In 1998, Edward O. Wilson published *Consilience or the unity of knowledge*^{cxiv}; the title literally means a "jumping together" of knowledge, the thesis of this book has its roots in the ancient Geek concept of an intrinsic orderliness that governs our cosmos, inherently comprehensible by logical process, a vision at odds with mystical views in many cultures that surrounded the Hellenes.⁵ Then, with the rise of the modern science, the sense of unity was gradually lost in the increasing fragmentation and specialization of knowledge of the last two centuries.

John Brockman, an American literary agent, identifies the third culture in the activity of scientists who are

2 *Crowd science* and *garage science* were born, and in 2009 the Prado Medialab launched INTERACTIVOS'09: Garage Science Workshop-Seminar (http://medialab-prado.es/article/taller-seminario_interactivos09_ciencia_de_garaje) in which artists-researchers were invited to send their research ideas that would be selected to become the contents of a series of techno-scientific workshops;

3 (UK, 1905–1980);

4 At the end of the 1980s, the German historian Wolf Lepenies (DE, 1941) picked up where Snow left off, publishing *Between Literature and Science: the Rise of Sociology*, (Lepenies W, *Die drei Kulturen. Soziologie zwischen Literatur und Wissenschaft*), where he identified sociology as a candidate for the title of the third culture, in its role as mediator between the natural sciences and the humanistic sciences. Some years later, Snow's ideas were echoed in the book *Le Tiers Instruit* (Serres M., *Le tiers instruit*, Gallimard – Paris, (1991). Michel Serres (FR, 1930), in which the universities are accused of having divided society into two categories: cultured people with no scientific knowledge, and people who know science but have no real culture. Serres called for the need to make our sectoral knowledges conspire;

5 The rational view was recovered during the high Middle Age, separated from theology during the Renaissance and found its apogee in the Age of Enlightenment;

also capable of recounting new and interesting things to a wider audience in the world, diffusing knowledge beyond academia. He defines these scientists as 'new humanists'^{cxcv} and validates the Third Culture because the public is hungry for new and important ideas that shed light of the world around them. The living interest that receives the ideas of scientists is not explained only by their capacity to communicate: what we traditionally called 'science' today becomes 'public culture. For Brockman, the conflict between the two cultures can be resolved by thinkers who, despite belonging to different disciplines, debate with each other, learn from one another and apply what they learn in innovative ways. Their work of divulgation finally seems to reveal to us a significant step forward in the direction first shown to us by Snow: that of identifying a third culture. The power of the third culture lies in its capacity to tolerate dissent and the plurality of points of view. As opposed to what happens in traditional culture, the results of science can no longer remain the exclusive dominion of a breed of specialists; its achievements change the lives of each of us and the planet on which we live. Among the functions of the intellectual there must be above all that of communicating their thoughts to others, so that they shape the way of thinking of their generation. It would appear that the third culture Brockman speaks of draws heavily from thinkers within the scientific fields. Actually, what Brockman refers to is a cultural project with a much wider scope, which embraces arts, sciences, literature as well as spirituality, economy, philosophy and many other fields besides. He has himself contributed to this project, founding a community, the *EDGE foundation*, which since the late '80s has been gathering contributions of the most brilliant minds of the contemporary intellectual horizon.^{cxcvi}

Two intellectuals who seem to foresee this *third culture* are Harold A. Innis and Marshall McLuhan. The former, for the cultural leap he performed transforming an economy essay on the timber market. The Innis research on pulp and paper provided an additional crossover point from his work on staple products to his communications studies into a key paper for media studies.^{cxcvii}

The latter for his use of a synthetic method, a contemporary mosaic, for his Global Village concept that echoes the phenomenon of the creation of an interconnected environment of causes and effects. McLuhan has been compared to an artist on more than one occasion, mainly for the nature of his investigations at the limit of scientific credibility. He is not just an 'academic', but also a great mind, (university witts) aware of the new

electronic reality. He is an artist who explored the backgrounds of the reality he inhabited with the tools of poetic literature.

Another important foreseer of the third culture was the Jesuit anthropologist Teilhard de Chardin⁶, who developed a general theory of evolution that presents elements of syncretism between science, philosophy and religion. It begins with the recognition of human thought as the result of an evolutionary process, but maintains that evolution does not stop with the appearance of homo sapiens, rather it transfers from the biosphere to the thinking layer of the planet: the *noosphere*. It concludes that what we are contributing to today is the progressive education of a 'spirit of the Earth.' The universe of Teilhard de Chardin is a cosmos in becoming according to a *law of complexity-conscience*, which implies an ever more complex world which is simultaneously ever more centred and aware. There are two fundamental proofs for Teilhard De Chardin: The first is that in the mould constituted of the closed surface of the Earth and under the pressure of a population, we do not forge other than a single body. And the second is that, in this same body, due to the gradual establishment of a uniform and universal system of industry and knowledge, our thoughts more often than not, tend to function as cells of the same brain. For Teilhard de Chardin, we can foresee the time in which men will know what it is for every person to desire, hope, love the same thing at the same time, as though of a single heart. A vision in which the Earth itself not only covers itself with a myriad of grains of thought, but also surrounds itself in a single thinking sheath, until it constructs, functionally, a single and vast grain of thought on an enormous scale.^{cxcviii}

The idea of a noosphere is consistent with the hypothesis of the physicist James Lovelock (UK, 1919), who in 1979 with "*Gaia. A New Look at Life on Earth*,"^{cxcix} defines our terrestrial biosphere as a living organism, with its own interior mechanisms of self-regulation. *Gaia*, nothing more than the name of the living planet, is based on the assumption that the geophysical components of the planet earth are maintained in conditions suitable for sustaining life thanks only to the behaviour of living organisms. This maintaining a sustainability of and suitability for life is due to a process of homeostasis which is the effect of active, autonomous feedback which the biota, or animal and vegetable life, is unaware of. Furthermore, these variables do not maintain a constant equilibrium over time, but rather evolve in synchrony with the biota. The dynamic phenomena therefore do not

6 (FR, 1881–1955);

only concern the organisms or the environment, but the entire Gaia.

In 1995, Kevin Kelly⁷ published *Out of Control: The New Biology of Machines, Social Systems and the Economic World*. In this book, he maintains that: - “as we make machines and social institutions more complex, we have to make them more biological in order to manage them, the most potent force in technology will be artificial evolution, we are already evolving software and drugs instead of engineering them. All technology will improve towards biology. The main thing computers are good for is creating little worlds so that we can try out the Great Questions. Online communities let us ask the question "what is a democracy; what do you need for it?" by trying to wire a democracy up, and re-wire it if it doesn't work. Virtual reality lets us ask "what is reality?" by trying to synthesize it. And computers give us room to ask "what is life?" by providing a universe in which to create computer viruses and artificial creatures of increasing complexity. Philosophers sitting in academies used to ask the Great Questions; now they are asked by experimentalists creating worlds. In order to harvest the power of organic machines, we have to instil in them guidelines and self-governance, and relinquish some of our total control.”^{cc}

According to Kelly the information network of the internet can be considered as a *Planetary Mind* in education, and in which every single human being has the opportunity to inter-act with thousands of other humans and machines, instantaneously, ubiquitously and globally, in a way not dissimilar to how the neurones of our brain inter-act with each other.

If a certain anthropology and the cognitive sciences today consider every human mind as a process that emerges above a certain threshold of complexity of the cerebral neuron networks, then it makes sense to consider, along with Harold A. Innis, Herbert Marshall McLuhan, Pierre Teilhard de Chardin, James Lovelock and Kevin Kelly, the planetary mind as what emerges when the complexity of the global information networks exceed a critical level and reach a singularity. A process of mestisation of the learning resources of the individuals to the benefit of the collective is in progress.

This sharing falls into a more general paradigm, which is taking the place of the old reductionist conceptual view. This new way of seeing is holistic and is supported by the law of complex systems that states that the

⁷ Founder of the California based magazine *The Whole Earth Review*, founder of *The Well*, an important virtual community surrounding the origins of the development of the internet, and director of the prestigious magazine *Wired*;

whole is greater than and not reducible to the sum of its parts.

It is well named by Roy Ascott as *cybernation*.

New physics, developed at the beginning of the 20th Century with the wave of theories of relativity and quantum mechanics and was enriched along the way by the fundamental contribution of the *Chaos and Complexity Theories*, inspired a way of conceiving the universe as a connected cybernetic system, pluristratified and with multiple levels of description, each of which is in co-evolution with the others, yet non of which offers a privileged point of view.^{cci}

What emerges is a universe in continual evolution. New physics reveals to us that there are no simple causes and isolated effects: reality is like an enormous interconnected network, a complex system of elements reciprocally interacting. As Roy Ascott teaches, “*Our planet is telematic, our media is moist, our mind is technoetic, our identity is multiple, our body is transformable, our art is syncretic, our reality is variable*”.⁸

We find a contribute also in Albert-László Barabási with the new ‘*science of networks*’, which seeks to show how relationships, the brain, the propagation of viruses, communication and transportation act as complex networks regulated by hidden principles common to all aspects of reality, and this defines a new simplified paradigm for interpreting this same reality.^{ccii}

A more esoteric response comes from new physics, which postulates the existence of an energetic field laying beneath the universe itself, called the *Psi Field* or *Akashic Field*, which would be identified by a 'quantum void' (or 'field of zero point energy') that would constitute a sort of cosmic memory, a virtually infinite tank in which every event of the universe leaves a trace of itself. According to the system theorist, Ervin László, life would evolve via a 'sacred dance' between the organism and the field surrounding it: this 'dance' transforms the living beings into elements within a network of relationships (the “connecting structure” of Gregory Bateson or the “implied order” of David Bohm) that embraces not only other living beings, but also the rest of the universe.^{cciii}

According to this theory, all matter in space and time influences the behaviour of each quantum, each atom and each organism. The human brain would no longer be an isolated entity enclosed in its cranium, but would be intimately inter-connected with its environment and with the reality in its complex: in this way, human

8 Ascott R., Conference at School of Media Design & New Media Art, NABA, Milano, 5 Dic 2007;

experiences would not be transient and linked to a single person, but would be accessible to anybody that produced 'extremely similar states of brain and mind.'^{cciv}

What we are assisting in is non other that an extension of the concept of 'mind': from the human mind we have proceeded to conceive a *planetary mind* and even a '*universal mind*'. From the passive *object* of our observation, the universe-world we inhabit has transformed into an active *subject*, in a process that will eventually lead to a singularity, an information state that may manifest itself as a *personal being*.

As science, philosophy and art become interwoven in new resolutions, they produce Ecotones; but it is in the spirit of Cybernation^{ccv}, which often succumbs to the temptation to express the scientific theories with the fervour and intensity of a romantic poet, that we must ask ourselves whether the first gesture of human kind was indeed the artistic gesture. That gesture we can see in the paintings of the Bardai Oasis in Chad from the start of the Neolithic period, approximately 7000-6000 B.C.; one difference between animal culture and our own, is that if we in fact look closely, we live in an artistic universe, where the creative sign, the metaphor and the myth of the muses often assume a role that is comparable, if not superior to that of scientific assertions in influencing the development of our beliefs of what truly counts in the life of this being we inhabit. Yet the fracture exists and Percy Snow did not see his predictions come true, moreover it is true that the arrival of technology in the Fine Art Academies, together with a widespread *crowd science*, is mutating the cultural territory.⁹ In the cybernetic reality, the artist places himself as a *Dramatis persona* in the role of the post-romantic thinker, the thinker who can face the thousand plateaus/abstractions of the contemporary planes of immanence, who develops a plane of immanence with a 'here and now' nature. Yet if we look closely, in the age of electrical, mechanical, informational and multimedial acceleration, the figure of the thinker coincides with the figure of the artist. So we see the creation of a paradox.

One problem that remains, as we can deduce from the arguments in some of the today new media art works (*Forkbomb, Technoetic Narcissus, The Hybrid Constitution, Telegarden, Roberta Braitmore...*), is the idea that humanistic culture and scientific culture must be correlated is resistant to the modern cultural argument. And the relationship between thinkers who find the plane of immanence in nature and modern thinkers, who search for a

9 The resistance today seems to come above all from the human sciences, emerging in the phase of academic maturation. Philosophy in particular, seems more incapable of producing knowledge regarding the present;

plane of immanence in a mathematical-scientific view of the world, has been lost to oblivion. In fact it is believed that modern thinkers, scientists and philosophers live in a 'rush of realism', through science and philosophy, without realising that this realism is almost linguistic, and therefore abstract and generalised and obsolescent. While romantic thinkers identify the plane of immanence with nature, they are forced to return into the abodes of the enchanters/magicians. At this point, the question spontaneously arises of whether he who lives in a less generalised immanent world is the same as he who creates the non-immanence, while he who inhabits the abode of the enchanters is he who creates the immanence?

The artist philosopher, romantically immanent to Nature, first informs the tensions of his relationship with his own impulses, with the community and Nature itself. According to this view, all the magisteria, with the sole exception of the magisterium of science, can produce artists-philosophers: religious men, shaman, priests, musicians, writers, poets, dramatists, film directors. The romantic artists-philosophers, with their 'doing-thinking', articulate the symbolic network of culture: the visions of a shaman are the patrimony of reality of a culture that entrusts itself to the shaman. ¹⁰

Today, the *Art & Technology Movement*, the video arts, and New Media Art *tout court*, have lead us to a central argument: the overcoming of anthropocentrism, an anthropocentrism that is inevitably technical and that enters the cultural agenda of artists and students. The relationship between what of man belongs to nature and what of man belongs to technics is today part of the 21st century agenda and therefore defines the educational horizon of any higher education project.

References to this are made in the works of Donna J. Haraway^{ccvi}, and N. Katherine Hayles^{ccvii}; nevertheless,

¹⁰ The research looks at the so-called Hudson River School; a mid-19th century American art movement represented by a group of painters, Thomas Cole (USA, 1801-1848), John Frederick Kensett (USA, 1816-1872), Sanford Robinson Gifford (USA, 1823-1880), Frederic Edwin Church (USA, 1826-1900), that reflects three themes of 19th Century America: *discovery, exploration, and settlement*. Thomas Cole is considered the founder. He created artworks such as *A view near Tivoli aka Morning* (1832), to then develop an art that is immanent to nature “*No Tivolis, Ternis, Mont Blancs, ... but primeval forests, virgin lakes and waterfalls.*” (Quoted by Charles Rockwell, *The Catskill Mountains*, 1873), he declared: “*All nature here is new to art*”, fixing an immanence of nature for art, after this declaration the artist left the Italian landscapes, juxtaposing peaceful agriculture and the remaining wilderness, fast disappearing from the Hudson Valley just as it was coming to be appreciated for its qualities of the sublimity that is identity, immanence and destiny. They were inspired by the themes of philosophers Ralph Waldo Emerson (USA, 1803-1882), and Henry David Thoreau (USA, 1817-1862). The Hudson River School is of interest to the research because it proposes the point of view of who researches a destiny immanent to Nature and not bound to technology. On the contrary, the World created by the tertiarization of the practices and by the mediatization of the experiences produces a partially designable, producible and controllable destiny, but which is still narcissistically alienated since the subject is not resolved in the natural plane of immanence. In modernism and in the first decade of the third millennium, mankind has been living in a world that has a weak immanence precisely because it is designed independently of nature;

today the artists-philosophers, examples of which include Roy Ascott (UK, 1933), Jack Burnham (USA, 1931), Hans Haacke (DE, 1936), Alan Sonfist (USA, 1946), Joseph Kosuth (USA, 1945), Nam June Paik (KR, 1932-2006), Joseph Beuys (DE, 1921-1986), Jim Jimjesky (USA... ..), Bill Viola (USA, 1951), Paul Ryan (USA...), Ellen and Newton Harrison, are still: – “[...] forced to record their private responses to the strains of civilisation without any assurance that the meaning of their expression will carry much beyond a small circle of similarly inclined creators and critics.” (Kosuth J., 1991, pg. 123)^{ccviii}

By observing and focusing on the conceptual persona of the artist-as-philosopher, the research aims to articulate a pedagogical model, the purpose of which will be to understand the culture by rendering the implicit nature of it explicit. It concerns a cybernetic model, whose implication is not its epistemological specificity but its being hermeneutical, and its not being *teleological* but *immanent*.

Yet this new persona must have a method in order to guarantee one of the initial assumptions of this discourse, or rather a shared language.

We must begin by defining the term we depart from and which is our objective: the method¹¹.

From an etymological perspective, *method* means the 'criteria and rules according to which something is accomplished' (1545, M. Bandello), after which the meaning follows 'qualification in didactic topics in which ordinarily a discipline is shown' (1869, TB). From here we derive the term *methodology*, a noun meaning a 'philosophical doctrine that studies the research techniques of a determined field of knowledge' (1869, TB). It derives from the scholarly Latin *methodu(m)*, which in turn derived from the Greek *méthodos*, meaning 'path (*hodós*) that leads beyond (*metá*)'. This word *méthodos*, composed of the preposition *meta*, which means with, and *odos*, which means path/way, means what Latin speakers call *diverticulum* or *iter transversum* and what we vulgarly call *traghetto/ferry*, i.e. a more direct way, consequently shorter than other ways, thus which arrives at

11 From an etymological perspective, *method* means the 'criteria and rules according to which something is accomplished' (1545, M. Bandello), after which the meaning follows 'qualification in didactic topics in which ordinarily a discipline is shown' (1869, TB). (Dizionario Etimologico *DELI 2000* Zanichelli Vc. Metodo) From here we derive the term *methodology*, a noun meaning a 'philosophical doctrine that studies the research techniques of a determined field of knowledge' (1869, TB). It derives from the scholarly Latin *methodu(m)*, which in turn derived from the Greek *méthodos*, meaning 'path (*hodós*) that leads beyond (*metá*)'. This word *méthodos*, composed of the preposition *meta*, which means with, and *odos*, which means path/way, means what Latin speakers call *diverticulum* or *iter transversum* and what we vulgarly call *traghetto/ferry*, i.e. a more direct way, consequently shorter than other ways, thus which arrives at the destination sooner and more efficiently. This initial meaning was later adopted in military terminology and later in the arts and sciences. And still: “[...] *method does not mean other in this last signification, than a path or a direct and brief i.e. quick and easy, way of teaching art and science*” (B. Varchi, *Del metodo*, in *Opere*, Trieste, 1859: II 796);

the destination sooner and more efficiently. This initial meaning was later adopted in military terminology and later in the arts and sciences. And still: “[...] *method does not mean other in this last signification, than a path or a direct and brief i.e. quick and easy, way of teaching art and science.*” (B. Varchi, *Del metodo*, in *Opere*, Trieste, 1859: II 796)^{ccix}

The scientific method is a general procedure that indicates an ordered sequence of moves (or stages) that the researcher must execute or complete in order to reach the aim of his research (deductive method, inductive method, deductive-inductive method). The scientific method is also a set of rules of conduct and of recommendations for each of the moves the procedure consists of (rules of acceptance, rules of falsification, rules for selecting the hypotheses and arguments). The method then, in accordance with its Greek etymon, indicates a 'path' of investigation, and this path refers to a series of procedural rules, 'stages', regarding the way of establishing inferences and of systematically controlling them. John Dewey offers a definition of the method when he writes that the expression “scientific method”: “[...] *is conducted exclusively with reference to satisfaction of its own logical conditions, or, as we say, for its own sake* ” (Dewey J., 1938: 396)^{ccx} According to the philosophy of Science, it was Galileo Galilei who discovered method, and Bacon who developed it, yet this hypothesis is still debated: method seeks an *objective, reliable, verifiable and shareable* description of reality. On one hand, it consists of a gathering of empirical and measurable evidence through observation and experimentation: on the other hand, it consists of the formulation of hypotheses and theories to be filtered by experimentation. But the criteria of verifiability is not accepted by all philosophers of science.

According to the eminent epistemologist Karl Popper, it is a technically fundamentalist act to consider *verified* a theory; true knowledge is only that which can be falsified by reality, not verified.

The research has come across an interesting contribution in the work of John Dewey¹². This American pedagogist maintains that scientific method is created in a series of conditions that originate in research itself.^{ccxi} The scientific method does not consist of a series of rules and regulations that are imposed and independent of the investigation itself. Dewey argues that scientific method does not consist of external regulations and a priori principles, but is created in its making investigation that learns how to reach assertions that can be considered

12 (USA, 1859-1952);

valid, shareable and assertable. Method is not blindly relying on regulations, it is not giving oneself up to dogmas, but rather the result of experience, which matures from the investigation that spawned it.

This affirmation is reinforced by another fact that can be traced to the reading of the research: the way in which science was born, constructed and methodologised in the period straddling the 17th and 18th centuries. In fact, between the two centuries a 'class of inferences' takes form, which generates a reflection on method as expression. The late 18th century saw the arrival of a class of questions more closely linked to alchemy, to the figure of Paracelsus and the figure of Johann Wolfgang Goethe (DE, 1749-1832), who in *Beiträge zur Optik* (1791), the *Wahlverwandtschaften* (1809), and the *Versuch die Metamorphose der Pflanzen zu erklären* (1817), catalysed the encoding of a science. They were the years that lead to the advent of the chemistry of Lavoisier (FR, 1743– 1794), when biology did not exist; Goethe fertilised this argument by conceiving of a fundamental beat of nature and of a fundamental polarity of the nature that generated real 'elective affinities' between elements. Then came Georg Friedrich Philipp Freiherr von Hardenberg aka Novalis (DE, 1772-1801), Friedrich Wilhelm Joseph von Schelling (DE, 1775-1854), Georg Wilhelm Friedrich Hegel (DE, 1770-1831), Immanuel Kant (DE, 1724-1804), Johann Gottlieb Fichte (DE, 1762– 1814), actors of what appears to be above all a methodological research. These thinkers moved before the unknown, the invisible and unimaginable aspects of new visions. They were poets, artists and scientists who had no instruments or machines with which to investigate the visions that appeared before them. The German romantic period is not just the home of poetry and great philosophical works, but the epoch in which the development of investigation of nature methodologised, in continual comparison with poetry, art and imagination. The research hypothesises that the situation today is very similar.

A society that, thanks to new computerised instruments, finds itself facing the unknown: new instruments that have shown new proportions of nature and humanity, for which we do not yet have the instruments to investigate further.

Exactly as was the case in the period that lasted from the end of the 18th century throughout the entire 19th century. The research has sought out a territory of human discourse in which there were conditions similar to those of the contemporary created by the acceleration in information technology, globalisation and the post-

structuralist paradigm. An interesting possible analogy can be found in the period spanning the end of the 18th century and the beginning of the 19th century. The interest of the earliest romantics in knowledge seems to precede the attention many contemporary artists pay to biological science, genetics, electronics... the research follows a number of conceptual personæ in the path towards the methodologisation of the study of nature.

The most marked difference between science and art is the relationship the two practices have with chaos: in the former, chaos is disorder, in the latter it is the infinite velocity with which every form taking shape in it vanishes. Sciences works through a plane of reference, whereas art, like philosophy, acts through a plane of immanence and consistency (conceptual personæ). Science therefore appears to be founded on planes of reference made up of limits, or boundaries-intervals (in a gestaltic view) beneath which it must face chaos.

Pythagoras (Ancient GR, c.575BC–c.495BC), Anaximander (Ancient GR, c.610 BC – c.546 BC) and Plato (Ancient GR, 428/427 BC– 348/347 BC) reasoned that it is by imposing a limit to the infinite that it becomes possible to discover things. Hypothesising a limit, hypothesising things.

The limit therefore creates a territory of meaning established on a system of coordinates composed of at least two independent variables-boundaries; these enter into a relation on which a third variable depends, which abides by the territory itself defined between the two variables-boundaries (such territories can be mathematical, physical, chemical, psychological...). It is a new territory of reference: the relationship of things with the variables-boundaries (created by independent boundaries). The state of affairs is therefore a function: it is a complex variable that depends on a relation between at least two independent variables.^{ccxii}

Art lives on a plane in which the limit is man himself, the artist in his totality as man, or the artist-individual as the immanent subject of the whole of humanity.

This could be seen as similar to science since all forms of knowledge operate on 'territories of reference,' so art too sets out variables-boundaries to define its own system, the only difference being that these boundaries are more flexible than the scientific boundaries. Today, a 'physical' explanation is really only that if it outlines the description of the phenomena under observation in the transformations that it outlines from the quantitative point of view, and that is to say, in the measurements and calculations that are possible around the movements that derive 'from the essence of the forces.'" The development of the investigation appears bound to a simplification

of the natural process in as much as all that can be observed must be measured and therefore must be traced back to the 'form and the movement,' and thus to simple mathematical relations.

In the 19th century, this was the position of the experimental scientists, yet at the same time there was also the position of the geologist Henryk Steffens (N, 1773–1845), *Vollständiges Handuch der Oryktognoise* (1811) who denounces the explicative power of any investigation based solely upon measurement and mathematisation. The geologist believed that when science was dealing with the 'living' it could no longer use mathematics, since the description of the processes of nature founded on the application of units and the pure forms of mathematics only end up detracting from their capacity of understanding

In Paul Valéry's *Notre Destin et les Lettres* (1937), we find an aphorism that petrifies the situation into its deep concreteness “*All that is simple is false, all that is complex is unusable*”. So what then are the conditions that the method must satisfy in order to have objective validity? Substantially, there are two.

The first is the “*Criteria of controllability*,” that is that the scientific argument consists of “controllable” and “justifiable” assertions (justified assertability). 'Controllability' refers to the reproducibility of the process that lead to an assertion P, by any other individual. This means that the process must not be based on arguments which are only relevant in the private experience of the subject proposing P. In fact, the connection between private experience and the assertion P excludes the possibility of sharing from the horizon of the problem and the phenomenon of the meanings. The assertion P cannot be used by other subjects due to the private nature of the fundamental argument. The subjectively perceived certainty of a successful empathic understanding can in no case constitute an admissible argument for any scientific issue. This is the typical case of a certain 'subjectivity' of the arts that at times appear to be founded on mere private and personal intuition which is impossible to share, thus invalidating any cultural argument or research pedagogy.

The 'criteria of controllability' does not address this by saying “show me that the assertion P is true,” but rather “show me the arguments on the basis of which you assert P; I will then take P into consideration on the condition that the arguments that assert it can be publicly reproduced.”

The second condition is the so-called “*criteria of publicity*”, i.e. in order for an argument to be treated scientifically, it must be based on the possibility of public agreement on the given argument.

In scientific investigation, the “criteria of publicity” and the “criteria of controllability” presume the meaning. “*Justified assertability*” refers to the fact that the assertion P can be systematically inserted into a system of expressing propositions, certain knowledges that guarantee the regular outcome of P given certain specified conditions. The criteria of 'controllability' and 'justified assertability' mutually support each other.

The method is therefore constructed on the correct way of justifying assertions and on rules for controlling them. Actually, these rules are not strictly applied but used openly depending on the case. The rules are in fact applied by people, in which interest coexists alongside an immeasurable quantity of other objectives of public and private history, of interests and affections. Even the most scientific methods therefore contain elements of unpredictability, and in the method it is not possible to codify all the possible moves.

Disciplines of humanistic origin that seek knowledge are usually divided into physical-mathematical orientations, with reference to geometry and statistics which tend to be defined as 'quantitative', and orientations of a hermeneutical-phenomenological kind, with reference to psychology and anthropology, which tend to concern a 'qualitative' dimension.¹³ Put simply, one can say that the 'quantitative' facts reveal models of regularity in practices, while qualitative facts reveal processes through which the models of practice are produced.

Pedagogy is undoubtedly orientated towards the qualitative facts, and assuming the position of a Second Order Pedagogy (see chapter 5), it is concerned with investigating and revealing the processes through which the models of practice are produced.

Chapter IV.II A plane of immanence - New Media art.

“Historically, new media arose when the boundaries between clearly separated art forms such as film, theatre, and photography began to blur, due to the rise of digital technologies.” (Lovink G. 2007: 41)^{ccxiii} New Media Art is well defined by Mark Tribe and Reena Jana in their homonymous publication: “*The term [...] is used to describe projects that use emerging media technologies and address the cultural, political and aesthetic potential of these tools*”. They continue to say “[...] it can be intended as a subset of two larger categories:

¹³ The thesis of the irreconcilable opposition between 'quantitative method' and 'qualitative method' is one of the greatest questions in the contemporary history of the disciplines that have attempted to create a scientific procedure for themselves;

technological art and media art. The first encompasses practices such as electronic art, robotic art and “Genomic art”, which make use of new technologies not necessarily connected to media, (A/N electronics). [...] Includes Video art, “transmission art” and experimental films [...]» (Tribe M., Reena J., 2006: 6-7)^{ccxiv} New Media originated in relation to video technology and evolved to encompass the forms of artistic research of new biological technologies in DNA, including Bio art (art that uses living materials as 'pallets-supports' in its works), DNA art (art that uses genes and genetics), Eco art (art which revolves around the environment and ecology), as well as the new technologies relating to robotics and physics such as Robotic art (art that uses robots and robot technology) and Quantum art (art that uses quantum physics as an expressive material of communication), Nano art (art that uses nanotechnology).

The first generation of New Media Art was born in 1965, when Sony introduced the portable electronic video camera. As prices became lower, artists such as Nam June Paik, Bill Viola, Vito Acconci, Dan Graham, Bruce Nauman started to use video to describe reality. Some critics may question the prefix New onto what is identified by many simply as Media Art (or Video Art). Multiple sources confirm that Media Art has always existed, since a painting is a medium, as is a tapestry. With New Media Art, the research indicates the art that originated in the impact of electronic technologies on image and on sound. In this sense, the research recognises the date of 1965.

The second generation of New Media Art arose between the late 1980s and the early 1990s with the arrival of the Internet and as the graphics of Personal Computers became more powerful. Although the PC was available on the market since the introduction of the Apple Macintosh in 1984, it was only at the start of the 1990s that PCs became powerful enough to process images and sounds. The World Wide Web was invented in 1990 by Tim Berners Lee of the CERN in Geneva. This new form of communication introduced and diffused interactivity. In 1994, the introduction of the first commercial web browser, Navigator, by Netscape Corporation, marked the transformation of the Internet from a military and scientific channel of communication into a medium of personal communication. The new technology forced a reconsideration of the forms of communication channels, favouring online forms like the Internet, the web, streaming, podcasts etc, and offline forms such as CD-ROM, DVD, and mass storage devices. The term New Media began to take on the meaning of a new context. As far as art is concerned, a key date was the online launch of the website-artwork jodi.org^{ccxv} by Dirk Paesmans and Joan

Heemskerck in 1993. 1994 is widely regarded as the year in which critics, curators and artists began to use the term New Media Art. In 1994 Vuk Cosic^{ccxvi} received an e-mail that had been corrupted by a virus, in which the only legible part of the text it contained was the link “net.art”, which immediately came to mean art that uses the Internet as a instrument for expression. Three years later, in 1997, Net art was included in the exhibition Documenta X in Kassel, Germany.

Roy Ascott regards New Media art as an expression of Technoetics: a discipline that reflects on the impact of technology on the human conscience, without distinguishing between the vital wet and the technological dry and creating the category of moist in between, the metaphorical emulsion of the circle of life-technology-life.^{ccxvii} The impact of cybernation is redefining the proportions of the human animal and his culture while New Media Art becomes technoetics when it investigates these new proportions.

The spread of digital technology leads New Media Art to realise many of the conceptual speculations of modernism. We can say that, just as the Dada movement was a reaction to the industrialisation of culture, New Media art and Technoetics are a reaction to cultural cybernation in the 21st century. Many typical forms of these movements form part of New Media art and Technoetics, such as political action, the readymade, performance, syncretism of techniques, the use of irony and of the absurd, the celebration of technology, the use of poetry and of the news.

New Media art uses text, often in the form of a formal essay, to define the conceptual references of the work, and thus introduces a marked speculative dimension. These texts are also referred to as 'process papers'.^{ccxviii} Contemporaneously, arts festivals dedicated to New Media Arts, Such as Ars Electronica in Linz Austria, or the itinerant ISEA, International Symposium Electronic Arts, Amber^{ccxix} in Istanbul, and the Swiss Biennial on Art, Science and Aesthetics,^{ccxx} ISEA^{ccxxi} have transformed into manifestations of research, places where an agenda of themes of political, philosophical and scientific speculation is shared. Symposiums have been introduced at these festivals, where not just artists, but also many theorists, historians, philosophers, and scholars in the fields of art, media studies and cultural studies present their critical essays. “Poster sessions”¹ have been adopted from the

1 Poster Sessions are common in conferences and science fairs, being meeting and networking for the excellence of science. In a suitable equipped space, posters are put up with the name of the author of the research and a series of brief descriptions and images of these same authors. The author remains close to his or her poster and receives colleagues interested in making an appointment to explore further the themes discussed in the research. The PhD, Philosophiæ Doctor, is the equivalent qualification to our *Dottorato di*

scientific world, and the catalogues too seem like scientific publications where the text prevails over the images.

Festivals have begun to use the praxis of requesting that the artworks be sent in advance so that the theme of the festival is selected later. The theme is established based on the issues addressed in the artwork they receive. In this manner, the festival also functions as a cultural observatory. At the same time, independent symposiums have been instituted all over the world and some festivals have been specifically defined as 'organisations of research and development,' places where one can get new ideas to apply to a region, society or technologies. The festivals have become the producers of this art and this research. And today, many prominent New Media artists undertake the PhD qualification and formalise their practice, making it valid within academia. The artists have legitimately entered international academia with the titles of Researcher, Reader, Lecturer, Assistant Professor and Professor.

This new syncretism between science, philosophy and art is the result of cultural cybernation and can be defined as Technoetic when it concerns the relationships that exist between technology and consciousness, both those already defined and the new relations still being defined.

The term tech-noetic (TNE) was created by Roy Ascott during his lifelong work as an artist and theorist, working with cybernetics and telematics. [...] For Ascott the term is a summa of the Greek term *Techne* + *noetikos*, tech-noetic culture - that is, in the quest to understand the effects of technology on consciousness.^{ccxxii} His research features in the work of many contemporary artists, including Victoria Vesna, Stelarc, Eduardo Kac, Joseph Nechvatal, Bill Seaman, Jill Scott, Christa Sommerer, Oron Catts, Jonat Zurr, Brandon Ballengee, George Gessert, Polona Tratnick, Marta de Menezes, Laura Beloff, David McConville, Michael Punt, Guto Nobrega, Maja Engeli, Wolfgang Fiel, Norbert Herber, Margarete Jahrmann, David McConville, James Moore, José Luiz Moutinho, Sana Murrani, Shaun Murray, Guto Nóbrega, Kjell Yngve Petersen, Nicolas Reeves, Semi Ryu, Thecla Schiphorst, Yacov Sharir, Diana Reed Slattery, Karin Sondergaard, René Stettler, Natasha Vita-More, Ron Wakkary, Claudia Westermann, Monika Weiss, Federica Timeto, Amos Bianchi, Enrica Borghi, Tine Meltzer, Valerie Bugmann, Teresa Chen, Monika Codourey, Louis-Philippe Demers, Karmen Franinovic, Nadia Gisler, Honor Harger, Sandra Hoffmann, Tiffany Holmes, Kirsten Johannsen, Hung Kung, Juergen Moritz,

Ricerca and qualifies for university and academic teaching posts at International Universities;

Andreas Schiffler, Trebor Scholz; in the work of critics such as Jack Burnam, Lucy Lippard, Roy Ascott, Siegfried Zielinsky, Peter Weibel, Edward Shanken, Jens Hauser, Dimitri Bulatov, Geert Lovink; and is also present in the Media Design and New Media Art faculties as well as art and technology schools. Technoetics is based on five fundamental steps “*Connectivity of minds, machines and community on a global level; Immersion in hybrid spaces; Interaction with transmodal methods; Transformation of the image, form and consciousness; Emergence of a new personal, cultural and spiritual syncretism and of value and meaning in social structures.*”(Monico F. 2008: 33)^{ccxxiii} [...]“*Today a syncretic reality is at the heart of six independent dialectic topics which interact with each other in a holistic way. These topics are: Consciousness of the fields and relative tendency of a 'spiritual coherence'; Widespread materiality and the relative tendency to serve as an 'agent'; Construction of the world and the relative tendency to embrace a 'quantum coherence'; Technoetics and the relative tendency towards a widespread 'creativity'; Connectivity and the relative tendency to maintain a 'cultural coherence'; Hybrid space and the relative tendency towards 'emergence'. [...] Reality is modulated, meaning that it is negotiated and worlds are constructed through participation; it is a mixed and intertwining environmental reality that takes on ambiguity and indefiniteness. The mind emerges from the activity of interfacing, whether organic or telematic, to which it is bound so that the syncretic research will use: Telematics (global connectivity); Nanotechnology (construction from the ground up; Quantum computers (augmented cyberception); Enthobotany and pharmacology (fields of consciousness); Esoterism (mental instrumentation). Today a syncretic art is at the centre of five dialectic places and five independent tendencies that interact with each other in a holistic way – Psychic space and the relative tendency towards an 'apparition presence', technoetics and the relative tendency towards 'systems'; Ecospace and the relative tendency towards a physical presence; Cyberspace and the relative tendency towards 'tele-presence'; Moist-emulsion and the relative tendency towards 'media' such as active bio-metaphors.*” (Monico F., 2008: 34-35)^{ccxxiv}

Art as a new apparatus of research leads to another bifurcation because the traditional path to knowledge founded on the character of the scientist, philosopher, engineer and priest came to be open to a new art-based knowledge that ideally includes art, artists, and academies of fine arts. All this is rooted in new artistic ventures with the utopian notions of subversive changes envisioned in the 1960s. Marshall McLuhan does not distinguish

between art, science and philosophy and as such; the relationship between technology and art, environment and anti-environment, is dialectical; all technology is initially created as a work of art, while all works of art, in its repeated use, becomes a technology.^{ccxxv} The artist is a person '*in any field, scientific or humanistic, who grasps the implications of his actions and of new knowledge in his own time.*' (McLuhan, H. M., 1964:65)^{ccxxvi}

In this territory the most important characteristic of the technologically oriented artist was a new type of dialectic perviousness between art, philosophy and science. “[...] *The artwork became a part of a larger context, that this contextualisation of the artwork became the starting point for a number of artists to create a work that was no longer an object, but one that consisted of elements that were related to one another as in a system.*” (Bijvoet M., 1997: 4)^{ccxxvii} The concept of an 'artist' deeply integrated as a “knowledge curator” of contemporary society is a retrieval of modernist thinking, in which the function of art and the role of the artist were matters of the highest concern. To the modernists, art exists to adapt the reader to the contemporary world.^{ccxxviii} During his PhD studies McLuhan spent time in Cambridge where he met the 'Modernists': Ezra Pound and T.S. Eliot wrote a number of essays with the aims of educating their readers in modern poetic technique; their efforts have thus far been ineffectual, while McLuhan tells us that James Joyce, whose first book was *A Portrait of the Artist as a Young Man* (1916, serialized 1914-1915), '*wrote no essays yet is no worse off in his readers.*' (McLuhan, H. M., 1950: 45)^{ccxxix} McLuhan, initially conceptualizing the role of the artist in the terms provided by I.A. Richards, Wyndham Lewis, T.S. Eliot, E. Pound, J. Joyce, by the mid 1950's he shift to the electronic and magnetic artist, started to expound differences between the artist in 'tribal' society, in (literate) Western society, and in the so-called 'post-literate' or electronic society. He insists that an individual's activity in a tribal society is governed by the fundamentally influential sphere of kin relationships, so that individual comes to regard [him/her]self as a rather insignificant part of a much larger organism - the family and the clan - and not as an independent, self-reliant unit. In contrast, the concept of the 'artist' provides the parameters for the application of McLuhan's 'anti-social' (sub-versive), 'anti-environmental' method of 'probing' the (unconscious) environment.

IV-III The training of perception

In his early works McLuhan conceptualises the artist in a retrieval of a concept influenced by I.A.Richards, E.

Pound and fellow as Wyndham Lewis.² What is extremely interesting is that all of them fulfilled the roles of both artist and critic; McLuhan says, it is '*the training of perception.*' (McLuhan, H. M., 1960: 94)^{ccxxx}

Richards describes the function of art as that of 're-ordering' the 'impulses' of the nervous system, so as to adjust the reader to the current environment; for Richards, art is part of the process of evolution, '*relieving ... the strain put upon [the organism] by life in a particularly uncongenial environment.*' (Richards, I.A., 1929: 287)^{ccxxxi}

Lewis says, '*The artist is engaged in writing a detailed history of the future because he is aware of the unused possibilities of the present.*' (McLuhan H.M., 1960, VII:I)^{ccxxxii}

For Ezra Pound, '*Artists are the antennae of the race.*' (Pound E., 1934: 65)^{ccxxxiii}

McLuhan defines '*art*' as both a '*storehouse of achieved values*' and '*the antennae of new awareness and discovery*', enabling '*a unified and an inclusive consciousness in which there is easy commerce between old and new.*' (McLuhan, H.M., 1967 [1951], pag. 87)^{ccxxxiv} And "[...] *the great artist necessarily has his roots very deep in his own time - roots which embrace the most vulgar and commonplace fantasies and aspirations.* (McLuhan, H.M., 1967 [1951]: 152)^{ccxxxv} McLuhan argued that artists tend to draw upon the most 'banal' and 'vulgar' materials of collective consciousness.^{ccxxxvi} 3

IV-III Integral Awareness

The spread of new digital machines and the Personal Computer⁴ caused the diffusion of a new language in society. The new language of data, like data, feedback, video, fluxus, closed-circuit, random access memory, and then hyperlinks, networks, the web, allow us to see things within new sets of relations, in fact the expression "*seeing things in relations*" - a concept retrieved from system analysis - became an important phrase. (Bijvoet M., 1997: 5)^{ccxxxvii} McLuhan's term 'integral awareness' implies that the artist is one for whom 'consciousness' is not 'fragmented' by repression in the use of the media ratio of his time; McLuhan expands in *Understanding Media: 'The artist is the man in any field, scientific or humanistic, who grasps the implications of his actions*

2 A/N as well as to the influence of Wyndham Lewis, T.H. Eliot, F.R. Leavis;

3 The Canadian critic retrieves this vision from W.B. Yeats' poem '*The Circus Animals' Desertion*', completed just before Yeats' death in 1939 McLuhan H.M., Watson W. (1970), pag 181. "*Old kettles, old bottles, and a broken can,/ Old iron, old bones, old rags, that raving slut/ Who keeps the till. Now that my ladder's gone,/ I must lie down where all the ladders start,/ In the foul rag-and-bone shop of the heart.*";

4 Unfortunately just after McLuhan's death;

and of new knowledge in his own time. He is the man of integral awareness.'(McLuhan, H. M., 1964:65)^{ccxxxviii}

As Roy Ascott observed, there were two sciences that deeply sub-versed the 'narrativeness' of the sixties: general system theory and cybernetics.

Marga Bijvoet stated “*Through the writings of Norbert Wiener, Herbert Marshall McLuhan and R. Buckminster Fuller they also infiltrated into the art world.*” (Bijvoet M., 1997: 5)^{ccxxxix}

However all 'sub-versive' activities are anti-environmental, because they bring the unconscious environment to conscious attention.

Like McLuhan, we can use the tale of 'The Emperor's New Clothes' to illustrate the way that only someone outside of a certain environment is able to 'see' it for what it actually is. He elaborates: "Well-adjusted" courtiers, having vested interests, saw the emperor as beautifully appointed. The "antisocial" brat, unaccustomed to the old environment, clearly saw that the Emperor "*ain't got nothin' on.*" The new environment was clearly visible to *him.* (McLuhan, H.M. and Fiore Q., 1967:88)^{ccxi}

To McLuhan, the 'artist' (like the antisocial brat - rebel) is one who is '*rarely "well-adjusted," he cannot go along with currents and trends.*' (McLuhan, H.M. and Fiore Q., 1967:88)^{ccxii} - '*Poets and artists live on frontiers. They have no feedback, only feedforward. They have no identities. They are probes.*' (McLuhan, H.M., 1970:44)^{ccxiii} Although it might appear that there is no continuity between the *Environmental Art* and *Art & Technology Movements* of the 1960s, and the development in the 1990s of *Art in Public Spaces*, *Media Art* (media as new public spaces), *Software Art*, *Net Art*, and even *Bio art*, they do share a deeply rooted common element in this frontier dimension, created by a new subversive artist's role: that of being a probe, the sentinel on the edge; in this deep dimension, this is a critical position, a position of awareness of knowledge.

McLuhan says that '*The child, by delinquent behaviour, is aping the exploratory artist. Dostoevski in Crime and Punishment saw the criminal as a sort of cross between the saint and the artist.*' (McLuhan, H.M., 1997 [1995]: 226)^{ccxliv}

Also in the last of Foucault's work, when the French critic analyses the “*Soici de soi*”, deeply probing the idea of crime as a psychocultural evolutionary, or liminal, tool. If anti-social activities are those that reveal the hidden environment, McLuhan says that '*Professionalism is environmental. Amateurism is anti-environmental.*'

(McLuhan, H.M., Fiore Q., 1967:93)^{ccxliiv} Amateurs, like 'small children', are less apt at conforming to the established mores of the environment.^{ccxlv}

In order to survey this phenomenon, Roger Malina, Director of the Marseille Institute of Astrophysics and the Director of the Leonardo Network on Science and Art, was invited to the School of Media Design and New Media Art to speak about the relationship between art and science.

This parallel between the child and the amateur is interesting in a mass culture society in which the individuals have a lot of free time available. We build our electronic pop culture in the age of television, a linear syntagmatic medium without discussion and elaboration. In this scenario the 'amateur' is qualified to have an opinion on everything.

Malina referred to “Crowd Science,” a popularized comprehension and acceptance of science in her broad term. This encompasses a subtle contradiction: that is that on one hand, to be 'amateur' is the starting point for the beginning of a diffused comprehension of art and science, yet on the other hand it is also the end point of any deeper comprehension and dialectics of structured knowledges like science and philosophy, and also art. So we face a social cultural dilemma: do we take the spread of a crowd science as real culture or do we take the 'amateurisation' of structured knowledges to be a problematic issue. The second position envisages a problem: the end of the “mass age” and a return to a middle-aged social distribution of knowledge. As in this age, today there is no longer a unified mass of viewers or readers. The digitalisation of the media introduced and epitomized by the Internet and the hyper link have lead to the fragmentation of audiences. Today the user must be able to handle the “recombinatory Blast”(Monico F., 2007)^{ccxlvii} in order to build himself a critical map of the fair sufficient notions for developing a critical understanding of a problem, argument or project. This will not be done by a mass; it is an individualistic action, and for that reason humankind faces a return to differentiation between entities such as the “elite” and the “vulgus”.

So the real point is that, although at first sight, opposing hermeneutic movements might even work against each other, they are nevertheless a search for a new context in which the arts could function differently and which would in turn involve a changing role of the artist.

Retrieving I.A. Richards, McLuhan recursively says that the function of art is to 'orient', 'adjust' or 'attune' the

populace to fluctuations or changes in the environment. While art in tribal cultures serves to 'merge' the populace with the new environment, art in today's rapidly transforming (new) culture is a matter of constructing 'anti-environments'; i.e. deliberately disturbing or disrupting the current (past) environment by bringing it to (conscious) attention.

McLuhan was aware of this distinction, as we can see in his letter to Harold Innis: - “*the business of art is no longer the communication of thoughts or feelings which are to be conceptually ordered, but a direct participation in an experience. The whole tendency of modern communication whether in the press, in advertising or in the high arts is towards participation in a process, rather than the apprehension of concepts. And this major revolution, intimately linked to technology, is one whose consequences have not begun to be studied although they have begun to be felt.*” (McLuhan, H.M, 1987: 221)^{ccxlvii}

This new role of the artist is a new experience, not something imposed, under the authority of a vision, but something that comes out of the experiences of the new digital media environment: a brand new 'mondial' internet library sharing the same space between everybody, including scientists, critics, philosophers, businessmen and artists, in a new way to build opinion and knowledge through the “recombinatory blast”, a re-mediation of the art. All new tendencies materialise in a creative environment such as the Academy of Fine Arts. Because art is a questioning of the object of knowledge which transforms into the methods of visualising/conveying it (cartography of meaning), and in this sense, art is intrinsically pedagogical.

In the 1950's, McLuhan studied pre-literate culture, envisioning that the role of the artist in oral-tribal culture was different to that of the artist in the modern Western view of society. The Canadian critic wrote in *Counterblast* (1970): “*What we [in modern Western society] call art would seem to be specialistic artefacts for enhancing human perception. Since the Renaissance, the arts have become privileged means of perception for the few, rather than means of participation in a common life, or environment. This phase now seems to be ending [with electronic culture] ...*” (McLuhan, H.M.. 1970: 32)^{ccxlviii} Modernist works of art, McLuhan says, like oral-tribal art “*have no content and no subject matter*” (McLuhan H.M., 1960: IV:4)^{ccxlix}

The Canadian critic understands that '*thematic variation*' in storytelling has replaced '*narrative continuity*', and attributes this to the fact that 'we are becoming a non-visual society. (McLuhan, M.H., 2005 [1966]: 15-16)^{cc}

This shift is very important because it forces art to become more and more conceptual. It rethinks how a new conceptual art fits into an Academy of Fine Arts. This contemporary art, if we remove technical ability or talent, is validated only by its cultural dimension; i.e. by the fact that it is a tool for understanding. In principle, the twentieth century art movement retains the modern concept of the autonomous art-object. In the sixties the non-objective artwork made by light, video, sound, and natural processes faced the spectator, the curator and the critic with a variety of artwork configurations that were no longer formally describable. These terms indicating: “1. an overall tendency toward undefined diversity and 2. a 'break' with the previous period called modernism”. (Bijvoet M., 1997: 6)^{cdi}

IV-IV A new ecology of shared experiences

The use of the term “de-materialisation” envisages transitory concepts as ideas, as art, as invisible systems and as thoughts.

In the 1970s Lucy R. Lippard and John Chandler borrowed the term “de-materialisation” from physics. This term was introduced into the sciences to denote the mathematisation of research into an invisible structure of created realities of all knowledges, including art.^{cdli}

New aspects such as time, space, cybernetics, ecology, were introduced by art critics and art scholars to explain new experiences and knowledge (like the recursive ecology of these experiences). McLuhan wrote that such thinking changes our perception of causality, for with an instantaneous and simultaneous appreciation of all processes, it becomes 'obvious that "everything causes everything' and today we retain the need for a new theoretical approach, for the knowledge and for the education that leads to this knowledge (a subversive Pedartgogy).

As Marga Bijvoet wrote: “Among the few exceptions who perceived the need for another theoretical approach was the English writer/critic Lawrence Alloway. Already in 1966, Alloway wrote an article entitled “Systemic Painting”, in which he set out to outline a general theory denoting the use of systems in abstract painting, and in particular 'field' painting. [...] he himself proposed the introduction of a number of notions from system theory, such as process, pattern, field, time-space organisation, dynamics, and to consider the

relationship of the part to the whole." (Bijvoet M., 1997: 7)^{ccliii}

And more "*Willoughby Sharp, who was the editor of the avant-garde magazine Avalanche (1970-1976) and one of the main protagonists of the intermedia art movements in the late sixties, was also one of the first writers to discuss artworks that used new [...] methods in a terminology that derived from the systems sciences*". Sharp wrote "*We need an art of the total environment. We need an art that unites us with the real rhythms of our era.*" (Sharp W., 1968: 316-318)^{ccliv}

Is true that "*It remains difficult to assess the discontinuation of these theoretical attempts in the United States after 1975. One reason might be that many artists returned to the confines of the art system. Another that the Earth Art and Art and Technology movements have always been described as movements with a (more or less) clear beginning and end, leaving no necessity for further evaluation. A third that the interests of art moved had moved into different directions by now and thus those of the critics and the curators. Yet another plausible reason is that the artists, who kept working in the domain of public and media art forms, were outside the mainstream of the official art system.*" (Bijvoet M., 1997: 8)^{ccliv}

The German sociologist Niklas Luhmann (DE, 1927-1998) offers an interesting view of this scenario. As sociologist of communication and system theory, Luhmann referred his speculation to an 'autopoietic self-production' inherent to art. Indeed, for Luhmann, social systems are always systems of communication., furthermore, each system has a distinctive identity that is constantly reproduced in its communication and depends on what is considered meaningful and what is not. If a system fails to maintain that identity, it ceases to exist as a system and dissolves back into the environment. Luhmann called this process of reproduction from elements previously filtered from an over-complex environment 'autopoiesis'; literally: self-creation, a term coined (1972) in cognitive biology by Humberto Maturana (RCH, 1928) and Francisco Varela (RCH, 1946-2001). Social systems are *autopoietically closed* in that while they use and rely on resources from their environment, those resources do not become part of the systems' operation. Moreover, an autopoietic system is autonomous and closed, in the sense that there are sufficient processes within it to maintain the whole. Autopoietic systems are "structurally coupled" with their medium.

Pedartgogy could be seen as a "Curatorship of the meaning" and could be seen as a territory populated by

'conceptual personæ' such as artists, curators, critics and the public, that generates its own inner identity. For Luhmann “...art had reached a point of its own “*autopietische selbstproduktion*” because art had become purely self-referential and immanent, operating from within as 'art about art'.” (Bijvoet M., 1997:7)^{cclvi}

As today, the (primitive) role of art is that of serving as consolidator, as value, as hidden structure, as our century, as cosmic power. McLuhan wrote '*...The primitive role of art [is that] of serving as consolidator and as liaison with the hidden cosmic powers ...*' (McLuhan H.M., Watson W., 1970: 177)^{cclvii} In this scenario, Art is in the same situation as capitalism was at the end of the era of capitalism, and it might be appropriate to look at the Marga Bijvoet's assumption that “*...the visual arts are in need of a complete re-orientation; a change of paradigm, to speak with Thomas Kuhn.*” (Bijvoet M., 1997: 9)^{cclviii}

This research is subversive; the idea is that art is bifurcating in different directions. One takes place within experiments like the Media Design & New Media Art School at the Nuova Accademia di Belle Arti di Milano, and takes the direction of an art as Vague Philosophy, and new experiences of education such as 'Pedartgogy'; this art will not be strictly related to capitalism and value but rather to wisdom, awareness, knowledge and construction of the self. And what is validating this? A very simple and powerful element: the interest, the success, the achievement, of a new way of seeing. If the faculty founded by this research was a great experiment, in order to foresee new cultures, new visions, new approaches, this experiment gave us data, through the student's interests and identity, which demonstrates that a new paradigm in art is possible, or at least that it has emerged from the thickets of our contemporary culture.

In the electric age, art becomes a 'in time' kind of research and probe.^{cclix}

The Canadian thinker foresees this in the 'Happening': - “*The art materials shaped by a single artist can serve as a probe to direct and order perception. With the Happening the exploratory and probe functions have to be assumed by the audience directly. The environment as familiar cliché is archetypalized, at least to the extent of being repeated.* (McLuhan H.M., Watson W., 1970: 198)^{cclx}

Jack Burnham reflected on the relationship between art and technology and on the change of the artwork to a system of art. He “*drew a parallel between the discoveries in the sciences (such as quantum physics) of an invisible conceptual mathematical world based on interrelated 'open systems', and the idea that the world was*

moving toward a systems-oriented structure (communication network, for example) with the visual arts changing from object to non-object, from material to immaterial, from literal to conceptual.” (Burnham J., 1968:12)^{cclxi}

Peter Weibel wrote *“Nevertheless, scientists embarked on this adventure and began to simulate human intelligence with machines and programming languages, and in fact even succeeded to handle and solve complex mathematical equations. (Weibel P., 2009: 14)^{cclxii}*

The artist as the well-trained pupil is the only person able to encounter technology with impunity, just because he is got an apparatus that makes him aware of the changes in sense perception.

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Chapter V - Pedartgogy as a complex system

The argument is rather that the technologisation of science (as well as the rest of our life-world) is changing the relationship between science and art in a radical way. The research retrieves from Nicholas of Cusa a knowledge based on unrelated individuals in a system of systems, and develops a complex vision of knowledge between Nature, Anthropogenesis and Technics. Some medieval accusers of Cusano would say, who would refute it knowing full well what political danger he would face. It is a vision that Pedartgogy has tested in artworks such as *Tafkav* (Monico, 2007-2011)¹, *Is there Love in the Technoetic Narcissus?* (Monico F., 2010)², *The Hybrid Constitution/Melez Anayasa* (Monico F., 2011-2012)³. In particular, *The Hybrid Constitution/ Melez Anayasa* does not imply relativism, but rather that it can be viewed as a manifestation of an inherent sensitivity to complexity that rejects traditional notions of knowledge and needs to 'approach complexity'^{cclxiii}. The worlds of science and art had neither existed in isolation (Valéry, 1894)^{cclxiv}, but one could perhaps argue that the relationship between the two cultures (Snow, 1963)^{cclxv} is entering a new phase. The ubiquitous pressure to do applied research has something to do with it, but there is also another reason: the immense increase of technology. At first glance one would suspect that this may decrease the importance of the artistic perspective, that the importance of art is somehow linked to the importance of creation only, but the research's suggestion is that the contrary is true. Not that creation is unimportant, or that creative aspects of science are not artistic. Few scientific endeavours have been as artistic as contemporary theoretical physics. During the exam of Phenomenology of the Media of the Post Graduate course, Academic Year 2010/2011, one student argued that there are similarities between the introduction to the method of Leonardo da Vinci (1894) as prefigured by Paul Valéry and the rhizomatic processes described by Deleuze and Guattari (Deleuze, Guattari, 1976); one characteristic is the relation between complex and complicated: a complicated system can be analysed, numbered and described accurately by its large number of components and in its sophisticated tasks (like a regular watch); a complex system cannot be analysed, numbered and described because its non-linear relationships and feedbacks perform a non observable and describable framework (like a good wine).

1 Monico F., (2007) AMBER07: Body process arts festival. Istanbul, 9–17 November. TAFKAV;

2 Monico F., (2010) PAV Parco d'Arte Vivente - *Diverse Forme Bellissime* with Piero Gilardi; *Is There Love in The Technoetic Narcissus?* and TAFKAV. Turin, Italy, 5 February 2010 to 11 April 2010;

3 Monico F., (2011) AMBER11: Next Ecology. Istanbul, 4–13 November 2011. *The Hybrid Constitution*;

We live in the midst of the process of change, and the heart of the matter is that we are capable of doing things that we do not understand as our technologies have become more powerful than our theories “*We can perform gene-splicing without fully understanding how genes interact. [...] We can create new subatomic particles without knowing precisely whether they actually exist outside of the laboratory. We can store, and retrieve, endless bits of information without knowing what they mean. Central to all these developments are the phenomenal capacities of the electronic computer.*” (Cilliers P., (1998) 2000:1)^{cclxvi} As defined by Manuel Castells we are in the 'informational age' that is characterized by the enormous power of the Central Processing Unit and by the new unpredictable semantic connections of the Hyperlinks. (Castells, 2000)

The most important invention of the 20th century was the Vacuum Tube or Thermionic Valve (Lee de Forest, USA 1906) and then the Silicon Transistor (Texas Instruments, 1954). Electronic computers became the most pervasive technology of the twentieth century. How they work is simply too complex to be understood by non-specialists. “*One of the most important scientific tools has always been the analytical method. [...] However the study of complex dynamic systems has uncovered a fundamental flaw in the analytical method.*” (Cilliers P., (1998) 2000:2)^{cclxvii}

“*A complex system is not constituted merely by the sum of its components, but also by the intricate relationships between these components. [...] The analytical method destroys what it seeks to understand.*” (Cilliers P., (1998) 2000:2)^{cclxviii}

The term Complexity, responds to the need of scientific speculation to abandon assumptions of linearity in the systems that evolve over time. The concept of linearity is commonly applicable to Magisteria (see chapter I) such as literature (virtuality) and philosophy, normally expressed through a process constructed of a virtualising discourse, whether it by epic, historic, narrative, or by a process constructed on inferential rules of logic; the characteristic of linear processes is that they are gradual and do not have leaps in logic or space-time, this makes them manipulable, sustainable, plausible, credible. But intelligence and the process of understanding is not linear, often it is not plausible or credible (like almost all religions).

The concept of complexity originated in speculations made by mathematicians and physicists⁴, the invention

4 Such as Henri Poincaré (FR, 1854 – 1912), Jaques Solom Hadamard (FR, 1865–1963) , Aleksandr Mikhailovich Lyapunov [Алекса́ндр Миха́йлович Ляпуно́в] (RU, 1857–1918), Erwin R. J. A. Schrödinger (AT, 1887-1961), Andrey Nikolaevich

of electronics (i.e., the thermoionic valve, 1906) and the subsequent advent of the computer (1940; 1945; 1950; 1984), allowed scholars to simulate and observe the behaviour of complex systems without having to understand them.

Complex system speculation could be seen as being established on an empiric approach, as scholars are not yet able to understand 'knowledge, meaning, comprehension,' far from concrete and real facts, since when they are mentally symbolised they are too complicated, or rather too complex to be managed by our representational behaviour: scholars are driven more effectively from technology and from its inner (and non mediated) pragmatic and behavioural dimension than from science and its hidden (and complicated) symbolical dimension: - "We have to deal with what we do not understand, and that demands new ways of thinking." (Cilliers P., (1998) 2000: 2)^{clxix} (The 'we' in this research stands for the Scholar<>Teacher dyad).

In this sense, we argue that art has a (very) important role to play, not by providing a purpose-description of what happens in science and technology, but by being an integral part of knowledge, also as scientific and technological practice, both theoretical and practical. Specific artistic perspectives can influence the way we approach complexity. Philosophical perspectives labelled as post-modern are of special value to the study of complexity. But in the end, all complex theories are present in the religious knowledges and wisdom, as in the magic cultures, divination and clairvoyance.

It was the scientific domination of the 20th century that drove knowledge to the construction of a linear, simple, unique awareness, where before human beings had always made do with the inner complexity of reality. For these reasons, complexity is inspiring and useful in a research into art as education and as an apparatus of knowledge. In fact, Art is important today because it is an open system. "One useful description, by Luhmann (1985:25), states that complexity entails that, in a system, there are more possibilities than can be actualised." (Cilliers P., (1998) 2000: 2)^{clxx}

At first sight the question of knowledge as seen from the complexity of the Student<>Teacher system, resides

Kolmogorov [Андрей Николаевич Колмогоров] (RU, 1903–1987) Aleksandr Aleksandrovich Andronov [Александр Александрович Андронов] (RU, 1901-1952). Decisive impetus on complex thought was impressed by the Belorussian polymath and medical doctor Alexander Aleksandrovich Bogdanov Malinovsky [Александр Александрович Богданов Малиновский] (BY, 1873-1928), by cyberneticians Norbert Wiener (USA, 1894– 1964), Heinz von Foerster (AT Heinz von Förster, 1911–USA 2002) by the mathematician-engineer Warren Weaver (USA, 1894-1978), by the philosopher of science Ilya Romanovich Prigogine, Viscount Prigogine [Илья Романович Пригожин] (RU,1917–BE 2003), Edgar Morin (FR, 1921), and Isabelle Stenger (BE, 1949);

in a group of dynamic characteristics:

The simple and the complex mask each other, the dialectic simple-complex (stated by a often presented Paul Valéry's sentence: "*All is complex is useless, all is simple is fake*" (Valéry P., 1937)^{cclxxi}, conveys the remarkable fact that complexity can be described simply, because teachers need reductionism in order to outline theories and experiences and students needs reductionism in order to be able to move within an always already new cartography of theories and experiences. But all reduction withholds information. Knowledge appears simple, but reveals a hidden complexity; it appears complex but at the same time can be described simply. Complexity is not located at a specific site or level in the system.

"complexity results from the interaction between the components of a system (worlds-reality; teacher-scholars), complexity is manifested at the level of the system itself. There is neither something at a level below (a source), nor at a level above (a meta-description) [...] This does not imply that complexity is merely a linguistic phenomenon, or simply a function of our description of the system. Complex systems do have characteristics that are not merely determined by the point of view of the observer." (Cilliers P., (1998) 2000: 3)^{cclxxii}

The Research understands that Pedartgogy can only be managed as a complex system. As the assistant professor Amos Bianchi noticed, since the very beginning of the project of the Faculty of Media Design & New Media Art (2003), the higher education programs have created uninterrupted entropy.

The term *entropy* was coined in 1865 by physicist Rudolf Clausius (DE, 1822-1888) based on the Greek εντροπία [entropía], *a turning toward*, from εν- [en-] (in) and τροπή [tropē] (turn, conversion). Entropy is the amount of information as order, disorder, and/or chaos in a system of complex systems. The traditional qualitative description of entropy is that it refers to changes in the status quo of the system and is a measure of "molecular disorder" and the amount of wasted energy in a dynamic energy transformation from one state or form to another.

The first law of thermodynamics, deals with the concept of energy, which is conserved in all processes "*[...] it was a stroke of genius by Claude E. Shannon to use it as a measure for the information content. In two seminal papers (Shannon 1948, 1949) he developed a mathematical theory of communication which formed the basis for modern information theory. By replacing 'energy' with 'information' in the equations of thermodynamics, he*

could show that the amount of information in a message is equal to its entropy. The more disorderly a message, the higher is its information content.” (Cilliers P., (1998) 2000:8)^{cclxxiii} This insight was fundamental to the development of Shannon's Information Theory, although the 'Entropy Theory of Information' does have a fuzzy implication: “if information equals entropy, then the message with the highest information content is one that is completely random.” (Cilliers P., (1998) 2000: 8)^{cclxxiv}

The research proceeds by replacing 'information' with 'knowledge'. We can postulate that the amount of knowledge in an educational message is equal to its entropy. This move has to tackle the thorny elegance of the entropy theory. For which “there is reason to claim that it is not an adequate model for the understanding of a complex system like human cognition (Katz and Dorfman 1992:167), where the intricate structure certainly cannot be equated with 'randomness'.” (Cilliers P., (1998) 2000: 8)^{cclxxv}

Instead Knowledge involves complex cognitive processes such as perception, communication, association, reasoning and learning itself that is part of knowledge; this part of knowledge is fairly random. So learning can be seen as an *always already new* process of modifying existing behaviours, skills, values, beliefs, and knowledge and involves synthesizing different types of experiences, memories, natural and social rules.

The ability to learn is possessed by living plants and animals, and by machines which use memory (chemical, neuro-electric, technological) for establishing a behavioural model, that once established and as results of this process, forms what can be defined as Knowledge (at large).

It is not mystic to see knowledge as an unstable system, since if magisterial knowledge is true, there are no fixed realities in the different Magisteria - {shamanistic knowledge} = {virtual knowledge} = {entheogenetic knowledge} = {logic-philosophical knowledge} = {scientific knowledge} -.⁵ Yet knowledge remains entropic, in fact it is not possible to define it as it is not possible to limit it. Therefore, knowledge is a random message inside a dynamic discourse: it is, however, a highly complex system.

In fact “a complex system cannot be reduced to a collection of its basic constituents, not because the system is not constituted by them, but because too much of the relational information gets lost in the process.” (Cilliers P., (1998) 2000: 10)^{cclxxvi}

5 : } = { symbols analogically derived from the formal language (logic) of the Zermelo-Fraenkel axioms: Axiom of extensionality;

The field of semiotics owes much to the work of the philosopher Charles Sanders Peirce (USA, 1839-1914)⁶; a *passeur* in the exploration of our map, who traversed pragmatism and described the modern theory of signs. Peirce maintains the assumption of the belief/revelation (in-telligence) as the ultimate aim of all knowledge: in the world there exists no necessity, and in fact the world is immersed in the dominion of the case (Peirce calls *tychism*).

In his territories there are descriptions of the gestures that help the placement of belief: that of *tenacity*, which consists of not bringing beliefs into question; that of *authority*, which consists of forbidding different beliefs; and that of *metaphysics*, which consists of constructing and ordering beliefs into systems. All of these places are characterised by the fact that they cannot be declared false; only scientific method accepts its fallibility and can accept the correction. *Fallibilism* is an element of thought; the doubting of a mental state typical of mankind that, when directed towards belief from its own 'thinking', must fight to reach a state of doubt and escape the deeply-rooted state of belief that arises through the production of beliefs, therefore creating an infinite correlation between beliefs; the new belief is inspired by the preceding belief and it goes on like this to infinity, recognising the necessary existence of an initial unverified belief. Admitting the eventual existence of an initial unverified belief, which is not necessarily true and is susceptible to criticism, leads Peirce's reflection to recognise the value of 'fallibilism', that is of scientific method. Peirce's scientific method abandons infallibility; the method establishes beliefs that are not necessarily true but are *amendable*.

Re-mapping this territory we can see how doubt is a necessary mental state in the S<>T dyad, directed at the belief of from its own 'mutual self-reflection' (the student in the teacher and the teacher in the student), but battle to escape the innate state of belief to reach doubt, where this escape happens through the production of beliefs⁷ and therefore the-student-entrusts-himself-to-the-teacher-who-entrusts-himself-to-the-student: this 'entrusting' (that reminds us of the *Passionate attractions* of Fourier-Ascott)⁸, deposits a correlation of inferences between cultural deposits; the new entrusting is inspired by the preceding deposit and in this way continues into infinity, recognising the necessary existence of an original unverified trust: the-student-entrusts-his-meanings-to-the-

6 And by the French linguist Ferdinand de Saussure (1857-1913);

7 From the Latin *credere*, or *entrust-deposit*;

8 In Italian it is implicated with a double sense of the *Ri-conoscere/Riconoscenza*;

teacher-the-teacher-entrusts-his-passion-to-the-student.

The experience of the NABA Faculty of Media Design and Multimedia Arts clearly shows how what the student verifies in the teacher, in order to trust him, is his knowledge, but also that he is passionate and that he believes in what he represents. In this sense the *Passionate Attractions* of Fourier-Ascott are central to Pedagogogy, since without the poetics of having a passion for a subject one cannot teach it, and then we are not Students but above all Teachers.

V.I Foucault - Alethurgy and alethiometres

The research adds Foucault's latest vision of *Du Gouvernement des vivants* (1980)^{cclxxvii}, a text on the acts that the subject can and must freely undertake in order to access the truth. This meditation is called “*régime de vérité*”: according to Foucault, the exercises of Christian asceticism in differentiating themselves from the Greek-Roman ascetic practices, provided the first directions for exploring this new territory.

The Frenchman moves back the historic arc of his investigation on the practices of the construction of subjectivity, to the investigation of the technologies practised in Ancient Greece, from the 5th century B.C. To the 2nd century A.D. He discovered a decisive difference between the Christian conception and the Greek conception of the examination of the conscience and of their spiritual practices in general: while Christian practices revolve around a *hermeneutics of the subject*, in which the individual must *confess* the truth about his own identity returning within the dynamics of a subjugating regime of unique truth, the examination of conscience in Ancient Greece did not make the individual confess the truth about himself, but rather verified his capacity to organise himself around a plurality of values in relation to which he has decided to orientate himself: the first approach forces an exposure of the truth about oneself and searches for a compulsory judgement of the self; the second approach appears the contrary, as a private act in which the individual examines their own capacity to live in compliance with cultural references that they have freely given themselves. The passage from individual to person that Christianity effects appears clear.

In the early 1980s, Foucault recognised in the Christian phenomenon an apparatus of government of individuals through a “*non political, but eminently politicisable*” (Karsenti B., (1977-1979): 44)^{cclxxviii} power that

operates on beliefs and desires. Foucault describes the 'pastoral power', as a technique of power; the 'pastor' is an individual who controls the entire flock. Pastoral power is an analytical power, bio-politics of the population that influences every aspect of life. According to Foucault, the “*The essential tools of government are the 'disciplinary' technics that [...] allow a capillary management of the population through a direct intervention on the individuals*” (Sorrentino V., 2008: 103)^{cclxxix} *Of these techniques, that of most interest to the Frenchman is the discipline of the Christian body because it is through this that the soul of the individual is produced: «[...] which is a reality, which is produced in permanence, around, on the surfaces, within the body [...]. This real and incorporeal soul is not at all substance; it is the element where the effects of a certain type of power and the reference of a knowledge are articulated, the gearing by which the relations of power give place to a possible knowledge, and the knowledge renews and reinforces the effects of the power. (...) The soul, effect and instrument of a political anatomy; the soul, prison of the body.*” (Sorrentino V., 2008: 106)^{cclxxx} The quotation (Foucault, 1975) concisely describes how the disciplinary management of a body is functional for the creation of a soul incapable of being free from the effects of power.^{cclxxxi} For this reason, the pragmatism of Pedartgogy also has bio-political effect, which in not binding the truth to a soul, but rather to a Magisterial knowledge, i.e. the {shamanic knowledge} = {the virtual knowledge} = {the entheogenetic knowledge} = {the logic-philosophical knowledge} = {the scientific knowledge}, opens up the system of knowledge to freedom.

The sacrament of confession is, in the meditation of the French thinker, the most radical panoptic device. It is a device through which the Christian Church effectively has control over its followers, controlling their body, sexuality, and therefore the soul that is the product of it. The accounts of the faithful during confession produces a discourse of truth that will recur in their own life, changing it in some way. Pedagogy becomes an instrument of power if it uses this same vision, but Pedartgogy is an open apparatus. If Foucault spoke of panopticon, then Pedartgogy speaks of the kaleidoscope, of Pan-demonium. It overturns the body and soul, it marries pragmatism and substitutes truth with experiences, causing the real to explode in a chain nuclear reaction towards the opening of infinite discourses of truth. In this sense, Pedartgogy is intimately libertarian because it becomes a fitness of 'resistance' to disciplinary practices.

Pedartgogy is based on the magisterial reading of the real, which produces many effects of truth. Since, as

Foucault states, “*We must remain at the frontier. Critique is the analysis of the limits and reflection on them*”. (Sorrentino V., 2008: 189)^{cclxxxii} The interpretation of reality, retrieved by Foucault, coincides with Pedartgogy's production of truth, which translates into a position of analytical reconnaissance of the limits of reality itself (we can only know what we do not know). Therein are produced the effects of power, and therein is produced also the resistance to power that the student must put into practice. It is in this practice that they will find the process of truth.

An internal dynamic of Pedartgogy is that it does not seek to be prescriptive, the lawmaker; nor does it seek to impose anything. It interrogates experiences, highlights facts, examines the disciplinary dynamics, reconsiders the relations of power. It leaves the individual-student to construct, and configure their own territory.

“*As opposed to what happens in the tradition of metaphysics, here we are in the presence of a conception for which there are no different degrees of reality on the basis of an 'ontological' hierarchy [...] rather there is an articulation within the living made possible by a merely perspective hierarchisation of its configuring elements*”. (Sorrentino V., 2008: 222)^{cclxxxiii} Foucault's studies are focused around the different functions that the truths of Socrates, Plato, Stoics and Cynics, play in Greek-Roman *parrhesia* in relation to those in play in Christian spirituality. In this sense the practice of truth (alethurgy), the apparatus of truth (alethimeters), and the truth in itself (parrhesia), are the heart of the teaching of Pedartgogy; it is an educational practice based on the very practice of truth that an individual (artist) must put into practice in order to be able to learn to be the apparatus of the self.

Pedartgogy proposes power as an intrinsic and constituent characteristic of the individual. Power therefore is created within the relation of power sparked by any knowledge and pedagogical relationship. Foucault interrogates ancient philosophy in an attempt to answer the following question: “*If power produces truth, how do we conceive a 'power of truth' that is no longer truth of power?*” (Cremonesi L., 2008: 15)^{cclxxxiv}

In the practice that the ancient philosophers used with truth, Foucault recognises the teaching of heteropoietic strategies of resistance to power centred around “[...] *a relation between subjectivity and truth that does not assume the form of a hermeneutics of the subject, but that is an experience that transforms itself by historical and critical investigation of our contemporary; an idea of work on the self that gives form to our way*”

of being and our ethos; lastly, an idea of a philosophical discourse founded on an ethos that permits you to decide which position to adopt within a relation of power.” (Cremonesi L., 2008: 212)^{cclxxxv}

In Foucault's meditation, the power of the discipline intervenes not so much on the body-gesture, but more on what precedes it. It changes the sector of intervention of the technics^{cclxxxvi} of power: it does not act on the behaviour carried out, on its 'potentiality', on its 'virtuality'. So, behind the bodily uniformity a set of virtualities that construct the individual is 'projected'. According to Foucault, confession is a «technique for producing the truth», (Foucault M, 1976: 54)^{cclxxxvii} technique for producing the truth originated in religious circles, and found its optimum time for development during the medieval period. Foucault writes, “*Confession has propagated far beyond its effects: in justice, medicine, pedagogy, family relations, romantic relations, in the most daily reality and the most solemn rituals; we confess our crimes, our sins and our desires, we confess our thoughts, our past, our dreams and our childhood; we confess our illnesses and miseries*” (Foucault M, 1976: 55)^{cclxxxviii} Foucault goes on to say: “*For a long time, the individual has authenticated himself in reference to others and through the manifestation of his link with them (family, relation of vassalage, protection); subsequently, he authenticated himself through the discourse of truth that was capable or forced to make about itself. The confession of truth is inscribed in the bosom of the procedures of individualisation by the power.*” (Foucault M, 1976: 54)^{cclxxxix} According to the French thinker, this is the sphere of disciplinary power and of its effects of subjectification.

Paraphrasing Foucault, the research obtains: “*For a long time, the individual-student has authenticated himself in reference to the authority of the knowledge of the teachers and of the institution, through the manifestation of his link with them (teaching body, institution); subsequently, he authenticated himself through the discourse of truth that was forced to make on the truth proposed by the academic authority. The discussion-acceptance of truth is inscribed in the bosom of the procedures of individualisation by the academic authority*” The research takes note of how the concept of 'authenticity' in Foucault bears much similarity to the research's concept of 'sharing the truth'. It is of the concept of 'verification' of the experiences of the social body. Foucault, in *The Will to Know* (1975), and in a text dedicated entirely to confession, an unedited text written in 1981 for an inaugural speech for a series of six conferences at the Université Catholique de Louvain, which he entitled *Mal faire, dire vrai. Fonctions de l'aveu*: the confession is seen as a discourse in which the subject says something

about himself, and recognises that he has done or said something. So in many ways it is an attempt to institute a 'Regime of truth', to then subject to analysis. Nevertheless, Foucault maintains that this is insufficient, as to be a confession, this discourse must be, in a certain sense, difficult to do. En 1981, Michel Foucault donne à l'Université catholique de Louvain un cours composé de six conférences et d'une conférence inaugurale qu'il intitule *Mal faire, dire vrai. Fonctions de l'aveu*. Il y examine le pouvoir d'énoncés réputés vrais quand ils ont pour sujets ou objets des êtres humains auxquels sont attribués crime ou criminalité.^{ccxc} The research reveals the similarities with the territories of the principle of 'exertion-work'. Foucault argues that confession consists of telling when not telling has a specific meaning, a particular motive or an important value. For this reason, confession must be undertaken spontaneously and thus imply a certain liberty on the part of the confessor. Nevertheless, it must take place within specific relationships of power, that is one confesses to another who exercises a certain power over them. *"We do not confess without the at least virtual presence of a partner who is not simply the interlocutor, but the instance that requires the confession, it imposes it, appreciates it and intervenes to judge, punish, pardon."* (Foucault M, (1976) 2004: 57)^{ccxi}

Confession, in addition to being difficult, must involve an 'effort', and take place within a power relationship. It is a form of discourse that implies a particular effort. The confessor, according to Foucault, commits, in a certain sense, to being what he has confessed to being, to construct himself as such, and binds himself to the truth of the self that he confessed.

The research draws a parallel between the moment of the 'oral' exam and this particular form on constitution of the truth identified by Foucault. The individual-student under examination must confess the truth about his task of learning and understanding assigned to them by the teacher, and this happens in the coercive context of the exam administered by the academic authority.

The exam:

1. involves an 'exertion/effort';
2. in undertaken within alethurgical relations (which imply power);
3. is a form of discourse that implies a narcissistic commitment.

The examination is the act of weighing and of weighing oneself. Within the S<>T dyad it means an bi-directional operation: on one side it identifies the student, on the other side it allows the teacher to confirm his role. The person under examination commits himself, in a certain sense, to be what he is communicating that he is; during the examination the pupil binds himself to the truth of the self he communicates, he constructs himself as such, in two directions, that of the Teacher, passing judgement, and that of the subject that lives the experience. It is important to clarify at this point that the experience of the Faculty of Media Design & Multimedia Arts highlights that the exam is never objective, that is it seems to be impossible to truly discover how much the individual-student has prepared; the exam is liturgical (alethurgy), i.e. it is validated by the coercive 'role' and the power that the teacher, whether willing or not, finds himself interpreting and exercising in the effort that the individual-student, also exercising a power, makes to support this tiresome posture (in this sense the exam as a mechanism is an alethimetre). The institution is a power structure; the exam becomes an alethurgical practice of the S<>T dyad, in the direction of the teacher in understanding that he will never really know what the student knows, and in the student in accepting a practice of truth on himself.⁹

According to Foucault, confession not only produces this particular link between the confessor and the confessed truth, but also modifies this link. In the same direction, when a student responds to the questions of the power-teacher, he is what he says, and in what he says he binds himself to the identity of those words, but at the same time he in part changes his identity: since he communicated, he *is* what he said (the communication entails a change of posture). In the confession: the subject is delinquent, but is also, because they have confessed, on the road to recovery; the subject is ill, but recovering, he is a sinner, but thanks to the confessions, he is on the road to salvation. In the exam: the student is both he who does not yet know but thanks to the exam is on the road to knowledge. The example is valid for the practical exam too (alethiometer) in which the student: has not produced, but precisely because he has produced work for the exam, he is producing. When a student presents his work to the institution-power, he is what he has produced and is then bound the identity of these works, but at the same time, changes in part his identity: since he has made, he is what he has made.

For Foucault, the disciplinary techniques proceed not only by projecting a nucleus of virtuality behind the

9 A/N: And in this sense, alienation becomes being outside of one's own knowledge; Hegel, Marx, Dilthey, Foucault;

bodily singularity, but also by extracting something: thanks to confession and to the specific effects of this type of discourse, these techniques extract a truth from the individuals, causing the individuals to connect themselves to this truth and construct their own identity according to this truth. Paraphrasing again: pedagogical techniques proceed not only by projecting a nucleus of virtuality behind the liminal singularity of the student (he who is no longer, without being what he will be), but also by extracting something: thanks to a series of exams-confessions and to the specific effects of this type of discourse, these techniques extract a truth from the individuals-students causing them to connect themselves to this truth and construct their own identity according to this truth. And in this way we can obtain an educational process.

Thanks to this mechanism, education falls into the sector of the techniques of individualisation. The role of the alethurgical-exam within the procedures of the disciplinary powers may surprise. In fact, if in the confession of truth telling, confession is a technique of power, why is it also true in education? Foucault himself realised that he had brought into question some of the great philosophical universals with his definition of the practice of truth. “*Confession frees and power reduces to silence; the truth does not belong to the order of power, but is kindred with liberty*”. (Foucault M., (1976) 1978: 56)^{cxcii}

In this case power is inseparable from the process of truth, i.e. it is a constituent of it.

Magisterial knowledge makes the concept of truth-power become part of the method, which proposes an absolute liberty, which it places at the foundation in a sort of atheism of knowledge (for this reason always and in any case libertarian). Thus Pedartgogy accepts the truth as an always already object of liberty, and locates it as a dynamic territory of the S<>T dyad.

In his last text «*La vie: l'expérience et la science*»^{cxci} Foucault introduces the dominion of truth and his problem with the truth. He describes knowledge as a product of the wanderings of life. The S<>T dyad is therefore always already a political and historical concretion, and not a free substance as the tradition of common sense dictates: in this sense, structuralism makes a return: the individual does not communicate but rather is communicated by his own stories. “*In order to generate the meaning of a sign, not only that sign, but the whole system, is involved – the meaning is distributed*” (Cilliers P., (1998) 2000: 81)^{cxci}

Foucault develops an interesting vision of the concept of 'taking care', the care that an individual puts into the

acts of observing and de-coding his actions through alterity, whether object or directed towards other individuals, it is the mechanism of the foundation of reality. It appears the French thinker wants to say that it is the 'care' that controls the focus of our experiences to eventually make them 'true'. This 'care' is central to the practice of the student, who in developing his artwork must *take all the care* he is capable of.

V-II Emotion, impulse and the Academy

Tearing down the barrier between the interior and the exterior, between 'raw materials' and 'substantial form' (hylomorphism) and between 'soul' and 'body' (transubstantiation), Pedagogogy moves within the territories of a different mimesis, of a different cartographisation of the identity founded on reflective processes (understanding-comprehending) of mutual definition between individual-student/technology and nature. This fact that the interior and exterior are folded one on top of the other, has implications not only for our understanding of the dynamics of complex systems, but also for our understanding of reality.

Teaching an objectivity to the students in an old modern fallacy, since: “*once we let go of our nostalgia for something really real, something that can be faithfully copied, we move into what Baudrillard defines (Baudrillard J., (1984) The precession of simulacra*”.(Cilliers P., (1999) 2000: 83)^{ccxcv}

Objectivity is too simple a concept because it is applied to knowledge. The act of knowing is subjected to an impulse of pleasure/displeasure, which is unrelated to the sensations of pleasure/displeasure, and these sensations influence the way we perceive stimulus. In the classic sense of neurophysiology, the sensation of displeasure is related to an increase in stimulus and the sensation of pleasure is related to a reduction of stimulus. If we imagine the psychic life of the student from a biological perspective, the 'impulse' appears as a conceptual limit between the psychic and the somatic, as the psychic actor of the stimulus of the interior of the body that reach the psyche, like a measure of the operations that are requested of the psychic sphere provided by its connection with the bodily sphere. The impulse is the property of rendering satisfaction possible.

And by this definition, sexuality is the clearest example. Classical biology shows us that there are two, both legitimate, ways of conceiving the relationships between the individual and sexuality. According the first point of view, what counts is the individual; sexuality is seen as one of the needs of the individual. According to the

other point of view, the individual is merely the temporary and transient appendage of sexuality. But it is true that the purpose of human sexuality is to attain 'organ pleasure'; one of the most debated themes in physiology and psychology is the reason behind this continual use of the sexual practices of human individuals, without distinction in gender. And only once this has been attained do they serve a reproductive function, becoming with this, universally recognisable as sexual impulses. This is another of the unknowns at the foundation of anthropogenesis. Mankind is the only species to compulsively have sexual intercourse for pleasure alone. Freud's hypothesis that a portion of the sexual impulses provide the individual with libidinal for their entire life, is entirely credible. So the question of how much sexuality there is, or there should be, in educational processes is valid, especially since today students face the phenomenon of digital pornification. We therefore enter very subtle and indistinct territory. Yet the precise knowledge of the source of impulse is not indispensable to the research. Pedartgogy deals with the enthusiasm and passion of the individuals-students and therefore must accept inner impulse as a fundamental constituent, and consequently accept Foucault's position on the role of sexuality as the drive behind the experience of the individual, as the place of reshuffling gestures, genders and truths, and this too is an alethurgical practice.

Intelligence, derives from *Intelligere*, Latin substantive "*intelligentia*" deriving from the verb "*intelligere*", which includes the prefix *inter* ("between"), and the root *ligare* ("link"); essentially suggests the attitude of 'linking' oneself between the self and the things and the bodies of the world Mankind, the 'intelligent ape', therefore tends to bind himself to the world, to its things, and being a symbolic species, 'of pigments', he transfers this world to another, metaphysical plane, to which he tends to bind himself.

To use Freud's language, there is a solid libidinal push, a pragmatic comparable to what we define as sexuality and that Foucault investigated in his work as 'knowledge', 'power' and 'care of the self' (which becomes 'care of the meaning' in Pedartgogy).

The students have highly accentuated libidinal pushes; they live in a time characterised by the flowering of thoughts and actions, acts of the being, which lead them to compare themselves to the world as an impulsive object. The Bachelors and Masters students are aged between 18 and 30 years old, a phase of life characterised by a strong libidinal impulsiveness that can be traced to the roots of many acts and many researches. The

teachers form part of this context and feel the effects of it. They must manage this energy, handle it and channel it to make sure the students use this cognitive and cultural force to their advantage. As Foucault argues, it is sexuality that drives us towards unexpected experiences, towards acts of sharing that lead us to liminal places of identity and of knowledge.

In this 'impulsive' sense, our intelligence is a 'connecting ourselves to alterity' and is not an abstract process, even if it is 'metaphysical or transcendent'. It is in fact, always a process in-corporated in the world. Our brains are part of our bodies (and vice-versa) and our bodies are made of biochemical relations. These biochemical relations lead us to confront ourselves with the other and alterity for an impulsive contingency that we can define as sexual. Knowledge is pragmatic, that is it is incarnated in the body, and it is binding to impulses of sexual ties.

For this reason, sexuality covers a fundamental role in knowledge, in as much as it is an impulse of knowledge itself, and for this reason the teacher's control of sexuality exits the sphere of pure pleasure and becomes part of the process, bringing with this a whole series of responsibilities on the part of the guarantor of the knowledge, i.e. the teacher. The teacher then, must observe the impulsiveness of the student, know how to control it, in order to seize the profound cognitive content.

V.III The 'acceptable' truth of artistic research

But is this realisation founded on the alethurgical practices of a regime of truth-sexuality acceptable?

Yes if it comprehends and accepts that 'science' establishes beliefs that are not necessarily true but which are amendable. The research has seen that the notion of belief is central to the cognitive philosophy of C. S. Peirce (USA, 1839-1914). Belief is in fact, the norm to future action, and is central to the S<>T dyad. Teaching/Learning means creating an infinite correlation of inferences between beliefs. And it is an antecedent belief that indicates the series of inferences suitable to found new and further beliefs. Peirce states that the use of a belief in life is a variable of its verifiability. The verifiability of an experience – Peirce explains – is the future effect of the same experience.

A belief is true in the moment in which there is conformity between the expected effects of the belief and the

actual effects that occur; a belief is false from the moment this conformity does not exist. When it is true, belief is the norm of useful action; when it is false it is a norm of useless action that affects human conduct. Peirce nevertheless does not mean in the same way as René Descartes that the truth is the individual outcome of the comparison between belief and future effects arising from the belief. Verification in Peirce is an individual event; the truth is a communal event: according to Foucault, the truth must 'authenticate itself' within the community, or rather the same academic community must 'authenticate' the truth which is always already suffocated by the verification of the students. The acceptable truth of artistic research therefore lies within the community of the Academy and of its forms of validating power and alethurgical practices.

Of course, any cultural theory has profoundly narcissistic characteristics. This narcissism was explored through the artwork *Is There Love in the Technoetic Narcissus?* (Monico F., 2010). And this narcissism is consumed in the attempt to rationalise a complex and chaotic process like education, as it is in the attempt to stimulate theories of knowledge through the use of abstract and complex rationality; i.e. human intelligence in computers. Therefore Pedagogogy is open and rejects a rigid methodology, for this reason it organises itself into the form of a lexicon (at the end of this research). Bernard Stiegler, in the film "The Ister" (AU, 2004, David Barison & Daniel Ross), tells the viewer that humanity has never been aware of technology. This is true, and it is unbelievable how little we are aware of how many machines we have created and how much we are made of machines. Humankind often thinks of machines as though they act in a dehumanising way. Heidegger, however, said that we are a part of a machine, as a being, as an entity; and McLuhan said that the being is the content of the entity as a medium (machine). But in our human-centred culture: *"At best, they (machines) are seen as useful, even essential, tools; at worst, as destroyers of the soul. It is this double relationship – dependence and abhorrence – that lends such a strange flavour to the attempts to copy living intelligence on a dead machine. For many this is the ultimate quest of modern science, the last grail. For others it becomes the prime symbol of an instrumental understanding of human beings, an approach that supposedly denies important human values."* (Cilliers P., (1998) 2000: 83)^{ccxcvi}

According to Richard Rorty (USA, 1931-2007) on the *Gedankenexperiment* of John Searle, the Chinese Room operates the same *transubstantiation* that a Catholic fundamentalist uses to support the divinity of the body of

Christ; the 170th Pope of the Catholic Church, Alexander (Rolando Bandinelli, IT 1100-1181), who coined and used the term *transubstantiatio*. The concept was picked up by Tommaso d'Aquino (1125-1274) and other scholars (VII-XVI), it appears for the first time in the pontiff's documents in *Concilio Lateranense IV* (1215), and assumes its definitive formulation in the *Concilio di Trento* (1545-1563). The concept retrieves the theory of "hylomorphism" conceived by Plato (Athens, 428 B.C./427 B.C. – Athens, 348 B.C./347 B.C.) and particularly by Aristotle (Stagira, 384 B.C. – Chalsis, 322 B.C.) against the materialism of Democritus (Abdera, 460 B.C. – 360 B.C.), of Heraclitus (Ephesus, 535 B.C. – 475 B.C.), Parmenides (Elea, 515 B.C. – 450 B.C.). The concept, also known as *hylomorphism*, affirms that every body is composed of two elements: the 'raw material', which is the undetermined principle, passive, potential, resident in all bodies, having potentiality to being substantial, which is determined by the form; and the 'substantial form', which is the active and specifying element, that determines the material so that one cannot be without the other. The point is that the principle is an idea, an absolute value, a Platonic idea, which through Plotinus and Neoplatonism, becomes the soul. Essentially, what Rorty vociferously says is that John Searle's *Gedankenexperiment* does not show anything but is based on an assignment of 'humanity' equivalent to 'divinity' to something through the principle of polymorphism-transubstantiation.

The term derives from Greek μετασπίωσις *metousis* and later Latin, *transubstantiatio*. In Roman Catholicism, it means the change of the substance of the host bread into the substance of the Body and sacrament wine into Blood of Jesus. The original Greek term *Metousiosis* means, literally, a change of essence, inner reality οὐσία. All believers and with them, the clergy, maintain that the *Metousiosis-transubstantiatio* is not in the eye of the believer but that it is intrinsic, otherwise it would allow any believer to consider any other thing as supernatural. But it is unclear where the church ministers and believers found their theological 'essentialism'.

That is to say that man is considered superior, existing, sentient to a sort of divine pre-concept.

According to Magisterial knowledge there is no single reality but a series of realities working together, like cartographic planes to leaf through in a set of maps. So the contrary is actually true: all realities are an act of recognition (belief), and *Metousiosis-transubstantiatio*, as a gnoseological act, lies in the eye of the 're-cogniser' (believer); i.e. it is in some way not intrinsic to the object but intrinsic to the subject itself. This subject then, as a

social being, recognises (shared) this intrinsicity with the magisterium of reference to which it relates .

The fact that 'humanity' is a transubstantialised value, is a narcissistic value founded on what paraphrasing a mystic like Nicholas of Cusa, is idiocy, or rather, to elect oneself as your own idol, which is coherent with what Peirce suggested regarding the fact that we elect our own beliefs. Peirce suggests that the truth is founded on a system of beliefs and desires that originate from an initial belief or desire. That is the human system is not founded on an objective and real truth, but on beliefs, and his actions are dictated by desires; i.e., the desire to know the origin of the universe has led us to believe in an elegant theory like the Big Bang. This implies that as there is no one truth, there must be many truths, (endless form most true), and thus what we must teach is not a truth but an approach to the truth as a complex system of many n to the n truth. And the question is what is it of what we call 'human' that we want to simulate in a machine? I.e. if we want to represent a human, we must presume that we have a theory of what a human being is. Can it be a simulacrum? An abstract, androgynous intelligence, called explicitly 'artificial'? For this reason, Pedartgogy can only be a libertarian and open system, which is Magisterial and which uses language as one of the functional technics that make it open.

Humankind defines itself alone, in an idiotic and narcissistic way; and it does not understand that it is the content of its technologies. But the greatest narcissism is to think that technologies must be made in the image of humanity and that they are always inferior to the human being. Technologies develop according to complex and non-linear processes, mankind hybridises incessantly with these in as much as he is the content of them; i.e., being [Heidegger's Sein] is the content of the being [Heidegger's Seiend]. This territory is very important for the students of the anthropocene, they impact violently with the technologies, as McLuhan would say, they are infected in a reaction of the entire social body with the technology. Education must push the individual-student to understand that he is the content of the technology, and that they develop according to complex and non-linear processes, while his body hybridises continuously with the technologies.

The intelligence of the student is defined by itself, via a narcissistic weight that will be correct if the individual-student follows a critical mestisation with technologies; i.e., if he understands that he is the content of the technologies he assumes. The narcissistic error is to think that technology is separate from our intelligence. Intelligence means *intelligere*, that is making a connection, a concatenation, and we 'link' ourselves to the world

through the system of relationship, actions, narcissistic reactions that activate the technologies. The *intelligent-technologies-of-the-world*, where intelligent retains its original meaning of 'connecting', develop according to complex, non-linear processes that include/comprehend the individual student.

V.IV Meaning and new Knowledge

It is important to grasp the difference between the traditional view of the system of meanings and the view developed in this research. Traditionally, human philosophy accepts the existence of an 'essence' of a term; i.e., that every term represents an essence of something, a *gnommero* or 'tangle of meaning' as Carlo Emilio Gadda calls it.¹⁰

For the research, the meaning is an element produced by the incessant dynamic of the nature-individual-technology system, and is always a construction. At this point the research adopts as its own the shift first made by Human Communication's Pragmatics (Watzlawick *et al.*, 1967) who turned communication into mere 'behaviour'. That is, the meaning is foreseen behaviour. All communication is always a behaviour, which inscribes itself in a taxonomy of behaviours that stand for acknowledged sharings.

At this point the meaning shifts its axis. In order to understand what the research means we need to stop by the famous Chinese Room of John Searle (1980: 417-418): *“He (John) asks us to imagine an English speaking man who knows absolutely no Chinese, sitting in a room. He is given a bunch of Chinese symbols along with a rulebook that formally describes the Chinese syntax. To him the symbols are meaningless squiggles, but by following the rules he can manipulate them. If he is given a set of symbols from outside, he can generate a new set and give it back. From outside the room it appears as if the person inside can speak Chinese since he responds appropriately to prompts and questions, yet the person inside does not understand a word of Chinese in the way that he does understand English. He is just following a set of formal rules. Since that is exactly what*

¹⁰ Ferdinand de Saussure (CH, 1857-1913) in his theory of language (*Cours de linguistique générale* 1916) argues that the system of language is constituted not by individual acts of speech, but by a system of relationships that transcends the individual user. This system is what Saussure calls '*langue*'. Because the signifier-signified relationship is arbitrary, the sign does not have a natural identity, but has to derive its significance from the relationships within the system. Because the relationship is arbitrary, and only has significance in terms of the system, there is no 'essence'. According to Gorgia da Lentini (ANCIENT GREECE, 485/483 B.C.- 375 B.C.), language 'virtualises' every human experience, that is it falsifies it and transfers it onto a manipulable plane. According to Werner Heisenberg (DE, 1901-1976), each look introduces alterations into the system. According to Martin Heidegger (DE, 1889-1976), the truth is therefore 'unveiling', *aletheia*. But according to Ernst Von Glasersfeld (AU, 1917-2010) it is the opposite, it is pure construction;

a computer does – follow a set of rules – no computer will have an 'understanding' of what it is doing, and can therefore not be said to think.” (Cilliers P., (1998) 2000: 49)^{ccxcvii} The point is that this experiment does not explain what it means by 'understanding', but it is apparently something linked to an 'essence', while the research follows a path of meaning that, together with Human Communication's pragmatics (Watzlawick *et al.*, 1967) traverses communication as a shared behaviour that produces a series of symbolic norms (ethics). If this view is applied to Searle's room, then the important thing is not the understanding of Chinese as well as English, but the use of them as a system of signs within a system of rules; i.e. the essence of why we do determined actions is not important, rather it is important how much and when we do these determined actions and in what context, etc.

As the third axiom of the Pragmatics of Human Communication states, after a certain amount of time, the set of feedback creates a system of shared norms, that is communication is behaviour and constructs its context of decodification within this same behaviour by time [$B \times T = M$, Behaviour per Time = Meaning], and in this system there is no essence.

Behaviour it could be seen as an *a priori*; it is determined by a complex system of concurrent causes that implicate the body, a psychoendocrinological system, the environment, the mind, etc. language memories, etc. From this complex system of concurrent causes emerge the behaviours, which in their repetition, regularity and analogies, are shared symbolically and become communication.

In today's digital age, we contribute to an exponential explosion of communication between individuals like English, Chinese or Italians. Often we use grammatical forms and syntax that does not entail a great level of understanding of the terms. In this sense, even the English used in this very research is probably much more founded on a set of rules and on the use of vocabulary rather than an in-depth knowledge of the language. In reality, knowledge of the language is not in-depth, in fact it is low, and has been intentionally left that way in order to empirically verify, in the practice, the margins of the communicative-behavioural exchange. It was intentional as, since the research had to be conducted in English, and the writer didn't know English, it brought into play a conflict between an educated and refined knowledge of a poetic language like Italian and the non knowledge, purely an attempt and exploration of the English language. This is sustainable if the communication is understood as behaviour, and thus an original 'essence' is not sought within it.

Today, electromagnetism and telematics have created an inextricable network of global villages where what counts most is the sharing of behaviours rather than meanings. This sharing is, in other words, an interaction and is creating new forms of shared acts, whether they be linguistic or not, new norms and therefore new meanings, *also and above all*, of the subjects that participate in it.

According to the research, in current society, M. McLuhan (1962), A. Toffler (1970 and 1980), M. Castells (1996-1997-1998), the Chinese Room experiment, *Gedankenexperiment* (Searle 1980: 417-418), loses much of its validity, since if understanding derives from communication which is behaviour, then it is not necessary for the meanings to be understood and/or known since the understanding lies entirely in the feedback generated between the behaviours. In an age of real time, in the trans-modern anthropocene, what emerge are the dynamic evolutionary relations that are always in progress.

In support of this behavioural and interactive landscape of the construction of meanings, the research has gone back to explore the territory drawn out by the philosopher in neopragmatism, Richard Rorty (USA, 1931-2007), who describes Searle's *Gedankenexperiment* in this way: “Searle knows in advance that a computational process cannot be a cognitive state because it cannot have the same 'casual powers'.” (Cilliers P., (1998) 2000: 53)^{ccxcviii} These “causal powers” are declines in many ways in the human territory.

In the shamanistic NOMA it lies in the alteration/divination as a process, in the virtual NOMA it is the need of the case through the facts being put in relation according to the tools and technics of each age of human territory, in the entheological NOMA it is the recognition of the singularity of the human landscape as a replica of a pre and super-existing meta-terrain, in the philosophical NOMA the 'casual powers' lie in the recognition of the rules of language, in the scientific NOMA it lies in the experimental process and in the predictive simulations of a Cartesian cartography and measure of the sense.

So Rorty's point is that Searle essentially does not believe in a possible experience of the machine and/or code as 'casual powers'. For Searle, mechanisations are mere material and he shows it in his arguments that convince him that these 'mechanisations' can never pass through the *Metousiosis-transubstantiatio*, or rather the non-recognition of man by the machine. But in a territory where communication is behaviour, the machine, when it 'operates' emits its own behaviour that communicates and permits it to have a telos and a purpose, and thus

humanity cannot refuse to consider it and recognise it as an inhabitant of the same human territory and to take part in the construction of a hybridised cartography of meaning.

The day in which a machine-carer accompanies an old person to the end of their solitary days, and this old person recognises the fact that the machine has protected his mind from solitude and is grateful to this machine for its company in the days in which he completed the meaning of his life, then we will no longer be able to consider machines as simple objects. This is especially true since a wealthy old person may one day leave their estate to the machine itself, making it then correct to give standing to the machine. At this point the machine will be re-recognised as part of a complex system that links nature, humanity and technology in a new paradigm that will probably mark the dawn of a new era. Thus it is not important whether the subject, human or mechanical, is 'substantially' capable of understanding the meaning of its communications (for the same reason we too are not always able to understand the meaning of our actions or our behaviour).

Human actions are the result of an incredible complex set of feedback within a system of cerebral returns, of neuro-modulators, in a chaotic system of compensations where *hormonal communication*, as well as nerve communication, plays a fundamental role. This system are affected by the feedback responses of the dietetical precursors from which hormones are synthesised, of mineral precursors that activate the working of sodium-potassium pumps necessary for dendritic exchange. The picture is complicated further by the fact that many of the hormones in circulation can 'bond' with specific proteins of transportation, in an emphasis of such significance that it is potentially indescribable. Now that we are such a complex biomechanical system, how can we think that there is an essence that guarantees an 'immutable coherence' to all this, in order to transform this bioelectrical chaos into a 'substantially' sentient individual?

Since reality has become principally accessible in linguistic terms (with the invention of language around 7000 B.C.), our understanding of the world is sub-jectum of the logic of the signs. In this sense, the philosophical magisterium maintains a normative priority over the more accepted forms of the knowledge of the real, in the hegemonic sign of 20th century supremacy of the philosophy of science over 19th century hermeneutics. But today, due to a technical acceleration caused by information technology, the individual-student inhabits a world that is not complicated but is complex in its production and realisation of meanings. The

mirrors of narcissism, whether technological or not, are numerous, in fact abundant and of very different qualities. Today the world is an amusement park of reality and the individual-student finds himself in an immense hall of mirrors.

According to Jean Baudrillard, our system of signs has become detached from the references of the real world; today our referential signs drift across our liquid screens and multiply in fluid databases. There is no longer an interpreted meaning of the 'real', nor even an 'imaginary'; all things are bogged down in the level of signs and their interactions – a 'procession of simulacrum's'; Baudrillard substitutes the term representation with the word 'simulation'. - *“It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real for the real, that is to say of an operation of deterring every real process via its operational double, a programmatic, metastable, perfectly descriptive machine that offers all the signs of the real and short-circuits all its vicissitudes.”* (Baudrillard J., 1981: 3)^{ccxcix}

McLuhan's technological narcissism simulates the self in order to create an *eidolon*: simulation does not attempt to represent some abstract essence of the real thing: it seeks to repeat it, removing the distance between the real and the simulated. Where the representation seeks to absorb the simulation, interpreting it as false representation, the simulation becomes a simulacrum and envelops the entire territory of representation. For the individual-student of the trans-modern anthropocene (Crutzen, P. J., and E. F. Stoermer, 2000), the image is the reflection of reality, → which hides and degenerates reality, → which masks the absence of a reality and does not involve an relation of any other reality: it is its own pure simulacrum.

The *simulacrum* assumes importance in the definition of the individual-student. Today, before the ever more massive presence of computers as an 'essential' tool of education-creativity-poetry, the distinction between human and machine becomes central, as well as the search for a new statute for the machines and mechanisations.

However if this research is invalid if it uses the theory of representation.

In fact, this traditional theory is based on the metaphysical assumption that something that is 'essentially' human must be represented in an abstract way.

Following the logic of the simulacrum, we must have a machine that has the capacity to repeat or reiterate a

(typically human) reflexivity.

The question then shifts from “*how can we simulate a human in a machine?*”, which the research calls 'artificial intelligence', to “*how can we simulate a behaviour in the machine that will activate a pragmatic of the communication between the machine and the human?*” That the research calls *intelligence of the artificial*.

In fact, man is the *eidolon* of himself (Nicholas of Cusa's Idiot); he is the simulacrum of himself. And the problem of education today is that for 15 years the individuals-students study a typographical paradigm founded on an anthropocentric and sequential approach, but find themselves acting through machines that are not typographical: the laptops from which they implement their artistic experiences are digital, interactive, liquid, multimedial and multimodal environments, in which control is total and the uncertainty widespread. The images are manipulated, sounds are created and modulated and automated, the semantic connections explode in a quantum freedom, the narrations implode in a chain nuclear reaction, the author dissolves into the behaviour and the simulacrum begin to open.

What the S<>T dyad must explore are the new pragmatics between the individual and the machine. Students today possess machines that are capable of encoding information from the environment (which is what a camera does)¹¹ and capable of acting on the basis of this information (as Isadora¹² does). It is a mistake to search for a representational device within the internal structure of these machines. One must search for it in the pragmatics that the individual implements with the machine. It is an evolved instrument that produces and acts as a 'unit' with the students.

The 'unit' is a concept derived from horse riding^{ccc}; machines, being infinitely simpler than horses, have a functional rather than a representational relationship, meaning the state or the process during which the human subject and the other subject, while remaining distinct, are united in a unified pragmatics.

In the function (and in the sharing of this function), a joining occurs. The best way of observing the alterity is

11 For decades, the device for capturing images was the cathode ray tube, until the mid 1970s when the first CCD sensors appeared on the market, now sold alongside the latest CMOS;

12 Isadora is a graphic programming environment for Mac and PC that allows the user to control digital media and in particular, to manipulate digital video in real time, thanks to impulses of controlled movements. The program is based on the human-computer interface through the use of sensors which process human movements, transforming them into input to modify the digital video in real time. Other applications are connected to the performance arts and motor rehabilitation and various interactions between the body and digital technology. Developed by Mark Coniglio with the choreography of Dawn Stoppiello;

to act on a functional level and not try to identify it individually according to a transubstantialised point of view (hylomorphism). Rather we need to share functions and activate a pragmatic relation, since when the alterity continues to provide feedback to our communication, it generates a system of shared norms that will realise the relation.

Thus, in this complexity, science loses the clarity of its objectives and at the same time, philosophy loses the luxury of being able to avoid contingency and praxis, and art emerges as a synthesis for a method for a new subject that realises a new knowledge.

This would be seen as one of the characteristics of anthropocene; a change of paradigm, a loss of innocence for science and philosophy, and a new role for art as a practise and care of the meaning as new hermeneutics.

V.V Characteristics of an 'artistic' complex system

Pedartgogy looks into the characteristics of complex systems, and paraphrases other similar descriptions in Cilliers (1998), Nicolis and Prigogine (1989), Serra and Zanarini (1990) and Jen (1990).

1. A concept-artwork consists of a **large number of elements**. When the number is relatively simple, the communicational behaviour, meaning, of the elements can be given a formal description in conventional terms. However, as stated by Paul Valéry (1937): “*All that is simple is false, all that is complex is unusable*”^{ccci}; i.e. when the number becomes sufficiently large, conventional means become impractical and also cease to contribute to any *understanding* of the system;
2. In order to constitute a complex system, the elements have to interact, and this **interaction must be dynamic**. A complex system changes over time. The interactions do not have to be merely *physical*; they can also be thought of as the transference of information as *behaviour*;
3. **The Fertility of the Ideas** - Concepts-artworks are fairly rich; i.e. any concepts-artworks in the system influences, and is influenced by, quite a few others. The behaviour of the system, however, is not determined by the exact amount of interactions associated with specific elements. If there are enough elements in the system (some of which are redundant), a number of sparsely connected elements can

perform the same function as that of one richly connected element;

4. The interactions (between concepts-artworks) are non-linear. **Non linearity** guarantees that small causes can have large results;
5. The interactions usually have a fairly short range; i.e. Information (and behaviour) is received primarily from immediate neighbours, conceptual art with conceptual art, net art with net art, technological art with technological art. Long-range interactions, such as net art and kinetic art or better, net art and cinema or art and science, are not impossible, but practical restraints usually force this consideration. This does not preclude wide-ranging influence – since the interaction is rich, the route from one element to any other can usually be covered in a few steps. As a result, **the influence is modulated along the way**. It can be enhanced, suppressed or altered in a number of ways;
6. There are loops in the interactions. The effect of any artwork can feed back into itself, sometimes directly, sometimes after a number of intervening stages. This feedback can be positive (enhancing, exciting) or negative (detracting, soporific). Both kinds are necessary. The technical term for this aspect of a complex system is **recurrence**;
7. Open Complex Behaviour: complex behaviour is usually open behaviour; i.e. It interacts with its environment. As a matter of fact, it is often difficult to define the meaning of a complex behaviour. Instead of being a characteristic of the system itself, the scope of the system is usually determined by the purpose of the linguistic description (communication) of the behaviour, and is thus influenced by the language of the description. This process is called **framing**. Closed systems are usually merely complicated;
8. Complex systems operate under **conditions far from equilibrium**. *Educational programs*, (as a system of concepts, artworks, knowledges, behaviour) has to be in a constant flow of energy to maintain the organisation of the system (into concepts, artworks, knowledges, academic behaviours) and to ensure its survival. However educational programs produce themselves and their cartography an enormous flux of energy that is entropic and that must be kept inside the system. The Academy is a complex system generating entropy. The only way to manage it is to leave the system free to generate entropy.

Equilibrium in Education, and in Pedartgogy is another word for death;

9. *Knowledge* has a history (discourse). Not does it evolve over time, but its past is co-responsible for its present behaviour. Any analysis of a knowledge that ignores the dimension of time is incomplete, or at best, a synchronic snapshot of a diachronic process. Every Knowledge is **Always Already New**;
10. Each element in **the system is autonomous**, and unaware of the behaviour of the system as a whole. It responds only to information that is available to it locally. This point in Pedartgogy is vitally important. If each student and teacher were to 'know' what was happening to the educational program as a whole, all of the complexity would have to be present, as *students and teachers (element)*. This would either entail a physical impossibility in the sense that a single student or teacher does not have the necessary capacity, or constitute a metaphysical move in the sense that the 'consciousness' of the whole is contained in one particular unit. Complexity is the result of a rich interaction of simple elements that only respond to the limited information each of them are presented with. When we look at the behaviour of a complex system as a whole (such as a School of Art & Media), our focus shifts from the individual element in the system to the complex *structure* of the system. The complexity emerges as a result of the patterns of interaction between autonomous elements.

V.VI The 10 complex characteristics of Pedartgogy

Pedartgogy is founded within a complex system.

This process is complex: “*Models of complex systems will have to as complex as the system themselves.*” (Cilliers P., (1998) 2000: 58)^{ccii} Pedartgogy is therefore complex, but if it is true that complex is different to complicated, in as much as complicated can be reduced to its parts, whereas complex cannot, then it is true that the complex is immeasurable, thus models of complex systems are characterised by an opacity intrinsic to the model itself.

The human brain and natural language are two complex systems. The organic brain is considered one of the most complex system known and natural language is not linear; it is not analytical, nor clear at all. The research will elucidate the ten characteristic of Pedartgogy as a complex system using another example: Art.

1. The active artistic students in an educational system certainly comprise a **large number of elements** (usually thousands upon thousands);
2. The various students interact by reading, creating, envisaging, and exchanging ideas for describing, narrating and understanding. These relationships change continually in the world of art;
3. The Student<>Teacher dyad interacts with a large number of other elements: schools, books, galleries, artworks, other institutions, other students, other teachers. For this reason it is open and cannot be classified. Pedagogical's student-teacher dyad is based on both the parties being both artists. In this way, there are two realities united at a superior level in a 'libertarian' way; i.e. without distinction in the quality, since both artists and the research consider art to be the primary form of creating meaning and awareness of man. Some teachers or students are more active than others, but this is not a function of the amount of the knowledge the teachers transfer or the students (re)produce, and is not indicative of their influence on the Magisteria;
4. The interaction is non-linear: knowledge can receive quantum meaning, small artistic insight can produce a large amount of meaning¹³;
5. The Student<>Teacher dyad primarily interacts with others in their vicinity, not necessarily in a spatial sense: local artists, local system of art, local cultures, local libraries, local galleries and museums, as well as their colleagues. Both however, can easily interact with more distant parties via telematic means; i.e. intermedia (Youngblood, 1970) frameworks such as blogs or websites;
6. The activity of the Student<>Teacher dyad may eventually reflect back on itself. A good insight, idea or artwork, can produce good positive feedback in terms of ideas, artworks, and an unclear insight, idea or artwork can produce negative feedback in terms of stopping ideas, or not generating artworks;
7. The educational system of art is certainly similar to an open system. It is impossible to definitively define its borders. It is continuously influenced by the political system, the markets, science and technology, as well as media, international relationships, society on the whole, etc. There is a constant flow of visions, ideas, artworks and information throughout the educational system;

13 Marcel Duchamp, *Fountain*, signed "R. Mutt", 1917.

8. Since the art system is driven by the human (life) need to produce information, knowledge, and meaning, it can never be in a state of equilibrium. It never stands still, not even in a contraction. Even when we refer to a 'stable' culture, or a clear knowledge, the 'stability' has to be understood in dynamic terms, it is a stability that can be described as *a stable stream in the flows* (with lots of *vortex*);

9. Cultural artistic systems are deeply influenced by their *history*. Today's meanings largely depend on yesterday. Many important artistic trends change fairly slowly over long periods of time, but specific influences can cause sharp changes;

10. The Student<>Teacher dyad can only act on the available information. It does not know what the whole system is doing. When, for example, a student wants to conceive an artwork, he devises a number of factors from his known knowledges and experiences: how much of these knowledges and experiences does he need? Can the dyad system afford it? The effects of this relation of the local information with global information are not normally taken into account. However in today's Global Village, through the internet and satellites views, there is globalised information available, so we face the paradox that the 'whole of the system' resides in the local communities of Student<>Teacher dyads, artists. From here we also arrive at the paradox that in the Global Community, the 'whole system' is in the *local* relationships.

This scheduled description of Pedartgogy's educational system is thin, but there are reasons for this. Research has described the elements of the interactions of the systems on the level at which they operate. If the research moves to a wider cultural phenomena (national education, global knowledge) nothing extra needs to be added; the phenomena mentioned emerge as a result of nothing more than the interactions between the various elements of the Student<>Teacher dyad. The interactions often take the form of clusters of elements which co-operate with each other, and also compete with other clusters. An Academy, for example, is nothing more than a number of individuals - readers, lecturers, professors, chairs, pupils, students, researchers, clericals, alumni, ... - grouped together to perform specific functions. The components of the complex educational (and research) system do not

consist of different types of things - ... academies, cultural heritage, schools and individuals ... - ; they consist of individual agents clustered together to form the larger-scale phenomena. The higher-order complexities we hope to understand reside not in the individuals, but in the opulent pattern of interactions between them. We can say that: - [...] *An element in the system may belong to more than one clustering. The clusters are dynamic and interact with other clusters, both directly as well as through the individual member they share with each other.* (Paraphrase of Cilliers, (1998) 2000: 7)^{ccciii}

V.VII Knowledge learnt by itself (Second Order Pedagogy)

“In order to respond appropriately to its environment, a complex system must be able to gather information about that environment and store it for future use.” (Cilliers P., (1998) 2000: 11)^{ccciv}

In Educational terms, this assumption means that the system takes the form of the information important to its coherence. This is a long-standing philosophical problem: - *“How does the brain represent the world? What is the relationship between linguistic components and the objects they describe? When is a theory an adequate description of the phenomena it tries to explain?”* (Cilliers P., (1998) 2000: 11)^{cccv} These questions were posed and *“solutions to these questions have been suggested, but they usually postulate a one-to-one correspondence between elements of the system and specific external causes. This atomistic approach is the legacy of the analytical method and usually takes the form of splitting the structure of the system, and the meaning of that structure, into separate levels.”* (Cilliers P., (1998) 2000: 11)^{cccv} From this point of view, understanding representation is not adequate for a complex system, in fact meaning is the result of a dynamic process founded in the relationships between the components of the system itself. - *“Meaning is the result of a process, and this process is dialectical [...] as well as historical, in the sense that previous states of the system are vitally important. The process takes place in an active, open and complex system.”* (Cilliers P., (1998) 2000: 11)^{cccvi}

Knowledge could be seen as the fluid result of a cybernetic process involving all elements of the system, knowledge it could be a never ending dynamic-dialectical process, that is always both false and true, always fake. It is founded in the social verification of the meaning, that could be seen as an emergent phenomenon of the falsification; i.e. virtualisation, of the realm.

This falsification/virtualisation is possible because of the verification of an empty space, that is the 'creative' side of the truth. This 'creative' side of the truth is rooted in the 'virtualisation', through languages, stories, myths, visions, of the experiences of human beings.

Knowledge is a complex system and as a living organism, it has to have its structure and “[...] *be able to adapt that structure in order to cope with changes in the environment.*” (Cilliers P., (1998) 2000: 12)^{cccviii} So, the key concept to draw from the theory of complex systems and apply to a theory of education is the notion of: self-organisation or learning from one's own coherence-homeostasis.

In an Academy of New Technologies for Art (i.e. Art & Technologies) the Student<>Teacher [S<>T] dyad works on the edge of an always already new relationship between nature (realm) and technology, and we can only probe always already new meanings of new human ratios. For that reason, it is extremely valuable to adopt a libertarian research based primarily on the always already new surmise and the adequate evidence (once founded and collected). In fact, what students (and teachers) need is 'a possibility of new knowledge'. What the S<>T dyad has to create is a set of symbols; these symbols receive a configuration from the academic apparatus, then “*next step is to make these symbols 'represent' something*”. If each of the symbols stands for an effect (new behaviour) in technology, or/and (a behaviour) in art, or/and (a behaviour) in language, then the rules of the academic system (the grammar of Academies) will determine the combinations of words and concepts “*that can be made in that (formal) language*” (Cilliers P., (1998) 2000: 12)^{cccix}. And then the permissible states of the system then translate into valid sentences of that language.

Having done this, we must return to the beginning of the process, as the Academy becomes a homeostasis that creates meanings, these meanings are constructed, and founded on entropy generated uninterruptedly by the Nature-Anthropogenesis-Technics system. Culture works to stultify this entropy, as it creates shared meanings over time which become standardised in a 'virtual correspondence'; nevertheless, culture will never succeed in its labour, entailing the cessation of the very value of the meanings, as part of and result of a non linear and uninterruptible dynamic process, entailing the stoppage of the process itself

“Meaning is conferred not by a one-to-one correspondence of a symbol with some external concept or object, but by the relationships between the structural components of the system itself.[...] Meaning is the result of a

process, and this process is dialectical – involving elements from inside and outside – as well as historical, in the sense that previous states of the system are vitally important. The process takes place in an active, open and complex system.” (Cilliers P., (1998) 2000: 11)^{cccc}

The fact is that the philosophy of science and the scientific community has paid little attention to the developments of the complexity theory, post-structural and constructivist meditations. Structuralism and constructivism, although post-structural and radical, are applied to language, literature, culture and art, “*but the theoretical scope therefore is much wider.*” (Cilliers P., (1998) 2000: 22)^{cccci} In our anthropocentric trans-modernity we all are on the edge, and as in all ages characterised by imbalance in the ratio between experience and symbols (meaning can be described as results of the experience over creativity, as a fractional equation, $E/Cy=M$), language is the ultimate tool that allows an interpretation and translation of our entire life-world. For this reason language could also be used by science, especially if we consider that “*The great advances made in science [...] were modernist in nature [...]*” (Cilliers P., (1998) 2000: 22)^{ccccii}.

This sentence embed the problem of the difference between the traditional European continental philosophy (German, Italian) and the pragmatic philosophy (English and American). The problem is linked to the level of meaningful interaction related to the two tradition. The continental incorporate logic and a metaphysical approach, the pragmatic seems much more related to practical facts, the 'experiences'. The Structuralist and constructivist, and their Post movement, are a style of thinking for the complexity and education can benefit from such an approach, no matter if it will not scientific as we know, today the Pragmatic side of Art is very useful in a new Pedartgogy.

As stated by Thomas Kuhn “*the principle of falsification provides only a mechanism for getting rid of ideas*” (Cilliers P., (1998) 2000: 23)^{cccciii}; falsification could be critical in an Academy of Fine Art in today's technological re-mediation (Bolter, Grusin, 2000) of the Trans-Modernity.

The trans-modernity could be seen as part of the Anthropocene and as a liminal age in perpetual passage where the equilibrium between man and technology has reached direct cybernetic levels; i.e. the inventions fall on the human experience incredibly quickly; this does not allow the new artefact/effect to be culturally symbolically mediated according to the traditional patterns/times of language and human communication. The

radio took 36 years to reach 50 million individuals and thus become a mass medium, Facebook in 6 months reached the same status, not allowing for a mediated sharing of the experiences afferent to it, and therefore not being culturally obviously fully codified.

Complex Meditations, conversely, are inclusive and trans-disciplinary and would actively encourage the generation of novel concepts, ideas, terms that would create a resonant new system of humankind's shared symbols. Through Magisterial knowledge, models from different disciplines can be transformed and incorporated increasing the options available. - *A post-structuralist [artistic] approach would lead [...] to focus more on practical results, and the implications of these results, and less on the generation of an abstract meta-narrative that has to legitimate [...] knowledge.* (Paraphrase of Cilliers P., (1998) 2000: 23)^{cccxiv} This is possible through the use of a pragmatic artistic approach, more sensitive to the contingencies of our anthropocentric 'trans-modernity'.

As T. H. Kuhn (1962) stated, general scientific method adopted the correct method to eliminate '*a priori*' possible results: experiments are designed in order to forecast the results inside a prescribed pathway/vision, this is useful in order to control the amount of the variables and is instrumental in restricting the possible interpretations of the results.

But in our trans-modernity this 'method' could appear too firm.

Today we have to question whether we need to be part of the process, as with the pervasive, widespread diffusion of the digital technics we are, in real time, a meaningful generative complex system.

V.VIII Pedartgogy as a subversive and libertarian praxis

In our contemporary test-society (Zielinsky S., 2012)^{cccv}, 'the meaning is negotiated' and we have to reject an interpretation of science as representing the totality of all true knowledge.^{cccvi} Pedartgogy aims to explore the narratives of each single student's understanding of knowledges, portraying knowledges as a plurality of smaller stories that function within the particular contexts where they apply, in Ascott's direction of the shift "from coherence to contingent". The paradox is that it is impossible to know but it is impossible to not know.

A classical criticism directed at post-structuralism maintains that if all forms of the description of the real

possess only the local justification of the subject and its interlocutors, the following will result: a fragmented knowledge that will not be able to implement a sharing of meanings beyond a local level; a relativisation of the whole knowledge; a lack of control and verification of the descriptions and no description/narrative will be seriously verified; a knowledge in which each reality/narrative is independent of the other; a knowledge made up of many discrete knowledges that will tend to isolate themselves undetermined communities of the contexts of discrete narratives;

The result of this knowledge is unacceptable for many people, in particular for those who sought an objectivity of the knowledge; i.e. the philosophers of science. However the research has experimentally operated seeking to satisfy the needs of these new generations that are not 'in the time', rather they are subjected to a continual updating and shuffling of the meanings. As media like Facebook only take a few months to reach the critical threshold of 50 million users and thus become a mass medium, since the arrival of these media we can no longer produce meaning with the traditional methods like the philosophy of science. In this sense, we could provocative argue that Facebook makes philosophy obsolete.

For this concrete reason, the research has set out to draw a territory that contains an 'Artistic Methodology' that is not scientific, but rather plays like science.

It must also be radical since it postulates that the non-existence of a fixed truth.

On the contrary it hypothesises that the truth only exists as a dynamic process and always in a plural form. Pedartgogy formulates hypotheses that are validated only within their contexts by the actions of the subjects-knowers, and thus cannot and will not verify the truths of its assumptions with the methods of classical philosophy and science.

According to Pedartgogy, the idea that the refusal of the fixed and univocal point of view represents the end of the real is a methodological error, since in the contemporary condition of the Always Already News, it is not possible to have a fixed point of view.

For these reasons, Pedartgogy can only conceive the self as 'producer of relations', as a node in a network.

In the years 2004 to 2011, the lesson on Structural Anthropology by Claude Levi Strauss reached its acme in the quotation: "the self doesn't not exist, but is the reflection of the unconscious mechanisms of the

communication that runs through us. We do not communicate, rather we are communicated.” The students have always accepted and reprocessed this meditation, confirming with their approval and enthusiasm the real excellence of this approach.

Pedartgogy is a self-organising system in which the meaning is generated through always already new dynamic processes, and not through the passive reflection of an autonomous agent who orders everything according to his sole point of view. In this scenario, rather than being autonomous and isolate, the discourses of the S<>T dyad are in constant interaction between the parties, which do not exist by themselves; the parts collaborate with each other to create a territory of meaning, the always already new boundaries of which are the real stakes. In fact, in the social network of the Test Society (Zielinsky, 2011), the discourses are distributed on a network constructed of many individuals. A discourse becomes a mere 'gravitational field of verification' of a vast group of individuals that exchange local information. Each individual is also part of many relational contexts.

An individual can be a mother, a scientist, a consumer, an artist, a politician. Pedartgogy reveals how this shared distribution of many discourses constitutes the anthropocentric condition of the individuals-students, and that this condition undermines the accusation of isolation of the local discourses. Following the observation of Amos Bianchi (NABA, Media Design & Multimedia Art 2005) on the generation of Entropy of the Academy, it is clear that the system, Pedartgogy, combats entropy without extinguishing it, at the cost of the end of the system itself. To optimise this process, Pedartgogy must be as open as possible, not as structured as possible. For this reason, Pedartgogy finds itself with Art, an open system, and with the complexity theory, an open theory.

Pedartgogy retrieves Lyotard and researches paralogy, that is an unstructured discourse that works as the self-organised critic: the system organises itself through the harmonisation of its sensitivity and external stimulus. That is to say, the self-organising system seeks to stabilise itself in a critical point between a structured order and chaos. Self-organising criticality is the mechanism through which the networks diversify their interior structures. The more the structures are different, the more structures rich with information can be memorised and processed. And the process is the result of a ferocious competition between unity or groups of unity.

Pedartgogy retrieves from Francois Lyotard (FR, 1924-1998) the idea that the central forces in a social

system are Paralogy and Dissent/Objection.

In the praxis of the course, starting with the first lessons in 2004, objection was requested from the students. In fact the consensus is an acquired horizon. The individual-student was requested to critically dissent from the hypotheses and theories formulated by the teacher. The students leave a school of obligation that fails to educate them in criticism and that sets consensus as a standardising and standardised position. Pedartgogy implements a homeostatic principle; i.e. to make an *a priori* criticism of each position in order to assume a configuration that always already involves a re-elaboration that is a praxis, a behaviour, a process.

In 2004, within the BA in Media Design & Multimedia Arts, the research postulated the existence of a power that destabilises the capacity of explanation, manifested in the promulgation of new forms for understanding or in proposals to subvert the explanation or points of view. The individual-student is encouraged to criticise and contradict the explanations and views of the teacher, who must be able to resist these de-constructive actions and 'defend' his positions, and thus revealing the intimate coherence and the subjective passion that make the experience real. The student does not criticise but proposes.

Pedartgogy's insistence in objection is subversive. It is opposed to the consensus and to the academy as a producer of unique thought; it is subversive in relation to that of the philosophy of science. Which has always tried take the place of religious metaphysics and hermeneutics, criticising the normative consensus with the imposition of a superior normative consensus. Religious metaphysics is founded in hermeneutics is always already interpretable, and therefore more libertarian. The role of science has been to fix knowledge in the coordinates of an interpretive grid, although the conditions necessary for an objective verification have always been problematic, or rather an experimental evidence can *support* a theory but never *prove* it in an absolute sense. The experimental process cannot include all the factors that can be involved, nor predict how a change of paradigm or a new knowledge could change the interpretation of experimental results.

Given that theories can be confuted, the verification process has been replaced by a process of falsification. If we cannot add to the interpretive grid, we can at least disqualify some of the undesired meditations. Anything that is too complex or that contains elements of uncertainty is left aside.

Consequently, a large part of human knowledge is discredited and unscientific – most of the arts, a large part

of romantic meditations, as psychology, the so-called sciences of the spirit. After German Naturphilosophie (later XVIII C.), the scientific model was affirmed and the figure of Goethe's Faust (1808) was driven by science towards the world of poetry and literature, limiting and reducing the mankind's great project as knowledge testified by Goethe himself.

Subversively taken to the extreme consequences, the theory of falsification leads to the fact that only abstract *a priori* truths are really scientific.

In order to develop and spread knowledge in an Academy, we must spread the discourses without trying to insert them into permanent and fixed grids. Paul Feyerabend (AT, 1924–1994) argued this position in his work *Against method* (1975) and insists that we need a scientific anarchy in which all the marginalised voices can participate in the construction of knowledge. Pedartgogy adopts this same position, arguing that there is no immutable method that can determine which form is canonical and which is not. Pedartgogy attempts to produce meaningful relations between different subjects and discourses, and it does this in response to the fact that today all knowledge is a social network, and the proliferation of meanings and discourses is an inevitable characteristic of a complex and self-organising network.

Pedartgogy does not aim to establish an anti-scientific position, but rather to reclaim the cognitive value of libertarianism (Bey A., 1994: 1-6)^{cccxvii}; it considers the conditions of knowledge in the Anthropocene (Crutzen and Stoermer, 2000) “out of time”, and complex. In a “Test society” (Zielinsky, 2011), marginalised voices become central.

Dissenting voices have to enter the “agon” of the network, where their importance is dynamically determined in the context of many stories, needs and objectives of the system.

Pedartgogy face the problem of its *recognition* or verification¹⁴ within its group of reference. As such, Pedartgogy appears at the time when the question of the object of knowledge is transformed into a problem that lies in defining the methods of its transmission, and according to this phrase, the knowledge is resolved in itself. Pedartgogy aims to re-present, to make the knowledge present again, the term *representation* derives from the Latin *re-ad-praesentare*; Pedartgogy can also be seen as a process of the verification that places the individual-

14 i.e. reference to Peirce;

student at the centre in his immanence (artist), who in turn is seen as a theory of essential *meaning*. And it is the context of computational modelling and the visualisation of complex scientific data, such as the signals received by the Hubble from a pulsar star, that re-present to us a problem of representation; i.e. what is the relation between the phenomenon and its representation?

How can Pedartgogy, a complex network of interconnected principles, open, and based on family similarities, on non-linear processes, on beliefs and desires and on analogies, represent a concept-object, and/or the set of concepts-objects?

What is the relation between the structure of the pedartgogical method and the phenomena of sharing that it generates?

The point the research highlights is that Pedartgogy must be a system of re-cognition of knowledge compulsorily open since it must operate within the perennial tests of the trans-contemporary anthropocene and must also respect the rule of the homeostatic academy: to be innovative if society is conservative and conservative if society is innovative¹⁵.

Pedartgogy as a model of a complex system, it must be as complex as the system that it intends to represent. It produces a cartography populated by 'conceptual characters and landscapes', 'passeurs', 'demons'... it sets itself the objective of emulating the capacity to produce, codify and store information in this new system, and the objective of copying the system, or rather the environment. Pedartgogy is at its roots, behaviour, or rather the sharing of a plane-path of immanence that are not linguistic rules but pragmatic acts (like this research), actions such as the crossing of a territory, observing, expecting. In this sense the Pedartgogy's theory of representation assumes the posture of the meaning: it is an attempt at explaining how the man-environment proportions become communicative and significant because they are always already pragmatic.

Pedartgogy then, is a cartography that is nevertheless another representation, an abstract symbolisation of the human experience, of crossing and describing a space that is also and above all virtual, in as much as its ontology is continually shifted and recreated.

15 Sole24ore, on 14/03/2012 The Encyclopedia Britannica announces that it is stopping paper publications, on-line at 20/03/2012 www.ilsole24ore.com/art/notizie/2012-03-14/britannica-stop-pubblicazione-carta-084954.shtml?uuid=AbIDeh7E. - at this point the Academy must become conservative and start studying the forms and trends of printed paper;

The research asks itself the question of what is the relation between the structure of Pedartgogy and the phenomenon of representation-theory that it generates? How can this subversive pedagogy represent the information of the dominion it describes? The answer is inscribed in the Pragmatics of Human Communication, that is it behaves as an original homeostasis that produces shared behaviour and therefore, following the three axioms of human communication (behaviour-feedback-meaning): sharing-verification-signification. Pedartgogy operates within the highly symbolic academic context, founded on the Student<>Teacher dyad - the research does not stop giving value and greater importance to the figure of the student in the academic process, the true teacher in these times of 'Trans-modernity' and the 'Test-society' in which new experience counts more than the settled aesthetic-pedagogy-, which produces communication through the sharing of practices. After a determined period of time produced by the cycle of the academic years, semesters, by the seemingly endless stream of exams and assessments, these practices produce feedbacks that in turn, after a stream of symposiums, conferences and publications, produce names, terms, norms, analogies, shared metaphors. This production is the meaning, the output of the academy.

V. IX Always Already New Meanings

This research avoids adopting the classic position of the “mentalese” of Noam Chomsky (1957, 1972) and Jerry Fodor (1975, 1981). The writer to have most inspired this part of the research is Hilary Putnam (USA,1926)¹⁶, who in 1987 definitively departed from the functionalist approach: he argued that if it is true that different neural states can effect the same functional state, in the same way an identical mental state can be implemented by different functional states.

Following this reasoning there is no unique mental algorithm that corresponds to a proposition. In 1988 he wrote *Representation and Reality* in which he developed her critical meditation - “A Chomskian theory of the semantic level will say that there are 'semantic representations' in the mind/brain; that these are innate and

¹⁶ As founder of the functionalist positions, whose central idea is the analogy between the mind/brain relation and the software/hardware relation, Hilary Putnam has repeatedly modified her positions. In the early 1980's he added that functionalism is only one of the possible theories through which reality can be conceived: in fact for Putnam, functionalism can be fruitful, but at the foundation there is the problem of a specular correspondence between language and the world. Putnam then adds to a radical criticism in the essay *The Many Faces of Realism* (1987);

universal; and that all our concepts are decomposable into such semantic representations. This is the theory I hope to destroy.” (Putnam H., 1991: 5)^{cccxviii}

For Putnam, the Fodor/Chomsky model is founded on 'mentalism', that is the illusion that there is a 'mind' that presides over games. Putnam inspired the research with her three critical arguments against 'mentalism', which were immediately converted into founding rules of the Academy and Pedartgogy:

1. *The meaning is an holistic phenomenon (syncretic and always already vague)*: according to Putnam, there is not just one but many relations between a sign and the nexus (objects/experiences) to which it refers. The meaning is generated by the activity of a group, not a soloist. 'Holistic' refers to the fact that we need to compare ourselves with a network of relations when we are dealing with meaning. The research uses the term *holistic alongside* the term *syncretic*, derived from Roy Ascott and intended as a network of relations that are 'not coherent between them.' From here we derive the hypothesis that in the trans-modern anthropocene, we must abandon the modernist view of coherence, a rule linked to the ideo-logies that today are no longer appropriate for describing the current test-society. Therefore for Pedartgogy: the meaning is a syncretic phenomenon; according to Putnam, a positivist bias would reduce the meaning to definitions whose components allow for interpretations in a digital-atomic way. For Pedartgogy, the meaning is 'analogical': it cannot avoid maintaining a certain 'vagueness'. The meaning, being *always already vague*, cannot arrive at a rigid definition; the anthropocene, the trans-modernity, the test-society, lead the meaning to not seek coherence but a contingency that could not exist without vagueness;

2. *The meaning is always already a normative belief*. Putnam argues that beliefs and desires are always implicated in the meaning; many students and teachers have never seen an atom or a DNA spiral, nor have they every clearly seen what art is. In realty, if we accept Wittgenstein's assertion on family resemblance it is impossible to clarify what art is. Amongst the students and teachers, the understanding of what an atom is, what DNA is and what art is founded on a system of shared *beliefs* and *desires*, given to them by the institution and the cultural system. And given that not all students and not all teachers possess the same level of knowledge/experience regarding the atom, DNA and art, these same beliefs differ between them, generating a

gravitational galaxy of understanding. For this gravitational galaxy, we could even define it as a 'heterogeneous gravitational fields', of understanding to work, it needs the "*principle of (interpretive) charity*" (Blackburn S., (1994) 2008: 62)^{cccix}. The 'Principle of Charity' assume a new post-human dimension through his development as 'Principle of Humanity', this will be developed in new study on and between nature, humankind and technology. The principle of humanity was named by Richard Grandy (assistant professor of philosophy at Princeton University) in 1973, states that when interpreting another speaker we must assume that his or her beliefs and desires are connected to each other and to reality in some way, and attribute to him or her "*the propositional attitudes one supposes one would have oneself in those circumstances.*"(Dennett D., (1987) 1989: 343)^{cccxx} The academic dyad is based on the interpretive charity that the student gives to the teacher; i.e. the S<>T dyad assumes the general coincidence between the beliefs of the student and those of the teacher: in other words, the student would be unable to interpret the teacher if he did not attribute him with the ability to discern the truth, and vice versa;

3. *The meaning always already depends on the environment.* This argument refers back to the theory of the gestalt and the steps of what Marshall McLuhan (CA, 1911-1980) describes in his works using the *Gestalt-Theorie*: our complex interactions with the environment, our being literally immersed like fish, play a role in the foundation of the meaning, which means that changing the environment changes also the foundations of the meanings, independently of any hypothesis of innateness¹⁷. So the research, following the paths marked out by McLuhan and Putnam, observes that the individuals-students are not abstract subjects that take on the academic environment, but rather they are produced by the academic environment. In this sense then, the best academic reforms are not made at a level of the content, but at a level of the environment; i.e. changing the environment changes the forms of the individuals-students. In this sense, the implementation of Roy Ascott's educational experience of the Groundcourse in the BA of the Faculty of Media design at the NABA, in the academic year 2009-2010, is a highly valid testimony to this theory. In fact, the insertion of an 'artistic' approach to the questions of the experimental research in media was highly complex while the research attempted to act on a level of the content of the course, yet it produced results almost immediately when the research acted on an

17 Putnam's criticism of Jerry Fodor, 1975, 1981, and Noam Chomsky, 1957, 1972;

environmental level, introducing a re-edition of the Groundcourse into the academic program. The students reacted immediately, producing an approach that was much more *art/being-oriented* than *technology/role-oriented*;

4. *The meaning is always already an historical concept.* The meaning is a complex system and the state of complex systems is determined not only by the external conditions (experiences), but also by the history of the system.

V. X The S<>T dyad as a network

The research sees the academy as a network of individuals-students and teachers. This network, simplified into the dyad S<>T, student is not greater than nor less than the teacher and vice versa, is structured on a sufficiently ample number of interconnected nodes between students and students, teachers and teachers, students and students and teachers and teachers, in a mechanism of exponential connection. Each node receives varied and different input from many other nodes. These nodes are different in 'weight'; i.e. the normal-student node is equal in weight to another normal-student, but starts to weigh more when the node is of a talented-student, or a prized-student; nodes relating to students-teachers weigh more, and the node of the director of the faculty or an excellent student weighs more still. Each connection between the nodes possesses a certain 'force' generated within the relation (within and between the nodes), and in the theory of neural networks (to which this modelling relates) this force is called 'weight'. These weights can be positive/+1 (exciters), negative/-1 (inhibitors) or neutral/0.

The concept of gnoseological openness is the same as gnoseological pessimism, it argues that it is impossible for knowledge to make knowing become a pure process and opens infinite possibilities to knowledge itself, which is an abandonment of something immutable and opens up to the infinite possibilities of the attempts.

So in regards to the gnoseological opening of the research, the nodes *per se*, are considered as very simple computational units that calculate the sum of the weights of the inputs received, and pass on these values through non-linear functions of transfer. The accumulation of these transfers generates a series of internal recurrences within the system itself, which can be defined as 'cultural behaviour', thus a form of cultural reflection.

Continuing the explanation: the teachers and researchers of the academy network are units of input thanks to their capacity to receive information from outside the system. These inputs, based on their weight, percolate through the largest system; i.e. the system that includes the students. In a similar way, the students act as units of output, and it is here that we can find the result of the network's operations. But things get more complicated, in fact in the test-society, the value of the student is equal to that of the teacher, both for the external inputs and for the internal inputs, and for this reason it is fundamental to maintain the research, or rather the role of research to the Teacher node, and also to the S<>T dyad - the experiences of the students with the new media are many times more sensitive to the contemporary than those of the teacher whose meanings are inscribed in time-. In this way the teacher participates in the output of the system, an essential condition in order for there to be parity between the value (not the weight) of the student and the teacher. If the external input of the student is not considered and research is not maintained in the academies, we will find an unbalance in the network towards an output generated only by students-nodes, which will be very detrimental to the result, as it will be avulsed from the outside world, from the system and from the context, and thus from the meaning. Which is what happens today in many Academies where they work on New Technologies for Art.

The S<>T network is the functional nucleus of the academy, and functions primarily thanks to the weight of the nodes. For this reason it is important to have nodes of different weight, in order to spark differences of potential meanings.

But are things determined by these weights?

The theory of complexity and of the neural networks states that a neural network is fundamentally trained showing them examples of how to carry out determined tasks. It is the example of the teacher that prepares the system, the example of the S<>T dyad, the example of the thesis-output, the example of the courses and previous workshops that train the system.

In fact, it is for this reason that a new courses takes at least three years to properly establish/configure itself. The research, in the frame between 2005 and 2011, has observed that a new course takes three years to generate its 'weight.' For the first year the course has no memory of itself, and is the equivalent of a system without experience. The students frequent the course but the heuristic value is very low. For the second year the course

has stored its form and the ex-students will pass their judgements that will influence the new students. For the third year the scheme repeats and the course begins to generate real content. In the NABA Faculty of Media Design and Multimedia Arts, this scheme is always used to activate new courses. Another example is the course in the History of Cinema, a classical course that presents internal elements typical of an orthodoxy and external elements that are completely and decidedly innovative. The traditional history of cinema is affected by the historicisation of the subject, which has sought to become a true literature and has turned to schemes of literary criticism to decodify its films, producing extremely well prepared teachers within a discipline anchored to linear cinema. On the exterior, however, cinema is one of the most greatly evolving contexts due to the crisis of the display (and its hybridisation with video art and the forms of contemporary art), the cinema theatre, the reduction in the costs of the technology. Today it is possible to make great films with very low budgets (Winterbottom M., *In This World*, BBC UK, 2002), and above all we see the end of linearity and the dominant arrival of interactivity with the selection of a video game (*L.A. Noire*, Rockstar Games, USA 2011) at the Tribeca Film Festival 2011 directed by Robert de Niro. Now the point is how to introduce new courses that look to the Post-Cinema.^{ccccxi}

What Pedartgogy has done is to prepare the system through example: the S<>T dyad network is called on to complete a task of classification, e.g. to classify films, video games, linear works, interactive works; the system is trained by showing examples of linear films, e.g. John Sturge's film *The Magnificent Seven* (USA, United Artist, 1960), and things that can be confused with linear films, e.g. *The Royal Wedding* of Prince William of Wales, and Catherine Middleton, (BBC, 29/04/2011) and in showing examples of non linear works, e.g. Quantic Dream's video game *Heavy Rain* (February 2010), and of things that can be confused with non linear works, e.g. the collections of *Found footage* of families. In the training phase, each presentation defines weights of interest in relation to the experience that the teacher and/or the student perceives to have in common. It may seem strange that an individual can have more experiences than Steve McQueen (USA, 1930–1980) in *The Magnificent Seven* (USA, United Artist, 1960), as opposed to in his family *Found footage*, but the global village has the ability, through the television (today the computer), to place Steve McQueen among those family images, thus creating new relation and hierarchies.

The network in this way adjusts the weights to minimise the discrepancies between the inputs and the

outputs¹⁸. This training/preparation continues until the S<>T dyad network converges at a set of weights that allow the system to distinguish between the various examples; of cinema and non cinema (it is logical that the assumption is that the department of the History of Cinema remains called just that). If the examples of the training are adequate, the S<>T network becomes capable of generalising a classification Of films that have never before been seen. Thus we obtain the result of introducing a new area of study, in a network that regulates itself producing knowledge.

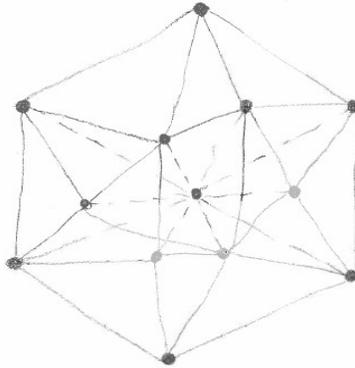
V.XI The relation between weights, type and quantity of information

As the S<>T relationship codifies the information coming from the outside world, depending on the relation between the weight, the type and the quality of the information, at the time of the research two substantial networks have been identified:

A- The first network that the research experimented with in the NABA Faculty of Media Design and Multimedia Arts, starting in 2005, set the nodes of the network as specific concepts and the weights for the relations between them. The research hypothesised 'node based didactics', i.e. where each teacher had to present a program divided into conceptual nodes, so that they could easily control a map of concepts necessary and sufficient to activate heuristic meanings in the pupil. The faculty was then tasked with filling the empty spaces between the nodes themselves though the production of significant flows of ideas, while the teaching body was connected from node to node. It is a simple system for constructing a didactic network that can verify itself, or rather that verifies a sufficient dominion of information on a subject, and that activates dialectics; i.e. connections between nodes, whether positive +1 (excitators), negative -1 (inhibitors) or neutral 0. It is a classic semantic network. The result was very encouraging, as this structure allows:

- A.1- rapid control of the base concepts to be put into the territory as a cartography of meaning;
- A.2- non overlapping of the teachings between the teaching bodies-departments;
- A.3- connections between the concepts-nodes;

18 Linear films and non linear films;



img 6: Punctuated didactic

B- The second type of network that the research experimented, was in relation to the recognition of figures that did not necessarily belong to the same genre. This is a network linked to the research, to exploration, what we could define as a network of probes. In fact the coherence of the figures, their pattern, assumes a function of a probe towards other figures in search of analogies, identity, contiguity. It is a network of 'distributed representation';

A phenomenon observed by the research at the academy is that when a network becomes too strong, as in the case of a teacher and/or group of teachers that 'fortify' a network of type A or type B, it hyper-adapts to its connections and no longer generalises, becoming heuristically weak. The research must be always already free and not imposed.

V.XII The complex characteristics of the educational/pedagogical networks

These complex networks have characteristics:

1. These networks operate with *complexity at implicit level*, in fact they resolve complex problems without an explicit theory on the structure of the problem. According to this rule, Pedartgogy uses the *Tetradic Game* (see int ref *Tetrads*) to analyse and explore the problems. The *Tetradic Game* is a network that allows you to face a problem without a theory of the structure of the problem. This is very important in today's trans-modern Anthropocene (see int ref *trans-modern*), in fact the diffusion of new man-technology-nature feedback is so rapid, that the traditional cultural form (*meanings in time*) cannot deposit shared aesthetic concepts, and for this reason the individual, in our case the student and the teacher, finds himself operating without theories of the structures of the problems. The Tetrads are a complex and non linear network, and for this reason they can be used as an heuristic instrument. The Tetrads are neural networks that implicitly codify the relations between ample quantities of factors and elements in a non-linear distributed path, and in doing this they eliminate the need for an explicit and complete theory. When a tetrad (a network) is ample enough, it will produce enough redundancy to be able to codify an ample spectrum of factors simultaneously, producing new knowledge. The rule of complex systems dictates that the network used as a model be as complex as the system that it attempts to codify. That is to say that the tetrads are complex to the same degree as the complexity of the system that it heuristically defines. From a practical point of view, the problem is reduced to finding a suitable path of presentation for the information in the network, and for the presentation of the resulting information outside of the network. The problem becomes a question of representation, in fact the academy too is affected by the essence of humanistic modernity, i.e. by the scientific research that is essentially *representation*. It is necessary to stop trying to represent the results and try to involve the processes that emerge. In fact, scientific representation involves the mental anticipation of the conditions that make it possible for something to reveal itself, while a complex network like the Tetrad does not anticipate, but probes and codifies a system in another system of relations in which the subject that enacts the network is also present, in our case the S<>T dyad;
2. The second characteristic of distributed networks, which in this case refers to the S<>T dyad, concerns their *ability to generalise the solutions*. Once the S<>T dyad, as a distributed network, has been trained,

informed and educated for a specific objective, it is capable of operating with new inputs that are not identical to those used to train, inform and educate it. It is a form of deuterio-learning, which is very significant within Pedartgogy;

3. A third characteristic of "distributed representation" concerns the reliability, in the sense of the performance, of this approach. In fact, the codified information is not merely pertinent to the student or the teacher, to be lost at the end of the cycle of study. On the contrary, it is distributed in the system itself and therefore persists beyond the second rule that: the more the network is distributed, the weaker the degradation; this is because the system acquires the capacity to organise itself. Reliability is vital in systems that must operate with the contingencies of the real world, for this reason the use of a system of networks like the Tetrads is well-suited and functional in a philosophical pragmatic approach, while it is weak if used for a continental philosophy that operates on abstract idealisations.

In its experimental part, i.e. in the implementation of these hypotheses in the educational practice, the research verifies a critical point when it compares the hypothesis of 'distributed representation' with the traditional teachers. In fact, this hypothesis does not give, does not create nor provide an independent and invariant context of representation. Since the initial state of the two systems is subject to variation, the systems will no longer be able to represent exactly the same concept. This 'vagueness' has brought into crisis the traditional representation that many teachers have of things and of the representation itself which for them is founded on invariance. This position is triggered by the fact that traditional science believes that a representation independent of the context (unchanging) is necessary in order to operate a regime of truth and objectivity. In contrast, the post-modern and the post-structuralist and constructivist theories of meaning, refute this view, maintaining that the contexts (synchronic like the structure of the relations and diachronic like history and memories) are not only necessary for meaning, but they are constituents of it. Since there is no theoretical limit to the quantity of information that can be imported in a network, it is possible to import as much information of the context as desired. At the same time, since the information is distributed, no explicit distinctions can be made between concept and context – these are codified together; the context is always already part of the

representation.

One of the characteristics of post-structuralist thinking is the negation of the singularity of meaning of language. The idea that the meaning of a word is present when the word is pronounced or read or recorded creates the illusion that the meaning is determined. The identification of a determined meaning with a determined word is an example of what Jacques Derrida (FR, 1930-2004) calls 'the metaphysics of presence'. According to the Frenchman, there is no one-to-one relationship between a word and its meaning, rather the meaning is a result of a reciprocal relation between all words (or all signs) in the system. The meaning then, is an effect of the internal dynamics of the system and not of relationships between the components of the system and the objects of the world. This view does not deny all relations and the relationships between the world and the system. On the contrary, the success of a system depends largely on the efficiency of the interaction between the system and its environment. What it denies is that these correspondences occur within complex systems, and the complexity cannot be simplified and reduced in direct relations without the loss of the very capacities of the system that the research is interested in, capacities that emerge as the result of non-linear relations, distributed between elements of the system such as the S<>T dyad. Before this hypothesis, what Pedartgogy proposes to do is to retrieve the practices of thinkers who also found themselves facing the complexity of ideas with limited tools: Friedrich Wilhelm Joseph Schelling (DE, 1775 – 1854), Fredrich Schiller (DE, 1759–1805), Johann Wolfgang von Goethe (DE, 1749-1832), Johann Christian Friedrich Hölderlin (DE, 1770 -1843) .

Pedartgogy therefore, hypothesises that while ever a system changes continuously, i.e. it is not in equilibrium, it is not possible to connect a series of images together as parts of a puzzle that can be inserted into their precise places and meanings, and operates a retrieval of analogical practices of knowledge.

1. **Juxtaposition:** Intended as combination, the coming together of various elements, such as forms and colours. In knowledge, juxtaposition can be seen as a form of composition by contact, which is produced by the coming together of two or more behaviours/meanings that come to form a new one;
2. **Analogy:** analogical knowledge is present in man. In fact, if our knowledge were primarily structured on univocal concepts, or rather connects that only gather the characteristics of a determined being, the student

would need an indefinite number of different and univocal concepts. Furthermore, man would process the concepts able to unitarily understand beings that are similar to each other yet different. By using only univocal concepts we would always have a plurality of different contents, each distinct from the others in a radically syncretic way; but man tends to use a global knowledge, a united view of beings, our knowledge is mostly structured in a way that embraces both what there is to communicate and what is different in the things that we know: this is precisely the principle of analogy. In the etymological sense, analogy means 'according to proportion', 'correspondence'. Next to the univocal and equivocal concepts, Aristotle admits the possibility of analogical concepts that have their roots in the similarities of a relation; hereafter this is known as 'analogy of proportionality'. Science, if it is realist, seems to be the descendent of Aristotle's analogy, while theology seems to derive from the Christian rereading by Tommaso (IT, 1225–1274): the latter in fact first poses the principle in God, while Science poses it in substance. There is therefore an analogy between science and theology, in as much as both are analogical forms of human knowledge, the fruit of the human need to share experiences;

3. **Comparison:** Relationship between two entities (designated by substantives, adjectives, adverbs or phrases) to compare them and identify qualities for pointing out analogies and differences;

4. **Collage;** Technique consisting of applying cuttings and fragments of different meanings to a context;

5. **Portmanteau:** A mixture of meanings, in English *portmanteau word* or *blend*, in French also *mot-valise*; it is a meaning formed by the fusion (syncrasy or haplology) of two different meanings, which more often than not have a part of the meaning in common (from here Techno-po-etics portmanteau/mot valise between Techno and poetics, Tech-noetics portmanteau/mot valise between Techno and noetics and Ped-art-gogy, portmanteau/mot valise between Pedagogy and art).

V.XIII Distributed Representation

A distributed representation is not a representation in the traditional sense of the word. There are no symbols that stand for something, there are no grammatical relations between these, and the system itself does not require a semantic level of interpretation. This is founded in experience, in the praxis. And this type of representation is typical of art, where the artist is an apparatus of understanding of the new human proportions through having

experiences through artwork. The work of art is always an experience, it precipitates the precepts, the intuitions, the concepts and the ideas in a practical act of experience shared between the artist and the public. Of course representation is asymmetrical: a portrait of an artist represents the artist but the artist does not represent the portrait. Film footage of a swallow in flight represents the swallow in flight but the swallow does not represent the film. We should clarify that any theory of representation derives from a specific theory of signs. In many semiotic systems, the sign acquires meaning due to the fact that it refers to something: it represents the referent. The Greek σημεῖον *semeion*, means 'something that refers to something else', for medieval philosophers, "*aliquid stat pro aliquo*", modern meditation studies the phenomena of signification; i.e. every *relation* that links something material present with something else that is absent. As the *Non Pipe* by Magritte means, it is a reflection of art (Magritte R., *The Treachery of Images (La trahison des images, 1928–29, translated as The Treason of Images)*, Los Angeles County Museum of Art (LACMA) USA;). The painting is not a pipe, but rather an *image* of a pipe, which was Magritte's point: *The famous pipe. How people reproached me for it! And yet, could you stuff my pipe? No, it's just a representation, is it not? So if I had written on my picture "This is a pipe," I'd have been lying!* (Torczyner H., 1977: 71)^{cccxii}

V.XIV Pedartgogy as a complex system: spontaneous self-organisation.

Pedartgogy is a complex system. It constructs itself from the environment/context (the academic institution), from the system of all the students, all the teachers and all the clergymen, from the present state of the system from the history of the faculty. - If Pedartgogy has the capacity to satisfy a number of constraints, it can develop a distributed form of internal structure through a process of self-organisation.(Paraphrase of Cilliers P., (1998) 2000: 89)^{cccxiii} "*This process is such that structure is neither a passive reflection of the outside, nor a result of active, pre-programmed internal factors*" (Cilliers P., (1998) 2000: 89)^{cccxiv} but the result of a complex interaction between the Faculty, the present state of Pedartgogy and the "history" of the Pedartgogy of this research (the system learns from itself).

Humanity in the western hemisphere has almost always turned to an organising agent, a planner, an *a priori* principle, an ideology, and almost all cultures have developed a repression towards the spontaneous emergence

of order and structure in the world. In truth, the self-organisation of a system does not conflict with our 'humanity'. Effectively, self-organisation is present in the form of human communication.

In fact as Watzlawick, Beavin, Jackson accurately explain in *The Pragmatics of Human Communication* (Watzlawick *et al*, 1967) the behaviour-feedback-meaning system is self-organising. Self-organisation is a form of development of a system through ordering and limiting influences coming from the elements that make up the system and that allow it to reach a greater level of complexity.^{ccccxv}

A classic definition of a complex system is that it is a network of nodes with a high level of non linear interconnections, in which the non linearity determines a behaviour of the system that is not determined *a priori* by the properties of the individual components of the system. The behaviour of the system is the result of complex patterns of interaction. The research continues with the analogy and pursues the idea that Pedartgogy is a proposal towards the complex patterns of interaction that are in action in the anthropocene (Crutzen, Stoermer, 2000).

1. Pedartgogy is a **dynamic process**. It is not the result of an *a priori* project, rather it is the *result of* continual practices of interaction between Pedartgogy itself and its environment (Students-Teachers-Institutions);
2. Pedartgogy is a system of "**catallaxy**" (from the Greek *katallasso*, exchange, reconcile) that is a 'self-organising system of cooperation and voluntary exchange' between students and teachers;
3. The internal structure of Pedartgogy is based on a continual **adaptation of the system**; i.e. it can dynamically adapt to environmental changes (innovation), even if these changes do not occur with any regularity;
4. Pedartgogy is a **non-linear process**. Self-organisation is not a mere product of processes that can be described as linear, such as feedback. Rather it presupposes non-linear processes of superior order;
5. Pedartgogy is a system founded on **self-organisation**. This characteristic emerged from the exploration and drawing of this map of Pedartgogy. Macroscopic knowledges emerge from microscopic interactions, that transfer small amounts of information between them;
6. Pedartgogy as a system tends towards **saturation**, rather it increases in complexity so that it learns of the

experience; it must 'remember' existing experiences/feedbacks and compare them to the new ones. The information is assimilated by the system and is regulated. The more information Pedartgogy stores, the better the regulating 'analogies' and 'comparisons' that Pedartgogy will be able to produce. The more information/feedback there is, the more the regulations increase, the more the complexity increases, which involves a local increase of the entropy, which needs a continuous flow of information through the system to discipline the system and prevent it from becoming chaotic. So the system emits a discipline, which becomes power that helps to regulate and self-discipline the system itself. That is to say, the chaotic cultural system produces more energy than what is input into the system. This increase of energy/information is the reason why the self-organising systems tend to age: as the excess energy produced by the system tends to regulate the system by slowing its capacity to increase in complexity and learn from the experience, until its saturation as a culturally 'active' system. In this process Pedartgogy can be seen as a system of second order;

7. Self-organisation is impossible without any form of **memory**. In a self-organising system like Pedartgogy, the previous conditions of culture are vital for the present behaviour of the same structure;

8. Pedartgogy is a practice of the Academy and is productive thanks to the students, to their creative drive, and to the researchers and teachers, and to their reflections and information. At this point the research has noticed that memory is impossible without a form of **selective forgetfulness**, of a form of separation of the information. Simply accumulating information's without any form of integration makes the information insignificant. Integration, in this context, means making the information into a complete or a group of complete sets. Thus the information produced by the S<>T dyad is 'separated' and 'gathered' in structures with a coherence given by the past behaviour of the system. These structures are the result of the system's feedbacks and constitute the regulatory part of the system. 'Separation' and 'gathering' are two actions with a cultural link, and are carried out through the history of the system, i.e. it is the system itself that is catalytic, and produces the attractors that 'separate' and 'gather' the information into '*gnommeri*' (tangles) in 'wretched substance'. The information that is not used simply vanishes. This act of forgetfulness is important not simply because it creates space in the memory, but because it provides the measure of the meaning of the information stored. In the sense that the system's selective forgetfulness gives meaning to 'what remains'. In order to understand this step, it is important

to understand that the 'remaining' is a pragmatic action of a system that has some form of memory. This memory is the teacher-student system. The more something is used, the stronger its 'representation' will be in the memories of the teachers and students. As for example, the terms *Technoetic* of Roy Ascott, *New Italian Epic* of Wu Ming 1 (2008), *Human Cultural Narcissism* (2009), are often used within the Faculty of Media Design & Multimedia Arts discussed in this research, and are therefore strongly represented, whereas terms such as *Garage Media* (2008), were not followed up and thus are only weakly represented, if not non-existent. The Pedartgogy system learns through the action of subtracting and using the rules of complex systems, for which self-organisation is possible only if the system can remember and forget. It is important to underline that in Pedartgogy, the 'selection', the 'integration' and the 'use' are not the result of a decision, but rather they are pragmatic actions of the system itself. In this sense, Pedartgogy is a system of second order;

9. Pedartgogy as a system must not be anthropomorphised. Instead it is based on a '**normative function of feedback**'. Since Pedartgogy is not guided or determined by specific objectives, if not by education, it is practically impossible to talk about the *function* of Pedartgogy. As soon as we introduce the notion of function, *telos*, purpose, we immediately anthropomorphise the system. In the sense that, as for humanity, we introduce an external reason, an eschatology, into the system. In contrast, when a system (Pedartgogy) is described in the context of a wider system (the culture) it is possible to talk about a sub-system (the sub-system of Pedartgogy only within the context of the culture). We can talk about the 'function' of Pedartgogy in the culture, but not of the function of the culture. The notion of function is intimately linked to our description of complex systems. The process of self-organisation cannot be the result of an attempt to execute a function; it is rather the result of a normative process of feedback for which the system would simply not function if it could not adapt (through this normative function of feedback) to circumstances of greater complexity. The normative function of feedback coincides with the third axiom of the Pragmatics of Human Communication; i.e. the feedback of a system automatically organises a normative system (Watzlawick *et al*, 1967). In this sense, Pedartgogy is a system of second order; because it produces the supra-system which is the culture that in turn creates Pedartgogy and vice versa;

10. Pedartgogy is an **holistic system**. Pedartgogy cannot be broken down through a reductionist process

since the various levels of the system cannot have an independent description. Pedartgogy is a system constructed of interconnected nodes in a non-linear network. These nodes are not definable by themselves. The self-organising process of Pedartgogy works in the following way: information of experiences, signs for the nexuses, flow within the S<>T dyad. This information influences the interaction of the S<>T dyad and alters the relation in the values and the weights of the nexuses; i.e. the knowledge. According to Hebb's rule (1949). Hebbian theory is a scientific theory in biological neuroscience which explains the adaptation of neurons in the brain during the learning process. The theory is often summarized as "*Cells that fire together, wire together.*" This mnemonic phrase is usually attributed to Carla Shatz at Stanford University.^{cccxvii} If a certain experience is regularly present, Pedartgogy will acquire it as a stable configuration of 'weight', (weight that represents this experience, these signs for the nexuses). If two or more experiences are regularly present in the system, the system will automatically develop an association, in the form of weights (ibidem). So if the S<>T dyad comes across different conditions in the environment (regular condition in the anthropocene and in the Test-Society), in order to 'represent' these new conditions it will generate new knowledge; within the confines determined by the quantity of memory that the system has accumulated and uses. It is similar to a neural network, which is composed of a group of interconnections of information composed of nodes and processes which use a connectionist approach. An artificial neural network is an adaptive system that changes its structure based on external or internal information that runs through the network as it works; it is a non-linear structure of statistical data organised as a modelling instrument. How can the S<>T structure develop itself in response to the conditions of the environment? This is only possible if the information can enter the system from outside. An event in the environment will cause activity in the S<>T dyad that will alter the structure of the system.

V.XV Pedartgogy as a neural network and self-organizing map

Pedartgogy is subject to the rules of complex systems: it has no 'pilot', but rather it self-organises through the real pragmatic functions that produce information, communication, and meaning and through homeostatic principles it creates shared meaning/text with the environment/context. One of the most important outcomes is the production of a territory/text of meaning; i.e. Pedartgogy exemplifies a model of composition of a map. The

model proposed retrieves the distributed neural network known as PDP, *parallel distributed processing*: distributed because it is not localised, as the system has a holistic, global function; parallel because it carries out several processes simultaneously.

Pedartgogy as *parallel distributed processing* works according to a few simple principles:

- **ACTIVATION-INHIBITION OF THE DYAD.** The entire processing runs out simply due to a step of activation or inhibition between the simple units (Students and Teachers); i.e. in the S<>T dyad. Moreover, between stimulus and response there are representations that are configurations assumed by the students and teachers connected to each other via the context of the Institution. In complex systems, these are known as PATTERNS: if active, the stimulus is transmitted, if inhibited it is not;
- **THE WEIGHT OF THE CONNECTIONS.** The connection can be more or less solid (heavy) and the strength of the link or weight of the connection determines whether the process of activation/inhibition passes or not. In other words Pedartgogy works through selective inhibition;
- **SIMPLE UNITS.** The model is formed by the simple units of the individuals-students and individuals-teachers, the S<>T dyad.

In other words then, Pedartgogy as *parallel distributed processing* is a distributed processing where the simple entities, the S<>T dyad, work together, connected to each other in parallel layers that activate or selectively inhibit (process) the signs for the nexuses; the weight of the connections determines whether the stimulus passes or not and the activation of the signs for the nexuses. This model is based on the substantial identity between simple entities, student and/or teacher, and units of signs; i.e. the sign/concept contained by a vehicle/medium that is always individual, that is the sign/concept is always part of an individual. The sign/concept is (in Deleuze's terms a Conceptual Persona) in a population of (neural) units.

The job of Pedartgogy is to CATEGORIZE new human experiences and the new proportions that these experiences introduce into human knowledge, - the categories are based on the existing similarities between the things perceived and make use of existing regularities -, and to LEARN, thanks to the system that learns by itself and through the categorisation, which allows it to make use of the regularities of the experiences, whatever they may be. Pedartgogy is similar to the way the human mind learns, as progress is made by exploration, 'trial and

error'. Of course this model does present some problems, in that trying to explain what happens inside the 'black box of Pedartgogy can only ever contribute to the world of pure hypothesis. But in the research, Pedartgogy as *parallel distributed processing*, is to be regarded as an experimental subject: it does not tell us what really happens other than the selective inhibition-activation. In the research, the system has been experimentally tested in the foundation and implementation of the Faculty of Media Design & Multimedia Arts in NABA Milano; i.e. in the BA, MA courses and the PhD itself. So far, having monitored the Faculty, it has given very encouraging results in terms of the quality of the cultural and artistic results of the students, and quantity; i.e. the success of the model in the context.

Pedartgogy as parallel distributed processing is a type of artificial neural network that configures itself as a Self-Organizing Map (SOMa)¹⁹. Pedartgogy produces training through unsupervised learning. Exactly like the widespread action of browsing and internet research, through search engines, through one or more key words it creates a list of connections relating to the research data. It is a 'non intelligent' model that retrieves habit and praxis to create new semantic connections through the use of hyperlinks (Manuel Castells places this praxis at the base of contemporary society, which he describes as the 'Informational Society'). The objective of learning in the self-organising map is to specialise different parts of the reticle of nexuses in the map and respond similarly to the signs for the nexuses as patterns of entry. The configuration of the reticle of nexuses is formed by pragmatic and competitive training, as the individual-student seeks to set up the best possible configuration for keeping the identity relation (a sort of base libido) between himself, his companions, the teachers and the institutions, active. When a nexus passes in entry to the network, the distance (sharing) between the various elements between itself, companions, teachers and the institution is calculated. The nexus with the vector of weights most similar to the entry is called the *Best Matching Unit (BMU)*.

The weights of the *Best Matching Unit* and the nexuses near to it in the Self-Organising Map reticle come together at the nexus of entry. The intensity of this coming together decreases over time and depending on the distance of the nexus from the *Best Matching Unit*. The formula used to update the weights W_v of a nexus is that of neural networks: $W_v(t + 1) = W_v(t) + \Theta(v, t)\alpha(t)(D(t) - W_v(t))$, where $\alpha(t)$ is a coefficient of decreasing

¹⁹ The model was initially described by the Finnish professor Teuvo Kohonen and this model is often referred to as Kohonen Maps;

monotonous learning and $D(t)$ is the entry vector. The function that defines the vicinity $\Theta(v,t)$ depends on the distance in the reticle between the Best Matching Unit and the nexus v . In the simplified form (competitive network) it is 1 for all the nexuses near enough to the Best Matching Unit and 0 for the others. The neighbouring function decreases over time.^{cccxxvii} Initially, when the vicinity is wider, the self-organisation happens on a global scale (*ordering phase*). When the vicinity is reduced to just a few nexuses, the weights converge onto a local valuation (*tuning phase*). This process is repeated for each new entry nexus (concept), for a variable number of cycles (synchronised with the academic year, with the semester and lessons). During **this process** a map is produced and the knowledge is configured.

Pedartgogy can then, be assimilated into a neural network that consists of a quantity of simple interconnected concepts-neurones (signs for the nexuses). These interconnections interact with each other in a complex and non-linear manner. Pedartgogy can therefore be viewed as a network of interconnected signs where each interconnection (nexus) has a determined strength or weight. The behaviour of the interconnections is determined by the value of their strength and/or weight. This value can vary and this variation is determined by simple rules based exclusively on the information available locally at a level of the nexuses involved. One rule of this kind would be that the value of a nexus increases if both the interconnected signs are active. In this way, the network can develop configurations of activity based on the dynamic of the interconnections.

The $S \leftrightarrow T$ dyad is connected to the external environment, to the Test-society; external transformation cause variations in the individuals-students and in the teachers; these variations alter the configurations of the interconnections. If the event that causes this transformation is significant, in the sense that it occurs often, the afferent configuration will be reinforced each time that the event repeats. The introduction of a new technology that becomes an event creates a new configuration, which is perceived by the individual-student and by the teacher and processes on a local level by the $S \leftrightarrow T$ dyad.

The self-organisation of Pedartgogy occurs when certain principles are met:

1. **Initial non-discrimination**, the Pedartgogy system is based on the dyad that consists of a large number of single elements, the individuals-students and the teachers, which must be relatively un-discriminated initially;

2. The dyad organises this non-discrimination into the weights and strengths of the interconnections;
3. The strengths of the interconnections are produced by the dyad;
4. There is **competition** between students and students and between students and teachers;
5. But a single element is too simple to develop a self-organisation, the system would not function, and thus there is also a **cooperation** between students and teachers. Reciprocal collaboration and co-operation are the preconditions for a significant system, in fact the meanings exist only where there is reciprocal collaboration because they exist as form of re-cognition of another;
6. Interaction between the elements of the dyad must be non-linear;
7. If the initial state of the system is too homogeneous, students that teach to students, this will inhibit the development of a complex structure. Pedartgogy is based on the '**breaking of symmetry**' which is spontaneously acquired through the weakness of some connections (first year student, graduate student, lecturer-chair). The system must be non-linear and this is achieved naturally with the *cursus studiorum* of the students and with the use of a segmentation of the teaching body into: practical teachers and theoretical teachers, lecturers, readers, assistant professors, professors, chairs.
8. Another very important secondary principle is **entrainment**, the synchronisation of the units. That is to say, the institution (environment) must synchronise the activities of the S<>T dyad so that it generates a shared path that generates meaning through the re-cognition of the path itself;
9. Another important principle requires Pedartgogy to be constructed on a **distributed memory**; the fact that the information is distributed over numerous units, students and teachers, increases the coherence of the system; i.e. the system becomes solid.

When we are facing unexpected occurrences, such as the influence of media in our everyday representation of life, humankind's tendency to ascribe his own causes to something magical, unique, divine, or rare. “*When we have to explain the crash of the stock market [...] we try to find a number of factors that combined to cause it [...] This kind of analysis [...] is the result of trying to explain the behaviour of small simple systems. Unfortunately, this extrapolation fails. Complex systems [...] display unexpected, often unpredictable behaviour.*

Any analysis that ignores the possibility of self organising behaviour by a complex system will be seriously lacking in explanatory power". (Cilliers P., (1998) 2000: 96)^{cccxviii}

The concept of Self-Organised Criticality appears in the January 1991 issue of *Scientific American*, in an article by P. Bak and Kahn Chen.^{cccxix} They propose an holistic theory that argues that the global configuration of the system cannot be understood through a simple analysis of the single parts. The system organises itself by 'tuning' its sensitivity to external stimulus. The self-organising system will seek to establish itself at a critical point between structured order and chaos. In fact, it is clear that a system that does not transform, that is too stable, will encounter problems, just as a system that is too chaotic will never achieve any performance.

The research sees in knowledge a system of self-organising criticality, which continually oscillates between definitions and concepts that function as attractors and chaotic forms of new experiences that tend to break up the relationships and the weights of these attractors. The Faculty of Media Design and Multimedia Arts is also set up as a system of self-organising criticality. And it is clear that what guides the criticality is competition; i.e. each node in the system tends to dominate the largest portion of the network, and the inputs of the academic system that do not present a wide variety will be represented by only a few string attractors. As the inputs increase in variability, the system orientates itself towards the critical point of its flexibility. If the information which the system must deal with becomes greater than the innate capacity of the system, it will be forced beyond its critical point. Beyond this critical point, the system will no longer be able to produce a stable attractor and the chaos will take over the system. For this reason, the information in a self-organising system must not be over-proportioned or under-proportioned. A legend is over-proportioned, a simple addition is under-proportioned.

In a subsequent article in *Scientific American*^{cccxix} (Kauffman, 1991) S.A. Kauffman hypothesises the fact that in the system, order is created through stable 'nuclei' that form in the network of connections of the experiences. This order 'percolates' through the network as the adjoining nodes are reconfigured into states of stability by the already stabilised group. The result is that the system acquired a knowledge that is "*partitioned into an unchanging frozen core and islands of changing elements.*" (Kauffman S.A., 1991: 68)^{cccxix} The model can be complexified by imposing modulation onto the nodes, the volume of the modulations has significant effects: if they are too high, the network will become too stable, if they are too low the system will be chaotic. If we

paraphrase this view we find a new rule: in Pedartgogy, order is created through the stable '*nuclei of knowledge*' that form within the network of connections of experiences. This order 'percolates' through the network as the adjoining knowledges are reconfigured into states of stability by the already stabilised knowledge. The result is that the system acquires a knowledge, that is the knowledge becomes a system. The model can be complexified by imposing modulations on the concepts, the volume of the modulations has significant effects: if they are too simple, the network will become too stable, if they are too complicated the system will be chaotic and thus unmanageable.

Cultural systems are systems of self-organising criticality. They are based on a critical dialectic that continues to work to destabilise the system itself. The result is a continuous increase in the complexity, but the system must immediately limit this complexity through its regulations in a homeostatic process of knowledge. In fact, systems of knowledge that are regulated too much only produce stability, and thus falsify knowledge; systems that are unregulated dissolve in an excessive complexity. But what Kauffman suggest in his article is that this tendency is an intrinsic characteristic of complex systems: once a system acquires the capacity to self-organise, it appears a natural tendency to optimise the organisation. Paul Cilliers leads us on a journey into complexity and writes: "*The critical state of a system is often referred to as being 'on the edge of chaos'* (Lewin, 1993)" (Cilliers P., (1998) 2000: 98)^{ccxxxii} This leads the research to understand how in order to function, the system must remain on the brink of chaos; i.e. produce new knowledge and not close itself within an arid discipline. Pedartgogy therefore must remain in this situation of **chaotic stability**, which will follow a homeostatic principle, like the academy in its complexity must be innovative if the culture is conservative and must be conservative if the culture is innovatove (Postman N., 2000).

The internal structure of knowledge is influenced by the environmental and contextual conditions of the outside. At this point, as in evolution, the distinction between subject and environment becomes critical; i.e. the distinction between the interior and exterior of the system becomes problematic, since in a system there is not real distinction between interior and exterior.

Traditionally, and on the basis of a western assumption, we imagine the structure of knowledge to be completely defined *a priori*, that is we think that the system is "hard wired"; this system will not be able to

fit/match with a complex situation: it will culturalise reality excessively, falsifying it and therefore it will not evolve as it loses contact with the environment/context.

The research abandons the idea of the singularities of the magisteria, and retrieves the position of neurobiologists Pierre Changeux (FR, 1936) and Gerald Edelman (USA, 1929), who reject the idea of a fixed structure of systems, and particularly they reject that the world is predisposed, that ideas and things are categorised as *a-a priori*, and that these categories can be known objectively; following the thinking of Changeux and Edelman, Pedartgogy refutes the family of ideas of Platonism. According to Heidegger, western metaphysics has been wrong since the time of Plato, placing an *a priori idea* over things; the attempt at logical positivism was less mistaken; i.e. the idea that language can be a uniform representation of the bodies, things and phenomena.

But with a new magisterial vision based on a mobile point of view, we see knowledge as a system without any organising structure, rather as a system whose structure is totally determined by the environmental conditions. But a system that simply imitates the environment and the context would not be capable of participating in the environment as it would be at its complete mercy. In order to be able to 'reprocess' the environment, knowledge must possess at least two characteristics: some form of resistance to change (in the cultural system they define this as the rules of the discipline), and some structure that can compare the transformations/conditions of the environment in order to determine whether there has been enough change to warrant some response. These attributes literally translate into a need for some form of memory, without which the resistance to change cannot be achieved. If we paraphrase yet again, we get: Pedartgogy must teach at least two rules: the forms of resistance to change, and the structures of comparison between the transformations/conditions of the environment. Pedartgogy needs some form of memory.

This evolutionary view was hypothesised by Pierre Pierre Changeux (FR, 1936) and Gerald Edelman (USA, 1929), who extended the notion of natural selection to apply to neural evolution, arguing in *Learning by Selection* (1984)^{cccxixiii} that to ensure the survival of an organism, it must not only deal with transformation of the environment/context, but it must do it for its entire 'life' , in what is called “Somatic Time”.

In Changeux there are two basic mechanisms of how a system responds to its environment:

1. The environment imposes order directly on the system;
2. A mechanism of selection activates, where the increase of order is the result of an interaction between the knowledge and the environment/context. The environment/context does not merely determine the structure of the knowledge, but also influences the development, transformation and stabilisation of structures in the system.

In Pedartgogy a knowledge emerges even if it is not supervised. The research hypothesised the following model-map: the knowledge is pre-structured in a *general* and *non-specific* way but with enough differentiation (a sufficient asymmetry) to allow external influences to be taken in. The original knowledge reflects the experiences and the behaviour necessary for the circumstances encountered in the history of the individual and transforms. The knowledge therefore organises itself in such a way as to prepare itself for the environment. Some parts of the original repertoire of knowledge may remain 'hard wired' and remain unaltered. The same applies in general to the entire sympathetic system and primary nervous system, which after some training in the evolutionary age, functions automatically. The central biochemical system of knowledge can also be considered hard wired; i.e. the hormonal system or psychoneuroendocrinological system, which maybe functions in a much more analogical way, because is influenced by food and nutritious substances. It is hard wired but it must be tuned and retuned for its entire life though continual training. The research was heavily influenced by a lesson that is well received every year by the students of the BA in Media Design and Multimedia Arts in the course of theory and method of mass media, on the system of cerebral return and suprarenal capsules.

V.XVI Pedartgogy and the education of a cultural map

The education of knowledge reflects the three characteristics of self-organising systems: cooperation, competition and memory.

1. *Isolation of the territory*: if knowledge were made only of configurations of fixed and homogenous

meanings, it would not be possible for a new configuration to develop (as in the primary nervous system). But the meanings themselves are incapable of representing the complexity, which can only be represented through the configurations of meanings. We can hypothesise that the configurations of meanings have an optimal dimension for meaning, but that this is not a constant that we can know *a priori*, in fact it is not even a constant. The dimension must form in a dynamic and spontaneous (therefore true) way;

2. *Selection of the territory*: in knowledge, this is achieved through “*selective forgetfulness*” and “*entrainment*”, i.e. the deletion of the configurations that are too simple and/or not used and the emphasisation of the sufficiently complex and/or used configurations. In this way a territory of meaning is isolated;

3. *Evolution in the territory*: once a configuration of meaning has been selected, its '*entrainment*' is determined by its competitive interactions with other configurations. The weaker and smaller configurations are eliminated, which configurations that are too large and inefficient are divided and claimed by smaller, lighter and vital groups – the vitality is determined by the frequency of the experiences that they recall and by the quality of the nexuses they activate. The competitive interactions are highly sensitive to the history of the effects of the system; i.e. the function of a configuration of meanings is determined by its history and by the history of these same meanings.

At this point the research asks itself a question: quantitatively and qualitatively, in what way does knowledge represent the necessary information on the environment it seeks to represent?

1. The meanings are formed in the students-teachers network through a process of self-organisation;
2. These meanings are selected, transformed and confirmed through a dynamic process with the environment/context of the S<>T dyad;
3. The external and internal experiences of the academy produce the selection-transformation-confirmation of some meanings that through the activity of other meanings triggered by the process, generate feedback responses. The accumulation of feedbacks creates a network of meanings that is the knowledge-map.

In what way, quantitatively and qualitatively, does knowledge represent the necessary information on the environment it seeks to represent?

This question leads us back to the problem of the Recombinatory Blast (Monico F., 2008); i.e. the quantity of information that a subject must possess about a certain topic and/or object in order to formulate a thought about the topic or object itself. A key problem in today's 'Test Society'(Zielinsky S., 2012)^{ccccxxiv}, characterised by the information of the hyperlinks, which produce new and incessantly new semantic connections (Castells M., 2000)^{ccccxxv}. This is a problem on which the aware individuals and the S<>T dyad must reflect. The research considers that the information produced by the academic environment directly influences the structure of the knowledge, causing transformations in the structure of the same knowledge. Nevertheless, the effects of these influences are not direct, in the sense that the structure of knowledge is not decided in images reflected directly in the mirrors of the environment. It is a sort of “Rear View Mirror Syndrome” (McLuhan M.H., 1962)^{ccccxxvi}.

This happens because:

1. The effects are delayed as they are founded on the system of feedbacks; i.e. they are the product of a reasonable quantity of feedbacks for a given time - It is impossible not to communicate, today communication produces feedbacks, after a certain lapse of time the feedbacks generate shared norms (Watzlawick *et al*, 1967) – in as much as in time the feedbacks produce norms; i.e. signs for nexuses;
2. The effects are delayed because the cultural system of normative feedbacks possesses a natural and intrinsic resistance to change, and for this reason the effects of the influences are not perceived immediately, but are registered over time;
3. The effects are delayed because the cultural system of normative feedbacks has a natural normative delay and it is therefore never completely in tune with the contemporary; this occurs because a meaning needs to '**be in time**' to become a sign for a nexus and then needs a very definite time to spread and become a social behaviour, since ideas and signs for nexuses, are only this when they become social behaviour;
4. The influences are always mixed between them as they are triggered by the same network process that perceives them. This means that cultural perception is never unmediated. Previous signs for nexuses, and

knowledges, cooperate to determine the new influences.

V.XVII Pedartgogy: subversive implications of self-organisation

Self-organisation is a characteristic of many real systems; the dynamic of self-organisation cannot be explained by a cause or an original and/or unique device; the structure of Pedartgogy is transformed by the process of the contingencies; of external factors, of cultural and historic influences. Self-organisation provides the mechanism for which Pedartgogy as a system can evolve without having set out evolutionals or original or intentional interventions.

1. Pedartgogy as the result of a process of interactions cannot be described in its components, but must be taken from the point of view of the 'dynamic relations between its components'; for example, from Pedartgogy's perspective, the student or the teacher do not exist, there is only the S<>T dyad (represented precisely by the symbol of equivalence between the two). The characteristics of Pedartgogy emerge through the dynamic process of interaction between the elements; for this reason in the BA and MA courses at the Faculty of Media Design & Multimedia Arts NABA, the student is subversively placed at the same level as the teacher. This act is in response to the need of the "Test Society" (Zielinsky S., 2012) to operate at the frontier that is better perceived by the student than by the teacher, since the teacher is bound to the past by the 'being in the time of the meanings' of knowledge, and finds its context in complex self-organising systems;

2. As a complex system, Pedartgogy takes up a subversive position in relation to the traditional philosophy of science, as it seeks to incorporate and include rather than falsify and/or ignore. It is a form of knowledge that does not refute contradictions and opposites, but instead uses them as strengths that create differences of dialectic power. Knowledge is seen as an always already new dynamic process, always in progress, everything is in dialectic process between ying and yang, all things become. This type of dynamic thought was also present in medieval thinking and regarded Trivium and Quadrivium (McLuhan H.M., 1942)^{ccccxxvii} from which the tetradic game of truth derives that Pedartgogy uses as a tool. Pedartgogy retrieves this game of truth of the classic as an apparatus of equilibrium, which helps make the dialectical tensions between the meanings cooperate. The

objection could be that in this tensive equilibrium, a stable configuration is never reached; so this approach is founded on the very conviction of the impossibility of finding a point of equilibrium, a fixed attractor. On the contrary, the system needs constant interventions that *are* and produce knowledge. It is a cybernetic and homeostatic system, which continues to move away from any hypothesis of equilibrium. Pedartgogy, as a complex system, is subversive towards Platonic and neoplatonic idealism, Christian metaphysics, Cartesian rationalism, positivism, Marxism, because the mechanism through which complex systems structure themselves implies a 'mobile perspective', the dialectics of the views, which Pedartgogy associates with the theories of the Non Overlapping Magisteria and in the Syncretism of Roy Ascott, because and as it is not subversive to postulate that single principles provide false descriptions. From here, the research retrieves and takes forward its discussion on Pedartgogy, the game, as it is an activity in constant configuration and renewal, of (developing) the truth, seen as the only meaning of knowledge, in a game of truth called the *Tetrad*.

V.XVIII Pedartgogy as a self-reflexive system

The processes of Pedartgogy are not simply passively reflexive from the exterior, nor are they actively determined from within. Pedartgogy does not produce a central control. Pedartgogy is self-reflexive according to a self-transforming process: Pedartgogy acts on itself. *“Reflexivity disallows any static description of the system since it is not possible to intercept the reflexive moment. It also disallows a complete description of the system at a meta-level (Lawson 1985: 20, 21). A meta-level can always be constructed, but from such a perspective only snapshots of the system as it exists at a given moment will be possible, i.e. Frozen moments that do not incorporate the residues of the past or the shadows of the future.”* (Cilliers P., (1998) 2000: 108-109)^{ccccxxviii}. Pedartgogy's production of knowledge is determined by the way it functions, but it cannot be predicted, since we cannot isolate the single rules but only the definitions of relation. It is a complex system, which is more than merely complicated, meaning that the whole is greater than the sum of its parts. The dynamic interaction of its parts produce effects beyond the simple relations of the parts. Only the construction of maps and the tuning of a history of the system allows us to probe possible results, but never with complete certainty. Pedartgogy responds to a need of the “test society” (Zielinsky, 2012) because it must discriminate between changes that should be

followed (innovation) and changes that should be in some way resisted (culture), and this can happen only when the control of the system is not rigid. Thus the control of Pedartgogy is not in the hands of the institution, nor even in the hands of the teaching body, but it is shared, in a libertarian perspective, with the students, and thus lies ultimately in the S<>T dyad. In this way, the system has forms of resistance of the notions 'in time' by the teachers, and has forms of change in the pragmatics of the students.

V.XIX Pedartgogy and philosophy of science: the limit of the system

Since all systems of knowledge are contingent entities, they are invariable finite entities. Even the most complex of systems of knowledge has a finite capacity to process the information. This is also and above all because the systems of knowledge can be seen as second order systems since they inform their own knowledge, i.e. they produce and structure the knowledge in their own forms, and in doing this must define the possible and impossible parts of this same knowledge. In other words, if I know this, I exclude knowing something else.

A system of knowledge can suffer from informative overload, above all when it faces too much new information. When a system of knowledge is in overload, it begins producing a behaviour, which when driven to its extremes leads to a chaotic behaviour and a catatonic fixation. There is no solution to these risks, but we can attempt to become more sensitive to filtering the excesses, and become less sensitive, becoming open to the interaction between individuals and environments.

V.XX Pedartgogy and the Recombinatory Blast

1. Pedartgogy must respect alterity (otherness) and difference as values in their own right;
2. Pedartgogy must gather as much information as possible, being aware of the fact that it is impossible to gather all information;
3. Pedartgogy must consider all consequences it can of the beliefs and desires it formulates, being aware of the fact that it is impossible to consider all possible consequences;
4. Pedartgogy must provide for the possibility of revising judgement if it becomes evident that it contains errors, whether specific or general;

5. In order to generate a path of knowledge, Pedartgogy must implement a strategy that limits the complexity with complexity, or which resolves the complexity in complexity:

5.1 to gather information one gives a number, a quantity in multiples of 3, for example three answers to three questions; i.e. 12 configurations of information (because the questions are information's behaviour);

5.2 to give information one gives a time;

5.3 to gather information one gives antithetical and homeostatic position: an innovator's point of view is always contrasted with a conservative point of view;

5.4 in order to process the information it must abandon coherence and move on to contingency.

XI.XXI Pedartgogy (as a system) and Test-Society

In this paragraph the research looks at the pedartgogical method (as a system) in terms of the ten characteristics of complex systems described in the paragraph entitled “V.V Characteristics of an 'artistic' complex system & V.VI The 10 complex characteristics of Pedartgogy” – The Academy and Pedartgogy are both distributed models of complex systems.

1. *Pedartgogy (as a system) consists of a large number of elements* – Human truth is inscribed in social experience, that is in the verification that this species completes with the common part of its being in the world. A culturally narcissistic operation that allows the human animal to create a common territory in which to act; this common narcissistic territory is the system of human truth; in the case of Pedartgogy, this narcissistic territory consists of a multitude of individuals-students: this territory is a system in which the number of elements (individuals-students) must be very large;

2. *The elements in Pedartgogy (as a system) interact dynamically* – The individuals-students, in their S<>S and S<>T dyads, are constantly engaged in a continuous exchange of information. Exactly as in neural networks, a single S<>S/S<>T node has little meaning, but the whole formed by the S<>S/S<>T nodes creates a dynamic configuration that codifies the pragmatic experiences into shareable information (performances, virtual texts, logic, experiments and simulations, alterations; i.e., NOMA) that produce the meanings. For this very reason, no

sole student has meaning in the test society, in today's test society more than ever (Zielinsky 2012), in which we must continually update and modify the meanings; Structuralism argues that '*the self does not amount to much*' (Lyotard 1984:15). Pedartgogy is founded on the fact that the student is constructed by its relations, with peers and the teaching body;

3. *The level of interaction in Pedartgogy must be rich and enriched by the context, exponentially expanded by the practices* - Individuals interact with each other and with the context in an extremely vast assortment of capacities. Institutions of Higher Education continually grow in terms of interaction;

4. *Pedartgogy is rooted in non linear interaction* - Pedartgogy is founded on ontological openness and on the syncretism of meanings; in this sense it can be seen as non-linear: non-linearity is one of the fundamental prerequisites of complexity, especially where self-organisation, dynamic adaptation and adaptive transformation are in play. The principle of asymmetry is linked to the principle of non-linearity. A context and a linear, symmetrical method can produce simple and transparent systems. In contrast, Pedartgogy breaks the symmetry and relies on the power of the non-linearity, and it does this through a high level of S<>S/S<>T interaction and through the context of the Academy. This is important since the system of human knowledge is not linear and is also asymmetrical. The same experiential unit and information has different effects in different individuals, and small insignificant causes can have significant and widespread effects. The dialectic nature of knowledge is regulated by relations of power that ensure an asymmetrical system of relations, yet this does not validate a faith in the relations of dominion and of exploitation, but must be seen as a mere argument of complexity. Non-linearity, asymmetry, power and the dialectics between nodes are inevitable behaviour of complex systems. It is these characteristics that produce the power differences that allow the motor of knowledge to start up and maintain inertia. It is these characteristics that literally make the academy work, and they are responsible for the production of the entropy that makes the academy a formidable energetic machine for exploration, productions and processing of knowledge. If there were symmetrical relations between infants and adults, the infants would not survive. If there were symmetrical relations between students and teachers, the students would learn nothing new. *“These considerations have important implications for social theory. The fact that society is held together by asymmetrical relations of power does not mean that these relationships are never exploited. [...] they are*

continuously exploited by parents, by lecturers, by the state and by man, but also by children, by students [...] The point is that the solution to these forms of exploitation does not lie in some symmetrical space where power is distributed evenly. Such space cannot exist in complex systems that are driven by non-linearity. [...] To combat exploitation, there is only one option: you have to enter into the agonistics of the network.” (Cilliers P., (1998) 2000: 120),^{ccccxxix}

5. *Pedartgogy is founded on 'Local determination', i.e. interactions that have limited reach but produce territorial effects* - The elements of a complex network interact mainly with the nearest elements; Lyotard calls this characteristic “*Local determination.*” (Lyotard, 1979)^{ccccxl} The students operate on information that is available locally; i.e. inserted in the context of the academy. The academic context must not exercise control over the flow of information, it happens naturally as the system is complex. It must be the interests of the S<>T dyad that directs the system through the heuristic interactions and the “passionate attractions” of the students and teachers towards the always already new. The behaviour of the academy is consequently directed by a system founded on a multiplicity of local 'discourses' of each single course, of each single student. Each single discourse is not isolated by the others, in fact, despite the local dimension of the interactions, they connect with each other in the production of a wide-reaching knowledge: different groups are interconnected and as these connections are non-linear, they produce effects greater than the sum of their parts. The single 'discourses' reverberate through the system in a fractal way, and are constantly modulated by S<>S/S<>T groups, through which these 'discourses' impact;

6. *Pedartgogy provides open circuits* – Feedback is at the foundation of the hypothesis of knowledge, at the foundation of Pedartgogy. That is to say, provided there is ontological openness, we can accept the axiomatic theory of the Pragmatics of Communication (Watzlawick *et al*, 1967) of the behaviour-feedback-meaning system. These shared norms are a territory, they are a context, thus they are a knowledge. This position is founded on the pragmatist assumption that an element, an individual, directly or indirectly influences himself through his activity. It is not possible to not be active, since life itself is the production of information. That is to say, even if I remain still I am producing immobility and I enter a system of feedback with the environment around me, creating and in-mobile con-text. This is validated by the ontological openness, in fact if an

individual, whether a student, teacher or any other living thing, accepts that the information proliferates according to the patterns, and that this information is continually transformed from other information, if not from itself, from the con-text. It can only surrender to that tragedy of knowledge described by Gorgias in the *Encomium of Helen*, and accept the radical ontological pessimism of Queneau that immediately transforms into openness. A truth is produced in this openness, which is the very process of knowledge, as defined by this research as a 'negative knowledge'. The information can be interpreted only locally through the Non Overlapping Magisteria, and generates a fractal system of knowledge that precludes the definition of fixed and rigid truth, but opens up to a world of the most beautiful endless forms (Gilardi P., Monico F, 2010)^{cccxli}. It is not a crisis of knowledge, but rather it is very simply the result of the complexity of our informational and post-structuralist society. Pedartgogy places itself on a network level, and the individual-student and the S<>T dyad must face the *paralogy*, that is the truth without a universal meaning and the disturbances of the syntactic-grammatical structure introduced by the fact that knowledge 'is no longer in time'. The result is not that it is impossible to interpret information. In the end, Pedartgogy is a self-learning;

7. *Academies are open systems, they must maintain homeostasis, Pedartgogy is founded on homeostasis* – Each local discourse interacts with all the other discourses. Each idea, precept and concept is the result of an ecology of continuous integration and hybridisation of its parts. Knowledge is the result of a social system. This ecology of the relations materialises in local political systems, which interact with universal systems - ”*Nature is no longer the passive object of human(kind) exploitation, but is part of the set of relationships that makes human(kinds) what they are*” (Cilliers P., (1998) 2000: 122)^{cccxlii}. Knowledge is not the passive object of human exploitation, but is part of a set of relations that make it so that the individual-student and the teachers are what they are. For this reason, the single courses of the academy must remain open to relations, and the academy itself must remain an open system, in touch with society. The best way is to visualise it as a homeostasis in perpetual contact with society. The academy must be conservative when society is innovative, and innovative when society is conservative;

8. *The Academy, as a complex system, operates in conditions that are far from equilibrium*– The academy is a complex system, and like all complex systems it requires a constant flow of energy to transform, diversify

and replicate itself in order to survive. The academy is a system that produces large amounts of entropy, and this is its strength; the equilibrium, symmetry and stability would immediately decree its obsolescence. Knowledge and “truth” can only survive as a *process*. Knowledge is not defined by an original or pre-existing 'idea' or by its objectives, but by 'what it does and what it is doing.' In the current Test-Society (Zielinsky S., 2012), it is this constant action, the lack of equilibrium produced by the new semantic connections, the frenetic rhythm of innovation and the 'not being in time' of the cultural forms and concepts (see int ref *meaning in time*), just as the subversive ideas of the students continually produces the entropy at the base of the knowledge;

9. *As a complex system, Pedartgogy is founded on the definition of an odological territory.* - Odological maps are represented by the earliest maps of the Mediterranean. These maps represented the territory through chronological and narrative virtualisation. They created stories of the territory that allowed ancient travellers to navigate the regions of the Mediterranean. The history of a system is not an objective given fact, but rather a collection of virtualised traces in a distributed path on a support which is time, where both the traces and time are always open to multiple interpretation. In post-modernism, history is seen as a system of sophistication, a falsification, and as Roy Ascott puts it, a 'virtualisation'. As an odological approach, history is a constituent part of post-structuralism and of Pedartgogy, because - “*It remains impossible to think in the present without considering the past – or the future*”; (Cilliers P., (1998) 2000: 122)^{cccxl}

10. *In Pedartgogy the individual-single elements are ignorant of the behaviour of the whole system in which they are embedded.* According to the rules of complex systems: the elements of a complex system must only respond to the local information (however this local information may be very rich). The single elements of a course and/or of a faculty cannot contain the complexity of the entire system and consequently cannot control nor integrally understand the entire system. In Post-Modern Society (Lyotard, 1979), in the Informational Society (Castells, 2000), in the Anthropocene (Crutzen-Stoermer, 2000), in the Test-Society (Zielinsky, 2011), we are subjected to an overload of information, we must face the Recombinatory Blast and to implement a process of awareness we must understand that it is impossible to obtain a global point of view and/or integrally understand the scenario. The individual-student lives in a society that is created in real time, where the technologies that allow us to communicate with the masses and produce shared experiences take just a few

months and consequently the signs for these nexuses are not 'in time'; all the elements flow, the object, the experience and the individual continue to re-codify themselves and each other in a perpetual liminal phase in which everything is no longer what it was without being what it will be. The object, the individual and the experience are a decentralised system, and for this reason, no single element can have complete control of the system itself.

In this sense Pedartgogy has lots of implications for our understanding of and for the status of contemporary knowledge.

V.XXII Pedartgogy as language as complex system

All languages can be defined as sufficient quantities of signs for the nexuses they create through the reciprocal relation of meanings. In these reciprocal relations, the characteristics of asymmetry and non linearity are fundamental. The languages function when they are open; i.e. when they produce the real pragmatics of relation, or rather according to the pattern of the *Pragmatics of Communication* (Watzlawick *et al.*, 1967) when they succeed in producing the norms through the three axioms of communication. These signs for the nexuses are not the truths but rather the conventions that emerge from the relationship between praxis, gesture, action, desire and time, when gesture, action, desire and time are generated by individuals that recognise that they are similar to each other (identity). In this sense the relation identity-otherness is a fundamental axe of today (as it was).

The asymmetry of language is a fundamental prerequisite for the functioning of one of the fundamentals of language: metaphor (and metonymy): to say that an artwork is a concept does not imply that a concept is an artwork ($A=B$ is different to $B=A$). The meaning of Art is constructed through a set of interactions with other signs for nexuses in the system. The system is complex and therefore open; i.e. the meaning of Art is constituted through a composition of a odological map that is a set of open interactions (for example, art and economy link *RTMark*, a work of art in the form of a site of the economy of art. Still the meaning of Art is primarily constituted of its interactions of proximity with the terms nearest to it such as 'work' [Wwww.rtmark.org](http://www.rtmark.org)). While the interactions of proximity with distant terms are mediated by intermediaries, which are often the result of metaphor. When metaphors become fixes, it means that the network of signs for nexuses has modified the

distances because it has outlined the odological map that it wanted to construct.

The pragmatics of language lead a frequently used sign to limit or to expand its semantic amplitude, by creating the norms of relation. The more a sign is used, the more its meaning changes. Since language is a complex open system, it interacts with the environment in many different ways. New environments have effects on the language.

If language is trapped in a discipline and formalised in a stable system, then it loses all capacity to codify human experiences in signs for nexuses. A living language is far from a state of equilibrium, it is an infant language. It includes errors, naivety, ambiguity. It is an ambiguous system, because it does not produce fixity, but a coherence with itself that is always already a liminal process.

This does not mean that the meaning is an arbitrary process. It merely means that it is a local process which is valid in a certain space time con-text which is that of the pragmatic relation. In other words, it is born and produced in the direct interactions and then in the cultural interactions between 'similar' elements.

From a pragmatic point of view, communication does not make sense if the elements are '*per se*'. Communication has meaning as 'interaction'; and language, like Pedartgogy, is a system in which the individual words have no meaning '*per se*': knowledge is generated when the individual words are grasped in the action of the system. Knowledge is generated by the pragmatics (signs) in a con-text (territory) in time; i.e. Odos.

How does language implement its interactions with a territory? (the world out there) Through the actions of an explorer-voyager (the individual) who crosses the language, the signs for nexuses, who participates in the definition of maps of the territory in order to survive and act in this same territory. It is clear that language is the most important technics of anthropogenesis. A reasonable language evolves over time through a self-organising process in which the useful forms survive, and obsolete forms decline; others are retrieved and others are transformed by the same pragmatics of the multitude of individuals. The world out there has a direct influence on the meaning of the words, but does not determine the meaning of the words: the meaning is produced as a system of feedback between individuals that flows out of a complex system of interaction between networks of pre-existing signs. This makes language a system that evolves and that is able to deal with this complexity. If certain nodes of the environment are important, the linguistic system will organise itself through an accurate and

strong set of nexuses of these aspects. The linguistic system will organise itself generating meaning beyond the world, as entheological systems and Western metaphysics show. There is no direct relation between language and the world if not in the pragmatics in progress.

The research sees language as a self-organising and self-poietic system; this position compensates for the post-modern and post-structuralism in a dynamic and functional solution, through this action the research can resolve the production of sense and meaning in the Tetrads, as open dialectics between signs for nexuses, which produce interpretations as open configurations, and thus that are able to dialogue with and participate in the complex systems of this anthropocene and of the test society.

This allows Pedartgogy (as pedagogical poetry) to position itself as a system of teaching, collection, analysis and codification of meanings, and thus to resolve its purpose: to learn.

But the research goes beyond this. In fact, if we describe the language without referring to a purpose-position, then by extension we can do the same thing for knowledge. The research must use the term 'scientific research', but it would seem to accept a language of an orthodoxy that has permeated the whole of the 20th century. In fact, the adjective *scientific* determines a vision. The point is that the research is founded on gnoseological pessimism/openness, tragedy of knowledge (Unterstainer, 1949) and subsequent openness of knowledge, and on the syncretism of the Magisteria, i.e. Complex knowledge, and in fact cannot clarify itself or determine a priority for the so-called 'scientific knowledge' (episteme), as science too is a form of magisterial knowledge, and thus regarded by the research as an equal authority as the other disciplines (shamanism, poetry, religion, philosophy).

Nevertheless, scientific knowledge represents one of the magisterial forms, and like the others, it must be taken into consideration. The research describes language as a complex and solid system that supports and recompiles our experience of nature. It does this with shamanism and its visions, and with liturgical forms, performances and narratives; it constructs narratives with entheological forms of religious revelations, coupling with a belief that is in any case the only possible foundation of a system of beliefs and desires. It is achieved with riles and the syntaxes of language in philosophy, through to the empirical forms of technological experimentation in science.

The research embraces a syncretic view. It describes language without referring to a purpose-position and by

extension does the same thing for knowledge. In the work, *Out of Control: the new biology of the machine* (Kelly, 1994) we find a clear description of how the thinking of the Beat Generation and the Heart Movement of the 1960s, distilled by works from the *Whole Earth Catalogue* (1968-1974) to the thinking of digital culture and *Wired* (1993 -1999). It is clear that for Kevin Kelly, editor of both publications, complexity, freedom and newness are the foundation of life on this planet. Kelly retrieves from ecology a view of complexity in keeping with what we regard as complex in this meditation. Kelly highlights the principle of self-organisation. He clearly declares that complexity is not chaos.

This vision lead research to investigate the nature of the youngest Magisteria: the scientific approach. Science can be seen as an isolated element in a closed, fragmented social system such as western society. Today, students and academies need a more open and broader system. Academies need to come to grips with complexity in order to ensure their own survival. Knowledge must be dynamically free and complexity is liberty. In our evolving contemporary society, the acknowledgement of complexity is a forced step. Knowledge and truth will not be obtained through the enforcement of universal laws, through a centralised control, nor will knowledge and truth flourish if they maintain rigid methodologies; because as we discussed earlier, every system of knowledge will become old very fast if it comes to be driven by methodology, or becomes rigid. Knowledge and truth need to be as open as they can be, externally and internally. The Research retrieves what Lyotard calls '*narrative knowledge*' (Lyotard, 1979) and syncretising this with the work of Roy Ascott, the Research calls this "*Virtual Knowledge*":

1. The criteria for Virtual Knowledge are dynamically defined by the con-text in which the narrative functions. Contexts are local and global; i.e. the Academy and the society (town, site) as well as the nation and the world (intermedia, internet);

2. No specific Magisteria is privileged in these virtualisations. They lend themselves to a variety of language games;

3. In the 'pragmatics' of these virtualisations, every element of the new territory strengthens the social norms;

4. Virtualisations have a temporal nature, they re-enact past experience, re-mediate past experience as present events, no matter whether this experience is real or imaginary. The meaning of the virtualisation lies in the metre and rhythm of its present re-enactment, or at least its present story-telling;

5. Virtualisation is based on narrative, through the forms and technologies of its time, the narrator performs the function of integrator, and all those who participate can place themselves in all the available roles as narrator, hero, victim, god.

In the academic praxis of the Faculty of Media Design & Multimedia Arts, one of the difficulties encountered was trying to find a scientific dimension of this 'virtualisation' of knowledge. It is true that Virtual Knowledge includes aspects of scientific knowledge, but the narrative assertions cannot be the subject of discussions and tests. What is scientific is the declaration of intention, what the intention is and what is the possibility of demonstrating the experience. The syncretic position of the Non Overlapping Magisteria is important not only for the relations between science and society, but also for the development of new forms of understanding of scientific knowledge and of scientific practice in general. The traditional division between the two cultures no longer has a *raison d'être*. “*As a matter of fact, contemporary science is at its most interesting where disciplines intersect: biotechnology, genetic computational algorithms, cyber-networks and virtual realities.*” (Cilliers P., (1998) 2000: 129)^{cccxliv} The research understands how an immanent and contingent research implies that in narrative knowledges (almost all knowledges), the value of the knowledge is the result of the pragmatic interaction of the participants. These pragmatics produce denotative, self-centred (cultural narcissism), and odological (in time) feedback. The important thing the research notes and implements is that there is no need for special procedures to authorise a narrative process. A narrative process simply *is*. We could argue that life is an 'informavore' (Miller G.A., 1983)^{cccxlv}, and thus life is a narrative process.

Yet the theory of the Magisteria is more flexible. The magisteria make up the parts of an open system, which brings the whole of humanity into the picture. Cultured as a whole, the single Magisterium do not depend on their own authority, but on the pragmatics that they initiate and that they are the result of: the individual has visions and connects the points in a story, has entheological experiences, uses the formal rules of language (or is

used by them), experiments and tests. For this reason, the criteria of knowledge in Pedartgogy are not merely denotative, but must be highly flexible.

Pedartgogy aims to be a method for working in the test society (Zielinsky S., 2012), with young people who are each contingent expressions of experiences, making it always already complex; it is open because it must take in the entire scenario in its visions, beliefs and desires (accounts). Pedartgogy is not validated by experts, but by itself as a complex and open system that operates in the S<>T dyad in time. It is now impossible to have the ideal of a single vision of the world in a single comprehensivist coherent vision. Ascott teaches that we no longer have a uniform coherence; rather we have an open network of living and dynamic interconnections.

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CONCLUSION

Knowledge is always and inevitably linked to the technics with which it is passed on, Pedagogy becomes a questioning of the object of knowledge, which transmutes into a definition of the ways it can be visualised. Ideas originating in the exploration of the paths of thinkers and artists have produced the hypothesis of a ‘second order pedagogy,’ which becomes an active part of the generation of meanings. In a contemporary context, meanings are no longer unchanging, since the information society (Castells M, 2000) brings with it an aesthetic acceleration where knowledge ‘no longer lies in time’ and memory falls into crisis while the students and teachers become immersed in a perpetual ‘test society’ (Zielinski S., 2010). Philosophy lessens its speculative role, whereas art, seen as the specific origin of anthropogenesis, is proposed as a new apparatus for theoretical speculation (McLuhan H.M., 1960).

This research then, setting out from a pessimistic position in relation to knowledge and truth, amplifies them to possible forms, (*magisteria of knowledge*, see chapter 2) and therefore causes a dual shift of philosophy towards art (*artistic practice of knowledge*) and of pedagogy towards hermeneutics (*aleurgie, care of sense, Game of Truth*).

The Research proceeds deriving from amongst texts and ideas. The term “Dérive” (adrift) as a practice is attributable to Guy Debord (FR, 1931-1994), who defines it as psychogeography, as the 'study of precise effects of the geographic environment, arranged consciously or not, and that acts directly on the affective behaviour of the individuals.’¹ The tool of psychogeographic analysis is Dérive, or the practice of crossing the various environments, without destination and with interest in the encounters. Dérive in terms of the research, indicates a cultural practice with no end, used to generate the very process of knowledge. A research that abandons for inertia the course of events ending us far from an ordered and regulated process dérive presents itself as a technique for passing quickly through various environments. The concept of dérive is indissolubly linked to the recognition of effects of a psychogeographical nature and to the affirmation of a lucid-constructive behaviour. (Debord G., 1956)²

1 Debord G., *Théorie de la dérive*, in *Les Lèvres nues*, n. 9, November 1956, Bruxelles; republished without the two appendices in *Internationale Situationniste*, n° 2, December 1958, Paris; It. ed. *Internazionale Situazionista*, Nautilus, Torino;

2 Debord G., *Théorie de la dérive*, in *Les Lèvres nues*, n. 9, novembre 1956, Bruxelles; ripubblicato senza le due appendici

This method allows the research to draw a distributed representation, that is not a representation in the traditional sense of the word, i.e. the production of a lexicon as apparatus.

There are no fixed symbols that stand for something, there are no fixed grammatical relations between these, and the system itself does not require a rigid semantic level of interpretation³. This is founded in experience, in the praxis. And this type of representation is typical of art, where the artist is an apparatus of understanding of the new human proportions through having experiences through artwork. The work of art is always an experience, it precipitates the precepts, the intuitions, the concepts and the ideas in a practical act of experience shared between the artist and the public^{4 5}.

With this premises the methodology consisted of a textual and visual description of a territory in a cartography of meaning that shifts a linear vision of pedagogy to a vision with its foundations in the complexity theories, which, by no means incidentally, is described by a portmanteau: Pedartgogy.

Whatever the power of suggestion, the true fascination of artistic research may be, it appears clear that the questions it explores belong to larger a scientific and philosophical debate. Above all, it must probe the possibility of identifying and defining precise connections and stable links between originality and reproduction, between natural and artificial, between real and virtual, and between living and non-living; connections and nexuses that will guide us towards a syncretic vision of the galaxy of phenomena triggered by anthropotechnics. Human knowledge is produced in a series of intellectual acts and practices, with the capacity to set in motion an a unification human experiences. In other words, it creates metaphors that become common and synchronise the different experiences that today, although not exactly coinciding, are very similar to the image of an 'Unexpected' that makes the process of the experience, and the sharing of it, a critical process.

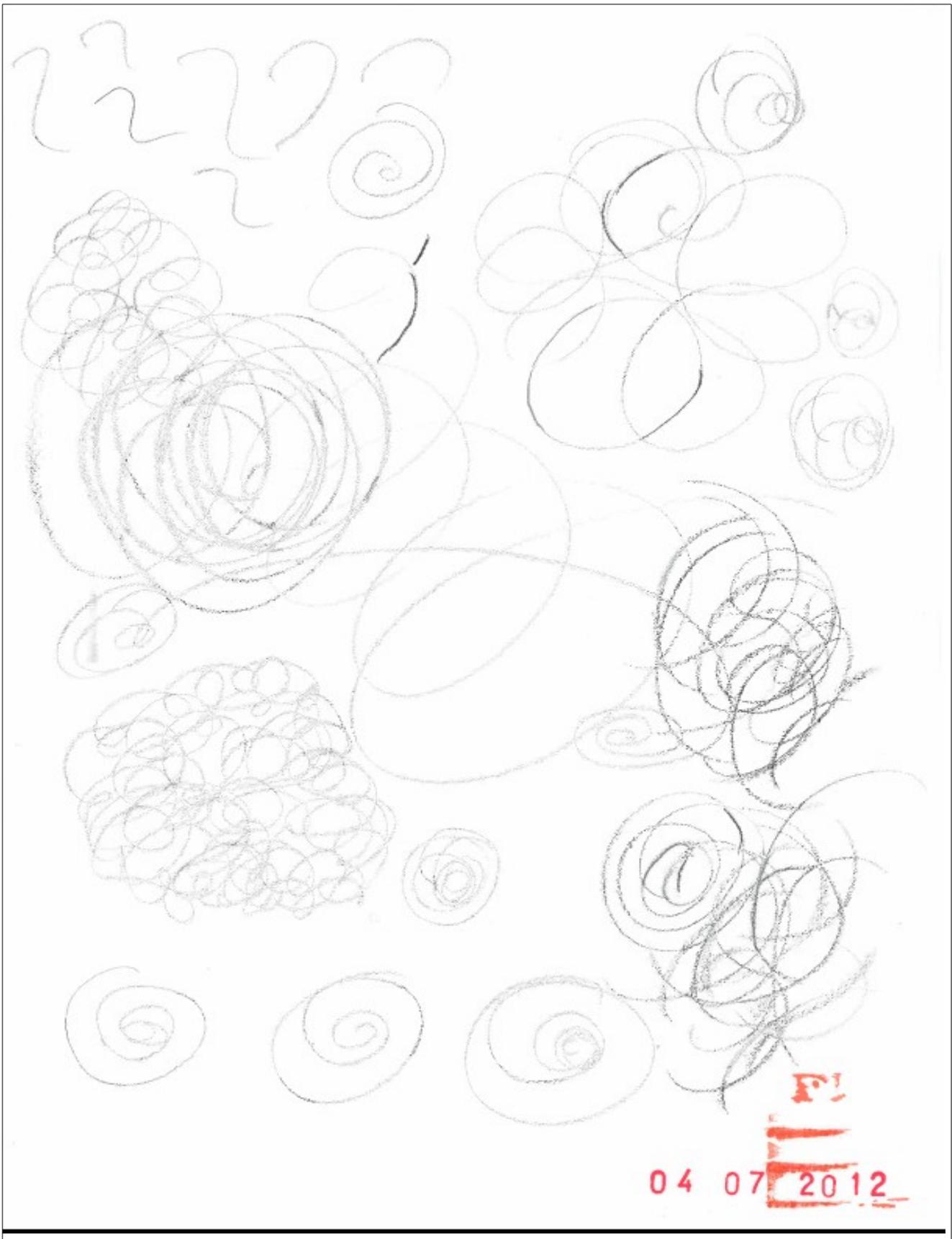
in *Intenationale Situationniste*, n° 2, dicembre 1958, Parigi; trad.it. *Internazionale Situazionista*, Nautilus, Torino;

3 This 'liberty' can be clearly seen in action in the Tetrads and in the production of a *Lexicon*;

4
5 Of course representation is asymmetrical: a portrait of an artist represents the artist but the artist does not represent the portrait. Film *Aliquid stat pro aliquo*. We should clarify that any theory of representation derives from a specific theory of signs. In many semiotic systems, the sign acquires meaning due to the fact that it refers to something: it represents the referent. The Greek σημεῖον *semeion*, means 'something that refers to something else', for medieval philosophers, "*aliquid stat pro aliquo*", modern meditation studies the phenomena of signification: i.e. every *relation* that links something material present with something else that is absent. As the *Non Pipe* by Magritte means, it is a reflection of art (Magritte R., *The Treachery of Images (La trahison des images, 1928–29, translated as The Treason of Images)*, Los Angeles County Museum of Art (LACMA) USA;). The painting is not a pipe, but rather an *image* of a pipe, which was Magritte's point: *The famous pipe. How people reproached me for it! And yet, could you stuff my pipe? No, it's just a representation, is it not? So if I had written on my picture "This is a pipe," I'd have been lying!* (Torczyner H., Magritte: *Ideas and Images*. p.71, New York : H. N. Abrams, 1977. ISBN 0810913003)

As quoted at the beginning of the first chapter and forth: the meaning of the information lies in the *remnant* of the communication itself after it has become a hybrid with the technics to which it assigns itself.

The model and practise of a pedagogy adapted to an always already new territory that, acting as a homeostatic practise with a second order effect, produces research and, also and above all, knowledge.



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- Reframed: *'New Realities: Being Syncretic; A transdisciplinary inquiry into art, science, technology and society'*. Partner and Host: The University of Applied Arts Vienna- Angewandte , Vienna, 3 July – 5 July 2008. The slow flowering of a Narcissus Poeticus becomes the subject of a New Media Art installation hosted in an unusual exhibition space: a video Tv channel. The “Technoetic Narcissus” is a work that, linking authors and the public, seeks to assure intersubjectivity in the realm of signifying. The project aims to active collaboration between different voices from the artistic culture by producing texts that explore the concept of Human Cultural Narcissism, a concept that has yet to be properly theorised. At the end of the exhibition, the texts and images of the flowering, along with the interpretative cooperation by various authors and participants, will be gathered and published in a limited-edition book – replete with its own ISDN - that will represent the real and final artwork. At the same time, a version will be made available through on-demand digital publishing for all artists, scholars and other people who are interested. - Contributor to the artwork with a text: Pier Luigi Capucci (Media Theory), Roy Ascott (Technoetic Arts), Jens Hauser (Bioart & Media Theory), Nicola Verlatto (Artist), Marta de Menezes (Bioart), Wu Ming 2 (Novelist), Enrica Borghi (Artista), Antonio Caronia (Critical Theory), Karin Andersen (Artista), Maurizio Bortolotti (Art Curator), Alessandro Bertante (Novelist), Giuseppe O. Longo (Cybernetic), Cristina Trivellin (Art Curator), Steve Piccolo (Musician), Amos Bianchi (philosopher & Media Theorist), Orio Vergani (Gallerist), Elif Ayter (Artist), Natasha Vita-More (Artist), Aria Spinelli (Art Curator), Antonio Lucci (Philosopher), Alessio Chierico (Media Artist). Project text published on the artwork website. On line at 12/12/11: <http://technoeticnarcissus.blogspot.com/>
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