Call for Applications for Transdisciplinary PhD Scholarships

Plaine Commune Chair of Contributive Research

Maison des Sciences de l'Homme Paris-Nord
Ars Industrialis - Institute for Research and Innovation
with the Fondation de France, Dassault Systèmes and Orange

Projet soutenu par Fondation de France

Table of Content :

The Ministries for Work, Industry and Research have commissioned the Territorial Public Establishment of Plaine Commune, the Institute for Research and Innovation, the association Ars Industrialis and the Maison des sciences de l'homme Paris Nord to cooperate with Orange and Dassault Systèmes, and other potential industrial partners, in order to experiment with the possibility of developing a contributive territorial economy.

Such an economy will be based on the redistribution of the time gained through industrial automation into the collective production of skills, capabilities and knowledge, which will be accorded value under this new macro-economic model. To be sustainable and constructive, such a proposal includes the creation of a Chair of Contributive Research, which will document, instruct and oversee scientific experimentation within the territory.

The Chair's mission will be to conceive and create other credential-issuing Chairs in Higher Education.

In collaboration with Dassault Systèmes and Orange, the Chair of Contributive Research will also aim to develop new contributive digital resources and interfaces to facilitate the creation of a local collective intelligence, by interweaving research activity into the administrative, economic and socio-political life of the territory.

1. RESEARCH CONTEXT AND OBJECTIVES

Disruption: the current stage of the Anthropocene

We are living in a phase of the Anthropocene[1] specifically characterized by 'disruption'. Technology evolves much faster than social systems. As a consequence, all social organizations, from the family and government, to companies, languages, the law, and the rules governing the economy and taxation are transformed. The extremely fast pace of transformation has got out of hand in the spheres of politics and society, and for public authorities in general. Social systems are bypassed by new start-ups built around a process of permanent and radical innovation, and consequently no new economic and social model can be developed with a view to long-term sustainability.

The misalignment between the evolution of technical and social systems isn't new: Bertrand Gille describes it as a typical consequence of industrial revolution. However, in this new paradigm, regulation, legislation and knowledge always come too late in their attempts to come to grips with 'the new'. The delay results in an unprecedented and constant extension of legal and theoretical loopholes.

In the first instance, these disruptions have been facilitated by the *World Wide Web*, developed at CERN. However, neither France nor Europe are currently their cause: on the contrary, most current disruptive models are born and developed around the digital industries of Northern California, and generally at the expense of the French and European economies.

In light of the widespread rollout of automation across industry, macro-economic transformations of the future will require the conception and materialization of new development models. Such models will lead to a progressive transformation of the economy, structurally overcoming disruption in a manner that, for Europe and France alike, will constitute a decisive bouncing back. However, this opportunity can only exist if research and higher education institutions collaborate with public authorities and civil society in order to invent new types of social and economic model.

If we don't reach a new (metastable) equilibrium between social systems and technical systems, dreadful consequences can be expected. Not only will the technical system end up annihilating social structures and destroying the individuals who realize themselves through those structures, but the individuation of a thriving technical culture will inexorably decline and won't be able to rejuvenate itself through social or psychic individuation. Without such individuation, no technical invention or fulfillment would be possible.

If we define entropy[2] in accordance with its broadest, super-thermodynamical meaning as the tendency to disorganize and dissociate structures, as the tendency of a system to exhaust its dynamic potentials and capacity for conservation and renewal, then disruption could be described as an entropic process. During this process, technological innovation becomes self-destructive, disorganizing social

[1] Originally suggested by Paul Crutzen (Nobel Prize in Chemistry), the term 'Anthropocene' refers to the geological era that started when human activities started to have global consequences on the environment, to the point of threatening the sustainability of life on Earth. This new era is believed to have started at the end of the XVIIIth century, from the time of the industrial revolution onwards.

[2] The concept of entropy was initially intended to describe the unavoidable dissipation of energy in the universe. The entropy rate is the measure of disorder in a local system. In this sense, it refers to the effects of a process that tends to close in on itself and exhaust its own dynamic potentials.

structures as it flies under the radar of public authorities. Disruption is also part of the massive process of increasing entropy that characterizes the ecological instability of the Anthropocene. All of the (climatic, geographical, demographic, biological) systems that constitute the biosphere are failing to survive the technological, industrial and economic projects that are currently being pursued on a global scale.

In this situation, it seems necessary to consider a new macroeconomic model privileging the production of negentropy[3], and to rethink the way in which we articulate the relationship between technology and territory.

Complete automation and the progressive disappearance of the employment model

We can compare the period we have been living in since 1993 to that of the 1910-30s, which were characterized by a general taylorization of the means of production. It is widely acknowledged that, over the next two decades, algorithm-based digital automation will have massive consequences for employment. Such digital automation is manifest in the data economy as well as in new fields of robotics, including home automation. Half of the current remaining jobs are considered partially or entirely automatable, doing away with the need for a human operator. Of course, this new wave of automation (the fourth in industrial history) has yet to be fully conceptualized. Nevertheless, we know that building robots won't create new jobs, since automated systems are themselves produced by automation. The Schumpeterian model of creative destruction is no longer relevant.

Roosevelt faced the radical upheaval of economic taylorization by creating an income redistribution system based on paid employment. However, this very model is now challenged by automation, which tends to replace not only factory workers, but many other positions in all kinds of domains (including education, medicine, law...). Such a challenging situation leads to the following question: with what money will the individuals put out of work be able to consume the products of an automated data economy?

According to the Roland Berger strategy consultancy, we are set to lose 3 million jobs in the next ten years. This could have dreadful consequences on the urban territory of Plaine Commune, whose population is extremely young and particularly exposed to risks of social tension. However, there could be a way to transform the disappearance of jobs into a positive opportunity. To conceive and set up a suitable solution, it is necessary to establish cooperation between higher education institutions and the various authorities involved (from local economic structures to regional and national authorities).

A new economic model based on the development of negentropic capabilization

Ars Industrialis explores the hypothesis that robots and algorithms are both the cause and the solution for the generalized process of precarization and proletarization. However, to be able to reach a workable solution, we need progressively to step out of the economic model based on salary and wages. This in order to rehabilitate and reassess the value of work itself as a means of enhancing individual knowledge and capabilities, as well as those of collective intelligence. Exiting the wage-based economy will require us to progressively give up the redistribution of productivity gains towards purchasing power (materialized through a salary) and to change our criterion of redistribution. Indeed, if automation allows us to save time, time is precisely what should be redistributed to citizens.

[3] Propensity towards structuring, diversification and innovation. This concept was first used by Schrödinger to explain the local and temporary opposition between the organization of living beings and entropy's unavoidable law of increase. Negentropy is thus the process that characterizes the living as it fights against the dissipation and resulting disorganization of energy. The concept has since been employed more broadly to describe everything that tends to create difference, choice, or novelty in a system that expands to favour its own preservation and/or improvement.

There will be two possible ways to use this time:

- it can be wasted in vain on the consumption of the culture industries, where the decline of purchasing power will mean that consumer activities can't produce anything but frustration; or it be mined by the digital labour and data economy, used for attention capture and data tracking, which leads to the mimetic reproduction of consumerist behaviors ;

- alternatively, it can be dedicated to the creation of new know-how (*savoir-faire*), the pursuit of academic knowledge (*savoir-conceptualiser*) and the development of lie skills (*savoir-vivre*). It would consequently help individuals to develop their capabilities, meaning their capacity to 'co-individuate' themselves through the exchanges taking place within collective projects.

The answer to society's digitalization and automation is thus twofold:

- on one hand, it is a matter of redistributing equitably, around sets of fair conditions, the time that machines allow us to save within the production process ;

- on the other hand, it is about inviting those who benefit from this redistribution to use this time to work for themselves by creating knowledge (through making, living, thinking) that they will be able to have valued within a contributive economy (as per the conditions outlined above).

This would give individuals the right and the duty to develop and share their own abilities. And it is why it seems necessary to set up a contributive form of income that would remunerate the use of this time for capacitation and the realization of collective projects. It postulates the creation of empowering structures and institutions that could offer means not only to develop knowledge individually and collectively, but also to support contributive projects which will participate in the local development of society. These institutions and this contributive income will have to be integrated within the collective organs of the local contributive economy, which might include contributive investment funds, certification boards and accounting practices of local contributive institutions. Their aim would be to capabilize individuals and, at the same time, to get them working at the heart of society.

The contributive economic model can accordingly take inspiration from two pre-existing models:

- open source work organizations, in which communities of knowledge and what Amartya Sen terms 'capabilization' are already being formed;

- the specific status of temporary and seasonal workers within the atistic and entertainment industries, where, in the case of the French state, conditional resources are allocated for periods of time without paid activity, with conditional income funding preparatory activities expected to lead a greater social good.

The application of this kind of approach to economics and society would allow the production of negentropy to be accorded economic value. Processes of capabilization remunerated by contributive income and facilitated by contributive institutions are producers of negentropy, in the sense that all the knowledge and capacities developed through working are processes that tend to produce organization within communities that shares common goals and rules. They also produce diversification, novelty, and singularity through processes of peer-exchange and review. The accumulated practical, social and conceptual knowledge to which they give rise never cease to evolve through the singular practices of each individual, and contribute to the dynamic evolution of societies, which distinguish and transform themselves through new techniques, new ways of life and new theoretical activities.

Conversely, the skills required by a job[4] trap employees within the execution of their tasks. They take no part in defining those tasks and sometimes do not even understand their global signification. Productivity as an economic imperative requires the employee to follow pre-established behavioral standards, adopting standards to which he has to adjust his conduct on a reflex-driven basis, and that he cannot that he cannot un-automatize. This stops him or her from developing a personal practice. Employment, when it doesn't require the exercise of knowledge circulation, but rather automatic application of senseless procedures, is structurally entropic: it is built upon paralysing processes, that repeat themselves endlessly rather than producing difference and novelty. Without claiming that this model is the only alternative, it seems necessary to acknowledge the gradual disappearance of employment, in order to imagine a potential way out of the Anthropocene, apprehended as an *entropocene*.

Territorial experimentation and contributive research

In order to be implemented in a durable and constructive way, macroeconomic proposals of this kind must be investigated, both theoretically and through field research and experimentation, based on the appropriate technological developments.

It is in this context that territorial experimentation will be undertaken in the Plaine Commune area under the aegis of the Chair of Contributive Research. The project will bring in researchers (legal experts, economists, engineers, sociologists, psychologists, computer scientists, telecom scientists, designers, artists, mathematicians, philosophers, etc.) working closely with local inhabitants (associations, services, societies, elected representatives, citizens), to test and work alongside experimentation with new economic models and new ways of using digital technology. The effect will be to make the territory of Plaine Commune an examplar of contributive digital urban society.

The Chair of Contributive Research will develop action-research methods based on contributive technologies designed and developed in collaboration with the area and the local industrial partners of the initiative.

The Chair will also strive to conceive and define two other Chairs, which will be set up over the coming year:

- a Chair in Higher Education dedicated to the new field of the development of contributive, self-learning digital territories which will be able to provide diplomas and credentialization.

- a Chair in Capabilization, in order to go beyond classic forms of (permnanent or continuous) professional training, by offering capability training to very large portions of the population, most notably those benefitting from contributive income.

2. CONTRIBUTIVE RESEARCH : PRINCIPLES, CHALLENGES AND

[4] 'Employment' refers here to the programming of human action framework as a contract of subordination in exchange for an income, acting as a kind of allegiance (Alain Supiot) and proletarization, meaning loss of knowledge (cf Ars Industrialis). This subordination is moderated by labour laws and collective conventions. Employment tends to subject employees to competency models and favors their adaptation to the procedures defining their tasks. It is opposed to 'work', which allows individuals to develop their abilities, socially and collectively, through a creative activity that makes sense to them. Unlike employment, work implies knowledge transmission, as well as its transformation and renewal through each individual's singular practices.

METHODOLOGY

The epistemic challenges of the digital transformation of our mnemotechnical environment

Today, digital technologies have penetrated into all spheres of existence: they constitute a new milieu for all kinds of knowledge.

In this environment, practical, social and therotical knowledge is not only transmitted, it is also practiced and transformed. Furthermore, it is from this environment that academic fields build their practices and their subjects.

The digital transformation of the mnemotechnical milieu leads to major epistemic ruptures across the fields of academia. The new scientific instruments put on the market have their own experimental working principles. These remain widely unknown to academic researchers, despite profoundly altering their subjects and practices. Academic disciplines shouldn't simply conform to the new principles set in place by technological consumerism. On the contrary, the epistemic breaks produced by the transformation of the technical milieu must be handled rationally within those disciplinary fields and critical peer communities: they must be theorized and criticized through experimental instrumental practices and explicit protocols of observation and formalization.

Local cooperation and international collaboration

While the use of digital technology has spread massively, their implications for the construction of knowledge (practical knowledge or know-how, social knowledge and conceptual knowledge) remain untheorized. Two complementary approaches seem necessary.

- Due to the huge range of epistemic shifts and of the many epistemic challenges thrown up by the digital era, it is necessary to grant time to researching and theorizing. This will enable a rational reflection regarding those transformations and the circulation of these insights across the academic community.

- Since a premature digital practice can be toxic (whether it concerns school environments, scientific fields or social relationships), it is also necessary to think of a *rational* and *deliberate* appropriation of those technologies by the population. This may lead to experimenting with new network architectures and new ways of using these technologies.

The project of cultivating contributive research responds to a dual need: the need for critical thinking in the long run and the need for a 'therapeutic' action in the short run. It combines the setting-up of fundamental research to theorize the impact of the digital across diverse disciplinary fields, as well as rational and supervised experimentation conducted in the territory in accordance with the methods of action research. Only this type of cooperation established between education, research, economic and public local actors will be able to handle the prospective theoretical, critical and operative challenges of a profound mutation in industrial civilization

An initial mapping project will strive to identify the pre-existing contributive activities within the territory of Plaine Commune, as well as to collect the views of future partners. Such a survey will allow the researchers to set up, in collaboration with the local inhabitants (citizens, societies, elected representatives…) a true territorial experimentation procedure that enable the elaboration and testing of new economic and social models (and in particular new processes for the redistribution of productivity gains).

Creating a network between the learner-territory and other international agents interested in the same questions (potentially Belgium and China) will also enable a real-time comparison of different research, experiments, hypotheses and models. This confrontation could take place through the *Digital Studies Network,* which was created by the IRI and gathers together 40 research institutions in Asia, North and South America, as well as in Europe.

New forms of publishing and digital 'editorialization'

Such a program requires the reactivation of action research methods by redefining them according to the contributive potentialities of digital technologies themselves: once those technologies' inner working has been redesigned, they will be able to elaborate new devices for association, transfer and exchange between academic researchers, territorial collectivities, educational institutions, businesses, the charity sector, elected representatives and citizens.

Such an organization of research requires a progressive publication of works and papers during the research process, for the territory's actors to drawn on as well as enrich, and also to be read and debated in line with the acknowledged principles of peer-review. This requires the setup of a new digital publishing activity, which will exploit the content management possibilities offered by new forms of knowledge support.

The digitally-enhanced publication of scientific work opens up possibilities for collective annotation and categorization that were hitherto impossible with print. The funcionality of digital instruments offers promising perspectives for current practices of research and for the creation of a digital collective intelligence. It furthermore allows the local population to take part in research, granting them a potential for self-capabilzation similar to that of students and researchers.

IRI is already working on developing similar technological devices: this research will have to be pursued through the drawing up of specific criteria for the redesign of network architectures and data formats. This way, new contributive functions will be added to current web formats and pre-existing tools. Those functions allow digital platforms to be used for the creation of empowered communities (rather than for data capture and exploitation by the *data economy*), in particular through:

- graphic annotation and shared categorization, allowing active users to compare notes and interpretations, allowing the creation of a dialectical exchange that draws on different types of attention;

- data analysis algorithms built upon qualitative recommendations made through the analysis of annotations, which allows for the constitution of affinities and groups around specific interpretations.

- new types of social network based on connecting groups, rather than isolated individuals (based on the concept of *collective individuation* from Simondon), enabling the confrontation of interpretations, controversy and reasoned discussion, which is necessary to the practice of public debate and knowledge building.

These new forms of contributive and territorialized editorialization process should be part of a larger project: the constitution of a new publishing industry, in compliance with the societal territory project, breaking away from the ways of traditional media.

A necessary transdisciplinarity

In order to be sufficiently documented and conducted, the theoretical subjects or questions conceptualized during this research programme require cooperation across diverse academic fields. If the research concerns 'intersecting subjects' —which bring up fundamental questions and require a theoretical elaboration based on several fields—it cannot be divided along disciplinary lines. On the contrary, research has to coordinate the way in which these fields and subjects are articulated by means of a transdisciplinary organization.

The topics of doctoral dissertations relate to fundamental theoretical questions, which are different from the practical empirical issues (social, economical, juridical, political) existing at a given time within a given territory. However, it is only under the condition of addressing the fundamental questions that practical situations can be analyzed in depth. Such an analysis then leads to the elaboration of rational (political, economic, juridical) hypotheses to face those empirical issues and to transform factual situations. That is why (social, economic, juridical) empirical issues should be turned

into theoretical questions that need to be documented and then addressed through the mutual engagement of different disciplines with local actors.

Setting up a form of contributive and transdiciplinary research on these subjects should initiate a transformation, an evolution and a reorganization of several research fields. Then, it will be possible to consider alternatives that will lead to the reconstitution of economic and social development models, as well as sustainable technological practices.

3. RESEARCH AREAS, THEMES AND SUBJECTS

THEME 1 – Political economy and contribution: work, value and negentropy in automated society

1/ Capacitation and generalized automation
2/ 'Neganthropy' in the context of the Anthropocene
3/ Contributive income, social rights and 'negentropic value'
4/ Work, creation and value appropriation within digital platforms
5/ Contribution: a political and technological issue

THEME 2 – Education, teaching, research, capacitation: libidinal economy and transindividuation in the digitalization of knowledge and the proletarianization of the mind

6/ Transindividuation and reticulation of social relations
7/ School, capacitation and digital technologies
8/ Digital studies, epistemology and contributive research
9/ Digital studies and creation-research: contributive and epistemological approach to software and artistic creation
10/ The different types of attention within automated environments
11/ Organogenesis and the economy of desire and drive

THEME 3 – Society, territory, public authority: technical systems and social systems facing disruption

12/ Territoriality and mobility within smart cities
13/ Network decentralization and territorialization of the Web
14/ Health/Society relationships: Health 3.0 and the quantified self
15/ Ars memoriae and industrial legacy: digitizing the archives of large companies
16/ Public authority and the 'internation'

The dissertation subjects will be developed with the help of the scientific committee and the relevant research advisers. At this preliminary stage of the program, the following proposals are purely indicative. Their purpose is to display how analyzing factual and concrete situations (themes) requires addressing some theoretical questions (subjects), which require the articulation of several disciplinary fields.

THEME 1 - POLITICAL ECONOMY AND CONTRIBUTION

Work, value and negentropy in the automated society

1/ Capacitation and generalized automation
2/ 'Neganthropy' in the context of the Anthropocene
3/ Contributive income, social rights and 'negentropic value'
4/ Work, and value creation and appropriation within digital platforms
5/ Contribution: a political and technological issue

1/ Capacitation and generalized automation

The progressive automation of all branches of business and the increasingly widespread proletarianization of employees characterizes a state of affairs, a concrete historical situation that fits a given stage of the technical system evolution. In this stage, the classic model of redistribution of wealth through the purchasing power of salaries seems to be exhausted. These technical transformations open up the question of the link between automation and proletarianization, knowledge and capabilization. If a contributive income that remunerates the practice and the production of social, practical or theoretical knowledge seems necessary, it implies providing individuals with the means to develop their capabilities and share knowledge through specific institutions. The development of such institutions requires us scientifically to address the question of capabilization.

However, a subject like capabilization cannot be theorized within a single disciplinary field: on the contrary, it has to be addressed from several fields and areas, such as the economy of development (as shown by Amartya Sen, Nobel prize winner in Economics, through his work on 'capabilities'), the anthropology and the sociology of work, education and training sciences, political philosophy (for instance the work of Martha Nussbaum), political science, management, public law, etc.

2/ Neganthropy in the context of the Anthropocene

The current period of the Anthropocene is characterized by two phenomena: an upheaval of the ecosystemic balances that constitute the different dimensions of the biosphere, and a process of disruption that implies the disorganization of preexisting social structures, as a result of the radical and ongoing technological innovation.

This period faces a massive increase of the entropy rate, that is the tendency of a system towards the disorganization or dissociation of structures - climatic, biological or social - which tends to exhaust their dynamic potentials and their ability to preserve and regenerate themselves. Negentropy is a local countertendency of entropy. The concept originally refers to the process characterizing life itself, in the sense that living systems struggle against energy dispersal and its resulting disorganization. The relationship between entropy and negentropy is deeply modified by the technical and organological form of life that we call human race, which produces entropy and negentropy on several levels: at the organic level of the living organism, at the organological level of the artificial organ and at the level of its social organizations. This ability to produce organisations, structures, diversity and differences can be described as a 'neganthropic' activity.

'Neganthropy' is also an intersecting object of research. Indeed, the notions of entropy and negentropy cross several scientific fields: *thermodynamics* (the notion of entropy was introduced by the physicists Carnot, Thompson and Clausius), the *theory of living systems* (the notion of negentropy or negative entropy was introduced by the physicist Schrödinger to characterize life, then redefined by Bailly and Longo as anti-entropy), *evolutionary biology* (Darwin's works), *information theory* (Shannon used the notion of entropy), *economy and ecology*, notably *bioeconomy and socioeconomy* (mathematician and economist Georgescu-Roegen applied the notion of entropy at the level of economical systems).

In order to experiment new macro-economic contributive models that deploy negentropy valorization devices, it is necessary to investigate the issue of 'neganthropy'. The question of the relation between entropy and negentropy should be addressed in the light of the Anthropocene's specificities. Indeed, 'neganthropy' is the new regime of entropy/negentropy, implemented with exosomatic organogenesis or the artificialization of the living, in the context of an economy that promotes negentropic value and fights against the increase of the rate of entropy.

3/ Contributive income, social rights and 'neganthropic value'

The progressive automation of jobs allows to produce more, with less employees (progressively replaced by logical robots or self-learning software). In this context, the redistribution of the gains of productivity cannot take the form of a salary relying on the employee's amount of work. In parallel, the technological innovations lead to gains of productivity, which free time from employment, and open the possibility for new activities during this freed time. This is why the question of the redistribution of this time should be addressed, as well as the question of its content, sense and value.

In such a context, there seems to be two major risks:

- The conversion of this 'free' time into free work, through digital labor or the blind production of digital footprints exploited by the *data economy*. Both lead to psycho-social disintegration, as they bypass the transindividuation process implied in all formation, learning, work, and all transmission and sharing of knowledge.

- The creation of a competition between robots/software and employees. Such competition generates a pressure upon wages, leading to a decrease of demand on the markets (the conservative revolution answered to this phenomenon with sub-primes, which led to an ultra-speculative market and the depression of 2008).

Proposing an economy of contribution aims to avoid those two pitfalls. A contributive income would valorize the use of that extra time for the development of contributive projects, which have a practical and social value, as they rely on sharing and producing knowledge, and imply processes of psychic and collective individuation. The idea is to remunerate not exclusively the time of alienated work (which characterizes employment), but also the time of learning and of capacitation outside of employment.

Such an income could be a tool to fight against the proletarianization and psycho-social processes that are generated by a complete automation. It should then be integrated to the organs of a contributive economy, based on the valorization of negentropy. The latter is produced by all activities of 'free work' implying a transmission and a transformation of knowledge, through the constitution of organization, diversification, novelty and psycho-social singularity. This practice of social, practical or theoretical knowledge can de-automatize mimetic and entropic behaviors derived from the adaptation to the injunctions of digital milieu.

Consequently, the implementation of a contributive income asks two major questions:

- The question of contributive institutions and the necessary means to implement, qualify, certify and finance contributive activities (contributive credit, contributive investment funds, contributive organs of qualification and certification, local accounting of contributive economy).

-The question of a new labour legislation, which could not be reduced to a wage labour law. It should instead be considered as the publication of the standard applicable to all the values which would then be constituted by negentropy and materialized within the practices of de-automation and knowledge production.

The question of contributive income, social rights and negentropic value implies a dialogue between political economy, finance, political sciences, law, computer engineering (conception of contributive digital infrastructures that enable the functioning of contributive institutions) and epistemology in the broader sense (concepts of positive and negative entropy - low entropy - in physics, biology, information theory, cybernetics, anthropology and economy.

4/ Work, creation and appropriation of value within digital platforms

The time freed by the automation of jobs seems to be massively exploited by the *data economy* and the digital labor, through virtual platforms that connect suppliers and demanders of goods or services. This time is thus monetized and merchandised, through the capture of the footprints left by users during their daily digital interactions, or through the transformation of those same users into resources that can perform subtasks. Digital automation seems to be leading to activities of a desingularised type. Those activities became tradable and calculable on a market that isn't necessarily the work market anymore. Freed time does not generate true cooperation and does not lead to personal and collective fulfillment (as it doesn't lay on the transmission, sharing, and circulation of knowledge).

However, certain uses of these technologies attest of the deployment of some sort of 'freed work', during which producers, carrying singular and incommensurable knowledge, individuate themselves while participating to the production or the maintenance of 'commons' (as with open source software or Wikipedia, as well as in the creation of co-working spaces in order to develop contributive activities). The nature of the value produced this way is yet to be determined, and its evaluation method has to be invented.

The digital transformation of the economy is built upon an ambivalence between *capacitating work* (during which a worker develops his or her capacities, individuates himself or herself by transforming his or her knowledge and by participating to the creation of commons) and *proletarianizing work* (which lays on the performance of standardizable skills and the employee's submission to pre-established procedures which may not even be compensated by a salary).

Digital platforms require the mobilization of extremely diverse activities. If the actors can be hired on these platforms, in the context of a regular or occasional freelance job, their digital activities remain most of the time unpaid. There can be intentional contributions from the internet users, under the forms of annotations, comments, contents or digital footprints unknowingly left through their activity on the web. However, these forms of free activities are monetized by the platforms and, often so, at the very heart of their model of value creation (comments and ratings are crucial in the process of choosing between several offers).

This digital economy is ambivalent both on the side of production and on the side of economical valorization. Aside from the market aspect (buying and selling digital services), there is a significant aspect of non-merchant valorization, both of them being generally closely tied together and conditional to one another.

A third dimension concerns the degree of self-determination of those productions: to what extent is the labor process chosen by the worker or imposed to him? Is there any control on the quality and the organization of this process? If so, is it continuous, discontinuous, *a priori, a posteriori*?

The production of value through « digital work » thus operates on a quadruple equivocity: work/employment, paid work/non-paid work, market valuation/non-market valorization, autonomous activity/controlled activity.

The research will have to examine the available theories to think the digital economy's specificities as a tool for creating value, as well as the different forms of value appropriation, emerging from the organizational choices of the platforms. It should revolve around an empirical study, at least partly set up on Plaine Commune territory. All research should address the theories mentioned above and state both their limitations and potentials. According to the concerned field(s), quantitative and/or qualitative methods will be deployed.

For example: the field of online platforms for transportation (Uber, BlaBlaCar…) seems relevant for analyzing the diverse facets of the digital economy. Coworking spaces or the alternative uses of digital technologies in order to develop true contributive activities (workers' capacitation and 'commons' production) can also be studied.

5/ Contribution: a political and technological issue

The development of a new economic model based on deproletarianization and negentropic capacitation requires to imagine new social practices that are fulfilling, both for the individual (who develops and shares his capacities through them) and for the collective: *contributive* practices, therefore producing value. If, then, we consider the *freed* time as *work* time, and if this work must constitute a contribution, then the question of the nature of this contribution should be addressed.

The contributive dynamic rests on the contributor's autonomization (through his own capacitation) and on the production of practical or social value — which makes it a fundamentally political dynamic. In order to understand which social practices should be developed as part of an economy of contribution, we first need to understand how contribution addresses the political questions of donation, autonomy, publicity and citizenship.
Such an analysis must consider the underlying organology of these political questions, which are both economic and epistemic. On one hand, the contributor's capacitation is directly connected to the invention, the practice, the sharing and the transmission of knowledge (social practices, practical knowledge or know-how, theoretical knowledge), which constitute the ultimate political challenge. On the other hand, the technologies of spirit format the life of knowledge, and we're currently experiencing its digital stage.

It would then be relevant to precisely conceptualize the history of the grammatization process, which is constituted by the development of those technologies of spirit. Such conceptualization leads to the study of these technologies' digital transformation, while analyzing the methods, the practices and the technologies related to the individuation of knowledge, whether those are categorization and interpretation theories (hermeneutics) or contemporary theories of the digital social networks.

This study should be based on numerous disciplinary fields. Indeed, the political aspect of the question implies to move forward with the tools provided by philosophy, history, anthropology, law and political economy. Furthermore, the technological aspect of this study could be explored by intersecting the anthropology of writing, the several theories of categories and categorization, philosophy, computer sciences as well as sociology and digital networks engineering.

THEME 2 — EDUCATION, INSTRUCTION, RESEARCH, CAPACITATION

Libidinal economy and transindividuation
Digitalization of knowledge and proletarianization of the mind.

6/ Transindividuation and reticulation of social relations
7/ School, capacitation, and digital technologies
8/ Digital studies, epistemology and contributive research
9/ Digital studies and creation-research
10/ The different types of attention within automated environments
11/ Organogenesis and the economy of desire and drive

6/ Transindividuation and reticulation of social relations

Social networks and media utterly transform relationships between generations. These transformations go hand in hand with the attentional deficits that digital technologies also create. Technological devices that retroactively affect individual behavior by capturing and exploiting their traces also seem to prevent them from forming their own projects and desires, short-circuiting psycho-social individuation processes. These toxic effects of relational technologies require that we question the relation between economy, libidinal energy—as per Freud's 1923 usage—and transindividuation.

To address such a question requires the mobilization of diverse domains of research, be it psychology, psychiatry, psychoanalysis, engineering sciences, communicative sciences, design, or the sociology of networks, as in Antonio Casilli's work on digital relationships, or as in Yuk Hui and Harry Halpin's collaborative work on social web at IRI (this work was inspired by Simondon's philosophy to conceive of a social network based on relations between groups rather than between isolated individuals).
The developing of innovative network architecture therefore requires interdisciplinary research, as well as new contributive digital instruments dedicated to forming capacitated communities.

7/ School, capacitation, and digital technologies: educational system and widespread proletarianization

Today, the consequences of digital automation on employment are considerable. Replacing employees with machines is a concern for liberal professions as well as for manual ones since it affects the operations of production as well as the design and decision-making processes. This context confronts our educational system to new interrogations. In the light of the automation of manual labour and liberal professions corresponding to the traditional industrial division of labour, it seems necessary to ask who to train, and why, whether in general training or in professional training.

As a result, it is necessary to rethink the role of education institutions within automated societies, especially given the fact that the process of grammatization, extended to perceptual and intellectual functions seems to lead to the proletarianization of the mind. The social networks and the data industry seem to be taking the helm of cultural industries and mass media, by focusing the desires towards products and consumer goods stimulating impulsive behaviors rather than towards objects of knowledge, which truly are objects of idealization relying on a collective desire. While machines could assure the subsistence of individuals, and enable them to share and cultivate their knowledge

and skills, the current use of algorithms by the data economy distorts their memory, captures their attentions, and governs their protentions and their behaviors.

The problem is that it was traditionally the role of school to train those memory skills, those attentional and projectional abilities, as they are essential to the learning process. The hypothesis defended here is that the educational institution has a fundamental role in the fight against generalized proletarianization and the massive adaptation of behaviors, through the development of the creative and the critical skills of students, which are essential to their autonomy.

To provide future citizens with the intellectual means and technical knowledge to play prescriptive roles concerning the content, method and applications of technical systems, the educational system can no longer carry on as usual with its current curriculum and organization. Teachers need to become aware of the technical aspects of the history of their discipline and to be able to grasp the pharmacological role of *hypomnemata* in the evolution of these very disciplines, before they can begin to articulate a scholarly approach of technical and digital environments with the empirical practices of the younger generations. Moreover, the fundamental purpose of education consists in transmitting knowledge as it constitutes the collective memory of a society: such a transmission can only take place through the socialization of cultural and technical mediums, which allow the conservation of this memory and makes it accessible from generation to generation. This is precisely why the digital transformation of mnemotechnical mediums cannot leave the current teaching and academic practices unchanged.

Deep attention and apodeictic rationality were the fruits of our historical noetic conquests, conditioned by the mnemotechnical dimension of alphabetic writing and the cultural technology embodied by books. Now, the digital tertiary retention could allow the apparition of new modes of knowledge production, new ways to organize debates between peers, and new types of rational attention, especially through annotation practices. The educational system could thus be a place for the development of a scholarly technological culture and a source of organological invention.
Therefore, it seems necessary to consider the conditions for a transformation of academic institutions, practices and programs, in order to turn digital technologies into scientific instruments and supports of memory, likely to allow the transmission, sharing and constitution of knowledge. A research project studying education within the context of the digital era cannot limit itself to pedagogy: it has to question the history of technology, epistemology, political philosophy, education sciences, neuroscience, media studies, economy, and computer science.

8/ Digital studies, epistemology, and contributive research

Digital technology permeates every level of our current existence. Technologies are forming a new mnemotechnic milieu in which practical, social, and theoretical knowledge are transmitted, applied and transformed. From this environment, academic fields create their objects and their practices. As the digital transforms intellectual technologies, it also affects biological organs and mental processes (see Maryann Wolf's neuroscience research and Katherine Hayles's work in attention studies). Well beyond its empirical effects, 'traceological' disruption brings to light the importance of the technical dimension in the constitution of knowledge, of its effect on the 'minds. These questions call for major epistemological inquiries.

Classical epistemology cannot help us apprehend the status of technical exteriorization in the generation, transmission and transformation of the human mind's life, because, apart from the fact that it only concerns itself with scientific knowledge, it conceives itself from the start as a unified *logos* untainted by any technical dimension, while our intent is precisely to investigate the question of intellectual technologies. Neither can these questions be solved through a more contemporary cognitivist approach since it excludes the potential role of technological organs in the generation of cultural knowledge, through the belief that all knowledge can be accounted for cognitively.

Because Digital Studies seek to examine the effects of technological artefactuality on knowledge and know-how, it requires a new intellectual paradigm able to articulate a plurality of disciplines.
On the other hand, general organology, which constitutes a theory of the interrelation between technical organs, psychosomatic organs and social organizations, allows us to articulate disciplinary approaches between themselves, thereby qualifying itself as a method for this new field of investigation.

Such inquiries can only be truly developed if they experience by themselves the active part that technical apparatuses play in the generation of knowledge. This is why they rely on a contributive research methodology, harnessing the possibilities that the digital can offer to the development of all sorts of knowledge, by exploring the processes of categorization and controversy enabling the evolution of knowledge. Hence, they must follow by an experimental approach of digital 'organology', producing and manipulating prototypes of digital tools for annotation, indexation, contributive 'editorialization' that should be articulated to new forms of social networks. Through the adoption of such tools, there could be a chance to reconstruct public spaces that would be able to host constructive debates between conflicting interpretations. It would enable a form of transindividuation through deliberation, for the kind of community of peers formed by any group of researchers or amateurs (which could be an artist collective or a group of citizens, of activists or inhabitants). The articulation between the academic world and the civil society could give birth to relevant 'therapeutical' prescriptions paving the way for a rational adoption of the digital *pharmakon* by social systems.

9/ Digital students and creative research: the contributive approach to software and artistic creation

Theoretical organology must be paired with the practical conception and creation of knowledge-sharing devices.

Once digital technologies are utilized in the data economy and exploited in marketing strategies, they tend to outpace the individual protentions of its users, capitalizing on their drives through algorithms in order to form them into consumers with transparent behavior.

Digital technologies, when they are at the service of the data economy and serving the interests of marketing strategies, tend to overtake the protentions of individuals, instrumentalizing their impulses, in order to shape them into predictable consumers, on the basis of an algorithmic analysis of their digital footprint through the mining of their personal data.

However, the digital medium contains the hidden potential of surpassing the barrier between the production of symbols and their consumption. Through contributive practices, individuals have access to meaning and its production, thereby transforming the very technologies that support them. If accessing information presupposes the possibility of sharing it — if the possibility of feeling presupposes the ability of making something being felt in return, if receiving meaning presupposes the ability to express it, the the digital mnemotechnic *milieu* could welcome aesthetic experiences, a collective space dedicated to sharing meaningful information, by communities of peers, researchers, artists, or more widely, of amateurs. In order to reach this goal, we must conceive and produce the tools and apparatuses that will enable every individual psyche to participate in the constitution of the symbolic *milieu* — which always double as a mnemotechnical *milieu*.

While the topic of research will be unrestricted, the creative research methodology must formulate an epistemological approach capable of addressing the interaction between the digital medium and its usage. In addition to theory, a contributive growth must be executed through software and artistic creation, especially when the project is related to participants in local areas.

This dissertation may concern digital or multimedia art in line with the 'virtual environment' projects developed by the Maison des Sciences de l'Homme Paris Nord (ACI Jeunes Chercheurs Espaces sonores, bibliothèque HOA, Projet ANR MUSICOLL)

10/ The different types of attention within automated environments

Automatization today involves an element heretofore absent in histories of industrial society: attention span. Simone Weil already described taylorized factory work as an 'attack on the attention of workers'[5] that constitutes the majority of their suffering and contributes to their alienation. In light of a progressive invasion of automated technology in the workplace, Yves Citton explains how such an alienation of attention follows the extension of neoliberal bureaucracy: 'the joint pressures of exacerbated competition, generalized supervision and constant evaluations are what cause factory worker's subjugation to seep into offices, hospitals, and schools.'[6]

We must therefore question how technological conditions affect our ability to pay attention. This would include the application of non alienating attention regimes which would give individuals the possibility of un-automating the very devices that tend to steer their behavior. Just as the human brain is capable of creatively defying its own automatisms, these synthetic creative types of attention must be put towards capacitation in collective projects and contributive work.
Given that our attention spans are formed and transformed by technology, attention as such could also be the object of an intended *design.* The issue at stake in this transdisciplinary research is that of defining and characterizing specific types of attention that can be un-automated and implanted in the conception of future devices.

11/ Organogenesis and the economy of desire and drive in the context of organologic 'hyper-maladjustment'.

The constant organological transformation that we experience today represents an unrivaled overturning to which we could apply Bertrand Gille's concept of 'hyper-maladjustment' (or disruption). This concept not only addresses the acceleration in technical evolution, but also that of the neoliberal model which replaces social organizations with technical services within an exclusively speculative economy. As such, artificial organs undermine psychosomatic organisms and social organisations all at once, leading to generalized proletarization and symbolic misery. This entropic regime threaten the metastable equilibrium upon which society is built.

We must consider this crisis as symptomatic of exosomatic subliminal processes and technical individuation within digital grammatization. Drawing from Freud's notion of libidinal economy and from Stiegler's *artefactualization of the libido,* this research will hypothesize and formulate a *sublimation economy.* This hypothetical economy, referencing both politics and psychoanalysis, will specifically transform the *economy of capacitation* into an *economy of sublimation.* Contributive work is to be reintegrated in order to facilitate individual participation in collective artistic production.

5 Simone Weil, *La condition ouvrière*, Folio Essais, Gallimard, Paris, 2002, p. 304-305.

6 Yves Citton, *Pour une écologie de l'attention,* Seuil, 2014, p.258.

THEME 3 — SOCIETY, TERRITORY AND PUBLIC AUTHORITY

Technical and social systems in disruption

12/ Territoriality and mobility within *smart cities*
13/ Network decentralization and territorialization of the Web
14/ Health/society relationship in Health 3.0 and *quantified selves*
15/ *Ars memoriae* and industrial legacy: digitizing the archives of large companies
16/ Public and international authorities

12/ Territoriality and mobility within *smart cities*

The advent of the automatic or 'smart city' has provoked a number of urban transformations, compelling a reconsideration of housing, mobility and territorial problematics, to be explored from all possible angles and disciplines, from the perspective of geography, history, anthropology, sociology, urbanism, architecture, etc.

In this context, the local population could act as prescribers of new technological apparatuses that would foster the local economy and the social cohesion of the area, instead of falling victim to digital solutionism[7], through the available commodified digital technologies. For this purpose, it is necessary to promote, through the consolidation of local knowledge, the emergence of a collective intelligence manifesting through digital tools, deeply aware of their effect on the territory.

13/ Network decentralization and territorialization of the Web

Originally, the Internet's distributed architecture entailed a decentralized symmetrical organization. However, today's centralized platforms make it impossible to read and interpret the impact of all this profiling and predictive analysis on one's perception of self. In response to these opaque threats, some users are creating safer —because encrypted— online communication spaces (TOR), offering alternatives to cloud computing (Wuala), or choose distributed architectures like blockchain. These decentralized architectures hold trust as a common principle insofar as they rely on peer-dependency, placing each user in a situation of disponibility and co-dependency with others, instead of relying solely on a third party, a currency or a specific method of evaluation. The Internet's re-decentralization obviously touches upon political, economical, societal and industrial issues.

Within the Chair of Contributive Research in the Plaine Commune territory, efforts must go into the development of an hybrid model (with *super peers*) using both top-down and bottom-up dynamics that will serve local interests while remaining compatible with the strategy of internet providers. What will be the entropic and negentropic environmental consequences on centralized and decentralized services? How will they affect the everyday life of citizens?

Decentralizing networks could serve to mobilize researchers of computer science, engineering, economics, sociology, and law. This was the basis for Yuk Hui and Harry Halpin's 2012 work on

[7] Technological solutionism belongs to the business ideology of Silicon Valley, whose corporations consider and advertize new technologies as the simple and immediate solutions to contemporary societal issues. E. Morozov criticizes this view in *To save everything: click here, the folly of Digital Solutionism*, *Public Affairs*, 2013.

decentralized social networks conducted at the Institute for Research and Innovation). Such networks would allow for anonymity amongst groups sharing projects or interests, rather than abstract links between isolated individuals.

14/ Health/Society relationships with Health 3.0 and quantified selves

Health has also been hit by the new industry built upon the NBIC convergence: nanotechnology, biotechnology, information technology and cognitive science. The commodification of medical instruments designed to measure movement, pulse, reflexes, breath, heart rate, etc. has allowed for a new *quantified self*. André Leroi-Gourhan once described hominization as a process of externalization: it is now exploring a new dimension of internalization (or endo-somatization) which incorporates bionics and neurotechnologies.

It thus seems necessary to study the relationships between the bio-psychic as well as psychosocial evolution of man and its exosomatic environment. It would allow us to understand the digital transformation of the technical environment (or *milieu*) within a much larger history of the evolution of this environment, which, according to Georges Canguilhem, is both a source of pathologies and their remedies. Such a research should be conducted across many fields, such as medicine, biology, anthropology, sociology, neurology, nano and biotechnology, cognitive science and philosophy of science. It could also be integrated into the third axis of research of the MSH, 'health and society', analyzing the effect of bodily injuries onto the psychic and social environments.

15/ *Ars memoriae* and industrial legacy: digitizing the archives of large companies

The digital revolution affects the entire industrial chain of production. The exponential and sometimes mismanaged growth in the production of data exposes companies to unprecedented risks of loss of data, of 'memory holes', threatening, in the long run, the very perpetuation of the industrial process. The preservation of digital information raises questions regarding the management of industrial legacy. Thus, managerial policies regarding archiving have become central in the strategies for industrial development.

Those research themes should be investigated from the point of view of contributive and annotative practices, as they allow the enrichment of archives. Indeed, archives only become alive where they are consulted, and when the whole informational and critical architecture can benefit from those consultations. Digitalization offers, in that respect, whole new possibilities which ought to be explored systematically.

16/ Public authority and « internation »

Public regional authority will, too, need to be rearticulated within the period of disruption that comes with digitalization. The adoption of contributive economic models (based on a economy of the commons) and the generalization of contributive research (which itself aims at facilitating the emergence of new and evolving economic models), as well as the shift in the goals of public cultural institutions, supposes a requalification of the notion of local public authority in terms of centralization and de-centralization, in our contemporary digital and disruptive context. This also constitutes the frame for the evolution of the practices and missions of educational institutions, especially the shift from formation training to the notion of capacitation.

Consequently, we will attentively examine PhD candidacy concerning political science, as we consider them likely to actively contribute to ongoing initiatives on the national level (with the programs of the State Secretariat) and at a larger European scale. The creation of partnerships is a key element for

social dialog, especially during a period of intense transformations, such as the current one. Within this context of disruption, a contributive and smart territory offers a favorable environment for a fruitful dialog between social partners, especially concerning the international organization of labour (once more with the help of political sciences).

The reevaluation of public authority both allowed and required by digital technologies can no longer be realized solely through the algorithmic governmentality of the Silicon Valley, it must be achieved through politic experiments on a local level, through the reticulation of territories. Through the local association of intelligences, fostering a new kind of relationships between territories, that could embody what Marcel Mauss calls an *internation*[8].

8 M. Mauss, 'La nation et l'internationalisme', 1920.

4. REQUIREMENTS AND ELIGIBILITY CRITERIA

Critieria for eligibility, requirements governing the content of doctoral dissertations, and the development of said research are defined by the principles of contributive research (outline above) and by the convergence of the proposed subject of research with the thematic and epistemological priorities of the Chair.

Consequently, apart from their intrinsic qualities, the candidacies will also be assessed on the following criteria:

1. The examination of the **epistemological challenges that digital technologies represent** for the candidate's field of study.
2. The development of doctoral research within **the framework of a contributive and transdisciplinary action research program** relying on close cooperation with the disciplines of other doctoral students and their research supervisors, as well as with the local territory with which the understanding, objectives and results of the research are concerned.

The field study conducted by Ars Industrialis and IRI between February and June will help identify the contributive potentialities of the area. This mapping project will be undertaken with the doctoral students, and their contribution will help facilitate the integration of their research within the designated areas.

The candidates must clearly state and explain their interest in this kind of contributive and transdisciplinary research.

3. Contributive research implies the regular publication of each research project's advances in order for them to be acknowledged, discussed and debated. To this end, a permanent seminar will be organized by the Chair between all the doctoral students, which will then supply content to the discussion board and the dedicated note-sharing digital platform. This process will lay the basis for the '**editorialization**' of all the ongoing research work and will help design a scientific editorial technology (in collaboration, notably, with the ANR Epistémè research programme).

The results will be regularly shared and put to work within the area, throughout the entire research process, beyond the group of contributors from this area and for the benefit of the whole population. To make this possible, the doctoral candidates must agree to a future collaboration with the mediators who will accompany them, in order to help any inhabitant of the area understand and appreciate the issues at stake in their research. This will be done in agreement with each doctoral student's dissertation committee, since it will monitor closely the progress of research work.

4. Non-Francophone candidates can submit their application in English, but they must agree to attend intensive French classes, in order to become Francophone by the end of their first year of research, and with the objective of delivering their work in French. They will be assisted to this end over the first six months of their residency in the area.

Requirements

Deadline for applying: Sept 30, 2016
To be sent to candidaturethesecontributive@mshparisnord.fr
Responses will be communicated in October
Application files must include:

- The PhD project
- A letter of recommendation from your head of research
- A Master degree or equivalent
- A resume
- A motivation letter
- A copy of your Master dissertation.

For any further information:
contact@iri.centrepompidou.fr