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SCIENCES ET CULTURES DU VISUEL
The research programme *Sciences et Cultures du Visuel (Visual Sciences and Cultures)* is made up of two complementary initiatives: the project **iCAVS** (Interdisciplinary Cluster for the Advancement of Visual Studies), and the technological platform **irDIVE** (Innovation-research in Digital and Interactive Visual Environments), granted the highly competitive EQUIPEX label ("Equipments of Excellence"), launched in 2011 by the French Ministry for Higher Education and Research.

**iCAVS : a research cluster based on an original concept**

The project **Interdisciplinary Cluster for the Advancement of Visual Studies (iCAVS)**, located on the Plaine Images (Tourcoing), in the Imaginarium building, wants to become the first research cluster fully devoted to Visual Studies in France.

Even though this area of research and study established itself in many universities and research centers around the world over the past twenty years, the same cannot be said of France.

What’s more, the iCAVS initiative wants to foster an innovative conception of Visual Studies, based on an alliance between Human and Social sciences (art history, material and visual culture, anthropology, psychology, sociology, language sciences, philosophy, information and communication sciences), neurosciences, artistic creation and new digital technologies.

This approach, both interdisciplinary and pluridisciplinary, will enable the whole project to make a difference and quickly break on the national and international scenes.

At the heart of the project is a strong will to implement innovative synergies between fundamental research, innovation/promotion and education, in an hitherto unseen manner, as far as France is concerned. The irDIVE platform will carry out these synergies, ideally bringing together Human and Social sciences, experimental sciences and technologies, artistic creation and the economic world.

**IrDIVE : An international leading-edge technological platform (EquipEX)**

The IrDIVE platform (Innovation-research in Digital and Interactive Visual Environments), acting as the indispensable technological platform for the iCAVS scientific program, was granted the highly competitive EQUIPEX label (Equipments of Excellence) launched in 2011 by the French Ministry for Higher Education and Research.

Truly unique in France, the irDIVE platform, occupying a floor area of an outstanding 1 600 m² in the Imaginarium building, will help foster an innovative space devoted to research and innovation-promotion exchanges in the area of images and visual contents.
The make up of the platform comprises three complementary technological spaces. These areas are conceived as integrated technological environments enabling researchers to use leading-edge equipments hitherto unavailable in the country, and displaying the most recent innovations (a double curve screen with toric structure to experiment with virtual reality, infra-red cameras to study corporal responses to emotional triggers, goniometric suits permitting to study artistic creation...). The three complementary spaces are organised as follows:

- « Virtual Reality » (creation of new digital contents)
- « Receiving and Using » (how digital visual environments impact human perception and cognition)
- « Digital Arts » (a workshop for artistic experiments)

The platform also comprises a « Laboratory for users » that aims to enhance the proximity of researchers to entrepreneurs, thus creating a specific area for innovation and transfers to the economic world.

A territory project : Pôle Images, Plaine Images, Imaginarium

The research programme Visual Sciences and Cultures, located in Tourcoing on the site of la Plaine Images, contributes to the dynamics of the area to build around the « image » a leading, truly innovative sector. Indeed the Plaine Images is one of the three areas, along with the Serre Numérique des Rives de l’Escaut in Valenciennes and the Fabrique à Images in Wallers-Arenberg, meant to sustain such innovative projects.

Inside the Imaginarium, the programme Visual Sciences and Cultures occupies a floor area of nearly 1600m2, including offices, a documentation center, meeting rooms and a leading-edge technological platform. This research space is fully integrated in a highly original environment comprising, within the same building, two floors devoted to companies working in the field of new media and images, the last two floors providing meeting rooms, workspaces and spaces for temporary exhibitions. The Imaginarium aims to become a place bringing research, the academic world and digital and artistic creation together.

Located in one of the future flagship areas of the metropolis (currently undergoing a major rehabilitation), and enjoying close proximity to the Fresnoy, the National Studio for Contemporary Arts, Pictanovo, Lille Region Image Community and the headquarters of a range of companies working with images (conception, realization, diffusion, etc.) or video games, iCAVS and IrDive enjoy a privileged location and environment.
A federative and innovative project

The scientific project is based on a cross-section research theme, organised around three interconnected lines:


This line is devoted to the theoretical, conceptual and methodological stakes of Visual Studies. It is based on the work and experimentation carried out by the three sub-lines, together intending to foster new, stimulating research in the topic of image/visual universes while at the same time producing new answers to traditional inquiries. Indeed, the development of a fruitful interdisciplinarity, enabling methodological approaches whose traditions, objectives and basic principles appear to be independent if not apparently incompatible, is one of its major stakes.

Line # 1 : Social and cultural construction of visual artefacts (resp. S. Raux)

Research in this line will focus on the fundamental roles and stakes of both images and the visual area, in contemporary and past societies. One goal is to study the various functions of artefacts and visual apparatuses, the construction of visual identities within human cultures, along with their inherent visual politics. Indeed, since time immemorial, the mastery and control of the visual sphere has been conceived as a critical stake for power in all its guises: all the way from Greek coins displaying the sovereign’s face, up to contemporary practices of political image making.

What’s more, this line will help develop the potential of current technological devices (3D, data visualisation, virtual or augmented reality, interactive experiments) for HSS research, while questioning their capacity to create new forms of knowledge and their role as new research tools. One of its aims will be to help reconstructing either damaged or disappeared fragments of the past, or to offer a visual synthesis of complex, incomplete or scattered information (architecture statements, excavation reports, textual descriptions, photographic records...).
**Line # 2 : Perception, Cognition and Interactions (resp. Y. Coello)**

This line will explore the perceptive, cognitive and emotional aspects connected to the reception of visual contents in all their forms, and their interaction with visual contents and associated technologies. Research in this area will mainly focus on visual exploration, the visual treatment of images and text, the study of learning mechanisms and the relation between brain and cognition (EEG), the recognition of objects through spectral analysis and temporal series analysis, visual identification for semantic classification of image databases... As for interactions, the line will study new interaction techniques and the specific uses they yield (gestural command systems, remote command devices, nomadic display systems, domotic devices...). The subjective and the feelings triggered by both visual contents and environments, be they natural or virtuals, will be studied as well. Finally, the information collected from this research will lead, in return, to conduct new modes of interaction and visualisation.

**Line # 3 : Arts, Sciences, Technologies (resp. L. Grisoni)**

This line primarily wants to strengthen the collaboration of two distant communities, artists on the one side, scientists on the other one, both having to deal with new forms of digital images. So as to encourage significant advances on both sides, it is necessary to create the material conditions enabling experience sharing (be it aesthetical, theoretical or technical), thus requiring exchanges of practices and knowledge on image and the visual sphere. A sociology of the artists/scientists relationship is the core concept of this area of inquiry, bringing together the communities of artistic creation and academic research along several lines. For instance, the animated image will be the object of new research, radically altering its writing forms (use of 3D, 360° video, spatialized sound). Sound installations will help grasp the sound/visual relationship using a multisensory approach. Finally, the creation of interactive installations within digital environments will enable the exploration of new forms of æsthetic experiences and public/work interactions.
PARTNERS

More than 50 researchers and partners in Région (Nord-Pas-Calais, France) have already shown their interest for the research programme Visual Sciences and Cultures:

- Centre d’Études en Art Contemporain (CEAC - Lille 3)
- Cultures, Arts, Littératures, Histoires des Sociétés et des Territoires Étrangers (CALHISTE – UVHC)
- Groupe d’étude et de recherche interdisciplinaire en information communication (GERIICO -Lille 3)
- Institut de Recherches Historiques du Septentrion (IRHiS CNRS - Lille 3)
- Laboratoire d’Informatique Fondamentale de Lille (LIFL CNRS - Lille 1)
- Laboratoire d’Informatique, Signal et Image de la Côte d’Opale (LISIC – ULCO)
- Laboratoire de Neurosciences Fonctionnelles et Pathologies (LNFP – Lille 2)
- Laboratoire de mathématiques Paul Painlevé (CNRS – Lille 1)
- Unité de Recherche en sciences Cognitives et Affectives (URECA – Lille 3)
- Le Fresnoy, Studio national des arts contemporains (Tourcoing)

Besides, several national and international collaborations are considered.

FUNDED PROJECTS

2013-2014

The call for projects iCAVS chooses proposals aiming for the development of a global theory of Visual Studies. This call concerns researchers, professors, and research engineers willing to contribute to Visual Studies.

Six projects have been selected for the 2012-2013 campaign and seven for the 2013-2014 one.

The domestication of images
Gil Bartholeyns Lille 3 – IRHIS
Pierre-Olivier Dittmar EHESS- GAHOM

The project proposes a new tale for visual culture by studying the emergence of a lifestyle where image represents a key feature of the daily experience for the major part of the population. After the Church, and the privileged people, image enters the domestic sphere and keeps diffusing, from the painted walls of the medieval residences to the digital socialabilities “among friends”. Understanding the development of this “visual culture” implies gathering specialists from different mediums and periods, but also technical experts in order to develop tools that allow collaborative study of meanings and uses of indoor images.

Touch-2-know
Yvonne Delevoye-Turell Lille 3 – URECA

The project offers a pluridisciplinary approach for studying the meaning of visual content when transferring neuropsychological tests from paper to digital support. Then, validity and sensibility of digital visual contents will be estimated in pre-diagnostic evaluation of the clinical disorders in the context of top class sport. Finally, the project will study the pleasantness and intuitiveness of use for digital contents from an ergonomic and design perspective, in order to encourage acceptance of neuropsychological evaluations.
Stereoscopic vision for image synthesis
Christophe Renaud ULCO - LISIC

In the past ten years, studies on human vision have been used in the context of image synthesis, in order to decrease the computer costs when generating an image in two dimensions. The increasing success of stereovision films and the development of “relief” screens offer a new area of research, from the perceptive point of view but also from the point of view of computational resources. This project proposes to study in depth the perceptive models which have been achieved in the context of stereovision images and to determine their use in image synthesis techniques.

Studying the interactions between the reception of visual contents and their processing through language
Séverine Casalis Lille 3 – URECA - Angèle Brunellièr Lille 3 – URECA

This project focus on the interactions between visual content and language processing from two angles: the impact of visual signs on the understanding of oral language, and the analysis of visual content for capacity of language processing. The project will first study the conversational indices that are visual, such as face and arms movements, which follow the speech flow and marks the distinctiveness of words in a sentence. A tool will be developed secondly.

Anamorphosis, global reflections
Francesco de Comité Lille 1 – LIFL – James Hopkins, Londres

The project “Anamorphosis” gathers a researcher, Francesco De Comité, and an artist, James Hopkins, to work on mirror anamorphosis. Francesco De Comité has developed a general method to build mirror anamorphosis, which has been validated by medium-sized prototypes. The goal of this project is to extend the artistic potential of the method through the point of view of an artist, specialised in anamorphosis.

Interactive images. Between art, science and technology
Jean-Paul Fourmentraux - Lille 3 – GERIICO

In direct collaboration with Pictanovo, the Fresnoy and the Imaginarium, the sociologist Jean-Paul Fourmentraux proposes to study the new production and valorisation dynamics for images in the digital era. The assumption used for the project “Interactive Images” is that image is now placed at the heart of a negotiation between various issues and purposes of technology and scientific or artistic creation. Based on theses “negociated images”, the aim is to document the unique transactions and conventions which stabilize while interacting with audiences, and while on assignment, between art, science, and technology.

2014-2015

Spectacular astronomy: historical and experimental explorations of the visual experience of planetarium (XIXth-XXIth c.)
Charlotte Bigg, CR CNRS, Centre Alexandre Koyré/EHRESS
Kurt Vanhoutte, PR Performance studies & Visual criticism, Univ. Anvers (B)

The objective of this project is to bring together an international, interdisciplinary group of researchers from the human, social, and exact sciences as well as artists, visual technicians and planetarium professionals to investigate the history, present state and future of popular astronomical spectacles. Through an historical study and experimental...
digital reconstruction of planetarium performances since the early 19th century, we want to analyse a particularly important locus where spatial and visual cultures of modernity were elaborated and experienced at the intersection of science, technology and spectacle.

We look into the material and technological characteristics of these devices, their social and cultural context but also their perception and experience by different audiences. Thereby we also seek to develop new approaches and methodologies for studying visual cultures: science performances are a perfect object to initiate a conversation between history of science and performance studies. Integrating perspectives from art history, cultural studies and theory, communication and museum studies, this conversation will sharpen thinking about the performativity of images, how to analyse their experience and if and how they stimulate belief. The experimental component, realised by artist Eric Joris and CREW, explores the value of digital reconstructions of historical devices for academic investigation in fields related to visual studies and provides an opening to public thinking about these issues, including about their practical implementation for science communication in or as future planetariums.

Avatalk : Understanding and solving the troubles of oral language using interactive technologies.
Delphine Fleurion, PhD student, Lille 3 – URECA
Séverine Casalis, PR psychology Lille 3 — URECA

The project targets several goals: first of all, using oculometry to forge a tool able to assess verbal memorizing capacities and thus, to look into interactions between memory, visual perception and the processing of language. What’s more, we aim to create an interactive application using augmented reality for rehabilitation purposes, targeting individuals suffering from troubles in the acquisition of language and speech. The game scenario and remediation program will consider the specificities of children evidenced in the first part of the study.

Tangible didactics : for a cross-analysis of scientific images
Olivier Poncer, Professor , Haute Ecole des Arts du Rhin, Strasbourg
Catherine Allamel-Rafflin,Professor, epistemology and history of sciences, univ. Strasbourg, IRIST

Our goal is to study the lasting impact of some paradigms of scientific imagery and their renewal in the virtual era. The chosen approach builds on interdisciplinarity (from archeology to visual didactics, including Art history, Epistemology or semiology), and the nature of the corpus itself naturally opens to other sciences. The project will encompass several experimental phases based on pictures (bringing together students and image makers), with the underlying conviction that there is something in them that escapes our control.

ACT-PA : On the effect of acting on artistic perception
Solène Kalénine, Researcher, CNRS, Psychology, UMR IRHIS Lille 3
Vincent Tiffon, Pr musicology, Lille 3, CEAC

The project will test out the impact of workshops allowing to manipulate artistic visual effects via technological interfacing with the perception of a spectacle. We want to measure the effect produced by the manipulation of emotional and cognitive processes implied in artistic perception. The question of the role played by acting in perception is of tremendous importance for the advancement of knowledge in cognitive sciences and digital arts. It plays a role in the study of the reception and transmission of visual contents. The project will produce a methodology meant to measure the impact of different types of workshops and interfaces on artistic perception. This methodology will be used within a larger project willing to develop new pedagogical tools for artistic transmission.
AlgoMus, Musical forms: calculation and perception
Mathieu Giraud, Researcher, Computer sciences, CNRS - Lille 1 – LiFL

Studying a musical work means illuminating some aspects of its composition and improving its listening. This project tackles two facets of musical analysis, on computational (algorithms) and human (perception, connections between sound/image/touch) levels. On the one hand, we will work using « Music Information Retrieval » (MIR) algorithms for the automatic analysis of scores: can a computer understand music? On the other hand, we will put together an exhibition of « musical puzzles » on musical forms, wishing to popularise and generate questions on musical perception. Those multi-sensorial puzzles will induce concepts of musical theory via the manipulation of objects connected to an audio device.

Oculometry and Image perception: new esthetical stakes
Nathalie Delbard, Prof. Arts - Lille 3 - CEAC
Dork Zabunian, Prof. cinema studies - Lille 3 – CEAC

We will tackle visual studies in three directions:
1) The probation, using oculometry, of theories of the still and moving image (such as Barthes’s photographic « punctum » and Eisenstein’s cinematographic « shock ») using the works studied in these very theories.
2) The examination of our visual system when confronted to different image formats and medium, leading to a rethinking of the stakes of reproducibility (for instance, the gap in perception between an original work seen in a museum and its reproduction on a screen)
3) The analysis of our gaze when it is placed in front of multiple representational sources (experiment of the coexistence of images: exhibitions, shared screens, etc.). Oculometry will be used to characterize the different types of attention used by theses regimes of multivision.

Political Philosophy and Visual Culture
Fr. Martinez Tagliavia, PhD, student Arts and languages, UMR CRH-EHESS
Maxime Boidy, PhD student, Sociology, FRE LCSE - Strasbourg

Visual studies are a large intellectual project set in the larger process of knowledge globalization. However, their original anglo-american epistemology remains fairly unknown in the french-speaking world. This research program will question this conceptual apparatus, and its political and philosophical construction. What’s more, it will strive to actualize its insights as for the various research themes currently investigated by francophone human and social sciences, but remaining for now outside the ambit of visual culture as it tends to settle in the academy. Scientific events and publications will strenghten the historical knowledge of visual studies and their settlement in the french-speaking world.
THE TEAM

The program is managed by an interdisciplinary team:

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