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► **To cite this version:**

Florent Di Bartolo. Connected Creation. PostDigital Art: Proceedings of the 3rd Computer Art Congress, Nov 2012, Paris, France. pp.115-119. hal-01340999v1

HAL Id: hal-01340999

<https://hal.science/hal-01340999v1>

Submitted on 3 Jul 2016 (v1), last revised 11 Jul 2016 (v2)

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Connected Creation: The Art of Sharing

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« Connected Creation: The Art of Sharing », in *Post-Digital Art — Proceedings of the 3rd Computer Art Congress*, Khaldoun Zreik et Robin Gareus, 2012, pp. 115–119.

Abstract

Launched in 2006 by the CiTu-Paragraphe under the artistic direction of Maurice Benayoun, the In/Out network (aka The Art Collider) is an open platform that uses peer-to-peer technology to enable real-time data exchange between art installations. It has been featured in several exhibitions over the recent years. This paper proposes to analyze its artistic potential: First, by describing and characterizing the type of connections that the network allows to establish between peers. Second, by analyzing how data is shared and transformed by artists according to a poetics of data. Finally, also by analyzing how the network presents itself and how the exchange of data has been made perceptible to visitors both locally and globally through art installations and a monitoring system.

Keywords

Peer-to-peer network, shared creation, poetics of data.

1. Introduction

Art does not evolve in a separate sphere, preserved from reality. Art is transitive and interacts with social space. It establishes relations, and configures spaces. In this regard, over time, artists have used several techniques such as perspective to structure spaces of representation. For example, during the Renaissance, painters used perspective to organize “the prose of the world” (Foucault, 1966) by placing human figures inside a unified space. At its origins (1430-1460), perspective had a political dimension and was used as a tool to build the scene of history and civic freedom (Arasse, 2006, p. 133). Perspective represents a system that differs significantly from the system of places and images that was widely

used in the late Middle Ages to confer order to memory. Coined as “art of memory”, this system was used from its introduction by Simonides de Ceos around 477 BC up until the 17th century to structure memory impressions, improve recall, and contribute to the combination of ideas (Yates, 1975). However, we might ask what type of system do artists use to structure and arrange elements today?

They use database systems within which they configure spaces and establish connections between different data sets. Online databases make it possible to retrieve data using advanced search criteria, in order to use their content to create dynamic compositions. Gregory Chatonsky, for example, has created over the last ten years several web applications such as *The revolution took place in New York* (2002) that use Flickr to dynamically retrieve vernacular pictures - taken by multiple individuals all over the world - in order to associate them with other images and textual statements (in a slideshow format). Database systems are also used to configure virtual worlds such as the one in which the art installation called *The tunnel under the Atlantic* (Maurice Benayoun, 1995) allows to dig. A database system is used to manage the visibility of a collection of pictures in a virtual world based on the time that each user spends to contemplate them: The more time a user spends in front of a picture, the more chances he/she will have of finding pictures belonging to a same category. However, database systems do not only make it possible to build dynamic compositions and virtual worlds. They also help to organize social networks: both centralized and decentralized.

In centralized networks, databases tend to be used to collect large amounts of data and to secure their access. Thereby, they allow organizations to control and monetize access to their content. Yet, databases can also serve to collect metadata in order to facilitate the exchange of data hosted by

peers. Databases are often used in this manner to collect metadata associated with files that are available in peer-to-peer networks: in terms of connection and communication between peers, peer-to-peer networks offer different possibilities from centralized networks. In a peer-to-peer network, users interact directly with each other to exchange streams of data without having to first obtain permission (from a central entity). Many researchers working in different fields have used this technology over the last thirty years to communicate and collect data. For example, in 1997, the Space Sciences Laboratory at the University of California used peer-to-peer technology to launch a distributed computing system aimed at analyzing radio signals, searching for signs of extra terrestrial intelligence with the help of a large Internet-based community. This project, called SETI@home, “captured, as stated, the public’s imagination and achieved tremendous popularity” (SETI@home Classic: In Memoriam, 2005). However, artists have also used peer-to-peer systems to collect and exchange data. They may even have used this technology to create original networks: networks of “shared creation” that allow new types of interactions between themselves and their audience.

Launched in 2006 by the CiTu-Paragraphe, the In/Out project is one of these attempts to create a network dedicated to artistic creation using peer-to-peer technology and a database. The In/Out network aims indeed to create an ecosystem of artworks by making the exchange of data between artists possible in real-time. The artistic potential of this type of network is addressed hereafter. First, the types of connections that the network allows to establish between artists are defined. Second, several artworks that have been designed especially for the In/Out network - today called Art Collider - are described. Finally, the relations that exist between a connected artwork and the network itself - considered as whole entity - are examined in order to better understand how they work together.

2. Establishing a connection

The In/Out network is the result of a collaborative work between different artists and programmers. Several teams were set up which were responsible for creating art installations that shared data streams in real-time using a same system of communication. However, the different installations do not share the same type of

streams. The terms of the exchanges are based on the individual artists’ personal interests. Each installation effectively reflects a different artistic position and proposes a unique experience of the network thanks to different types of data streams. In this regard, the In/Out network allows not only to share video streams, but also to share audio and raw data streams. In addition, artists can use these streams of data in many ways.

In order to establish meaningful connections between the different installations, over the last years the CiTu has organized several meetings between artists and programmers. For example, ahead of the second exhibition of the network that took place in 2008, the CiTu organized a one-week workshop to discuss the projects and their associated streams. The workshop enabled each artist to adapt their project to the needs of the others participants. The workshop also made clear that the network needed to be organized. It was therefore decided to use a server to keep track of each stream generated in order to make these accessible to everyone as soon as they would be available.

Being a peer-to-peer network, the In/Out network allows direct connection between peers, but in order to provide access to all the streams generated, the network also keeps track of all the individual streams. Each data stream of data is indeed indexed in an online database. When queried, the database releases information about all data streams currently available. None of these are actually stored. They are only indexed by the database that collects and shares metadata such as their name and their URL, that is to say metadata that can be used to identify them. However, the database is also used to store metadata other than name and URL so as to make it possible for users to search for streams matching specific criteria. Thus, for each stream, the database records a description, a screen capture, and a list of tags. The database also provides the name of the person at the origin of each stream, allowing, for example, to retrieve dynamically only the data streams produced by a specific person or tagged as “bright”.

It is not necessary to query the database in order to establish a connection with another artist. Anyone can directly ask for the data stream produced by another art installation provided they know its URL. However, the database plays a key role by enabling artists to search in real-time for streams of data that match advanced search criteria, so that they do not have to rely on chance

to obtain a stream that corresponds to their needs. In this respect, the database offers the possibility to create connections that are both dynamic and meaningful. Moreover, the qualities of the connections that can be established also depend on the number of streams available at the time that a request is initiated. Indeed, the network needs to reach a critical mass, that is to say a sufficient number of peers who generate their own stream of data. To reach this stage, the CiTu has launched a wiki platform that provides several software programs such as the Flomixer: The Flomixer enables anyone to join the network by providing a video stream that can be the result of a compositing process (Getting Started, 2011).

The In/Out network uses the database in a manner similar to the way that Internet services such as Napster have utilized their own database. Developed by Shawn Fanning in 1999 to offer the possibility for all to share their MP3 collections online, the Napster platform also used a database to keep track of each file available on the hard drives of its users in order to facilitate their access. By making copyrighted materials available for free, Napster defied - until its closure in 2001 - the rules of the market economy. In the same time, the Napster platform contributed to the creation of online communities based on peers' interests, allowing a new relational sensibility to develop among young people. The In/Out network shares these aspects with the Napster platform. However, unlike Napster, the In/Out network is not used to share copyrighted materials. It serves to coordinate the circulation of data streams generated in-real time by artistic installations.

3. Connected artworks

To further examine potential relations between different art installations belonging to the In/Out network during an exhibition, two specific examples are presented. The first one is an installation called *Driving* that we created ourselves in 2008. *Driving* is a video installation that shows a pony car driving through the night. The car (a 1970 Dodge Challenger R/T) was modellized and rendered using 3D software. The frames displayed by the installation are completely computer generated and are projected onto one of the four walls of a small and dark projection room. Yet, unlike frames projected in a classical movie theatre, the frames projected by *Driving* respond to an external signal. This signal is a data stream generated by another art

installation (currently connected to the In/Out network). Indeed, the *Driving* installation uses an external audio stream to control the speed of the car displayed on the screen: This higher the sound level, the faster the car moves and conversely the lower the sound level, the slower the speed of the car will be. The car may even come to a stop if the stream connection is lost and no other audio stream is available. The installation does not show a movie with a beginning and an end. Instead, it plays the same dozen of video sequences in a loop, showing a car travelling on an endless road. The audio stream retrieved by the installation is also used to produce car engine sounds. Created mainly by altering the pitch of the audio stream, the sound of the car engine confers to the Dodge Challenger a real presence inside the projection room.

The *Driving* installation only shows outside views of the pony car. Visitors can not see the inside: they are invited to sit on a bench in front of the screen to watch the car drive by closely at different speeds. Moreover, in order to establish a more direct contact between the visitor and the network, the audio stream retrieved by the installation is also used to flash the car lights. By doing so, the installation aims to reveal the presence of the network behind the image, enabling visitors to imagine all the streams of data that are being generated and retrieved simultaneously by the different installations that are part of the network.

In addition, in order to retrieve an audio stream, the installation generates its own stream of data. The installation releases the video frames that are being projected inside the projection room in real-time, thereby offering others artists the possibility to use them as raw material. As an example, the video frames made available by *Driving* could be used by the computer program *Crystallizer*. Born from the collaboration between Robin Gareus and Joseph Nechvatal in 2009, *Crystallizer* is a program that attacks video frames by using colonies of viruses. The program is inspired by the work of mathematician John Horton Conway on artificial life (particularly Conway's Game of Life). It uses video frames generated by installations within the network as a host environment for viruses that feed on their colors, and multiply until they have completely altered their code and original appearance. *Crystallizer* is one of the programs that Joseph Nechvatal has used throughout his entire career to influence the

outcome of an image thanks to autonomous agents (Sikora & Nechvatal, 2011). Yet, unlike other computer virus programs that Joseph Nechvatal has used previously in his viral works, the *Crystallizer* infects an entire network. The attacks are not limited to a collection of pictures previously selected by the artist. They contaminate an entire living network by producing and proposing to the other peers, transformed and degraded streams of their own data.

The In/Out network is characterized by a continuous displacement of data from one peer to another, allowing artworks to invest a space without barriers. Thanks to the network artworks are not confined to an enclosed space, they can be distributed. This changes most of the rules that apply when organizing an exhibition. As Geert Lovink has stated, new media are increasingly distributed and require a new aesthetics that moves beyond the concepts of form and medium. They require namely “a distributed aesthetics” that takes into account simultaneously “the dispersed and the situated, the asynchronous production and multi-user access to artefacts on the one hand, and the highly individuated and dispensed allotment of information, on the other” (Munster & Lovink, 2005).

4. Distributed creation

In recent years, the In/Out network has been presented on multiples occasions. In 2008 and 2010 at La Bellevilloise in Paris for example. Yet, the exhibition of the network does not generally occur at one place. The exhibition typically takes place simultaneously at several locations in order to reflect the distributed architecture of the network. For instance, the artworks selected for the In/Out x.0 exhibition (that took place in 2008) were distributed between several exhibition venues located in Paris (like La Bellevilloise) but also in Montreuil at the premises of PétaHertz studio and at the Maison Populaire. An interactive installation connected to the network and created by Yves-Marie L’Hour and Benoit Meudic was even exhibited at the Cube (Issy-lès-Moulineaux).

The distance that separates each exhibition space from the others, confers a physical dimension to the network. Each exhibition space helps to define the presence of the network in the city by covering different territories. The exhibition spaces represent points of connection. They enable visitors to enter the network, to follow the path taken by data to travel from one place to

another. Yet, inside each exhibition space, how are the connections that are being made between the different installations that belong to the network made visible?

In order to make the network visible to each visitor, the CiTu has developed a monitoring system. This system uses the information collected by the database described previously, to show in real-time all the connections that are being established or closed between peers. The monitoring system has a structuring effect on how visitors understand the structure and dynamics of the network. It shows what kinds of streams of data are being shared and where each installation is located, enabling viewers to choose between the different exhibition spaces. Presented in all exhibition spaces, the monitoring system proposes several views of the network called “Connections”, “Physical and Metaphysical Locations”, “Sociability and Nervousness”, “Treeview and Influences”, “Affinity Groups” and “Flux and Reflux”. Each view offers a different representation of the network making it possible for the visitors to observe many of its characteristics. The “Physical and Metaphysical Locations” view for example places all the selected installations inside circles that represent all the exhibition spaces. This view thus allows visitors to observe the data exchanges that are being made between the different exhibition spaces. On the contrary, the “Connections” view does not take into account the location of the installations. By representing all the streams of data that are being exchanged between the different art installations it draws the viewers’ attention to the connections established directly between artists. The view even specifies the type of streams of data that are being transmitted (raw data, audio or video) by using different colors to display them: Each stream is represented by a colored line that connects two installations (themselves represented as cells).

The monitoring system helps to map the network by drawing a landscape of connections. However, the map is not the network. A network is indeed opaque, ubiquitous, and non-formal. It cannot be reduced to its representation. It must be apprehended within the complex ecology in which it is developing, that is to say not merely with the monitoring system that only makes certain types of connections visible. The smooth and seamless lines that the monitoring system displays cannot account for the human efforts required to create links between each physical installation or to

maintain them. The views of the monitoring system work only in relation to the installations that are being presented in each exhibition space: The monitoring system is in charge of the global representation of the network, whereas the individual installations allow to interact directly with them, to observe how data is being moved and transformed. The poetics of data that the network carries is not fully displayed by the monitoring system. It has to be experienced by entering the network, that is to say by interacting with the exhibited installations, and visiting several exhibition spaces. Unlike the monitoring system, the installations do not offer access to a global representation of the network. They allow to capture what is not yet described, what is not yet visualized, as illustrated with the flashing lights in the *Driving* installation. The installations also enable viewers to observe how the data streams are progressively transformed as they move from one installation to the next, in an endless relay.

5. Conclusion

The In/Out network is not only a tool. At a time where artistic presence over the Internet tends to be standardized, it is a collective experiment that proposes an original way of being present as a connected artist on Internet but also in an exhibition space. The In/Out network makes it possible to imagine new types of collaborations and external participations in favor of a poetics of collaboration. The In/Out network is an open space with no barriers that invites one to be part of its making, part of its development and change. The network does more than simply manage and map data. Potentially it enables anyone to play a role in its organization (structure) by proposing a stream of data or by developing a computer program that uses and transforms data streams shared by other peers. However, like any network, In/Out does not constantly grow. The life of the In/Out network is organized around exhibition projects that bring together groups of collaborating artists. The In/out network is a continuous emergent project characterized by a distributed aesthetics that invites one to embrace the surrounding flow of data. For all these reasons, the In/Out network can be considered as an artistic proposition in itself, a collective artwork. Indeed, the In/Out network does not only connect artworks, it also embodies an artwork that

has to be entered and experienced through multiple views, as a visitor or as a participant.

6. Acknowledgements

We wish to extend our thanks to all the members of CiTu-Paragraphe who have participated in the activities of the In/Out network. We are especially grateful for the support of Julien de la Fuente and Robin Gareus successively in charge of the network development under the artistic direction of Maurice Benayoun. Our thanks go also to all the artists who have collaborated with us.

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