

ExpyeZp: Constructivism Avoiding Data Redundancy

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Abstract

ExpyeZp is a collaborative effort aiming for constructivism, or knowledge building through group efforts for confronting and generating ideas around the concept of “new music”. Its cooperative model avoids duplication of work and efforts, thereby building upon experience and avoiding data redundancy. This paper describes a background and a chronology on this effort, and surfaces the notion of an “Artist as a Hacker” as a standpoint. With this scheme a context for knowledge sharing, a laboratory environment and the workings of a mailing list are further illustrated.

Keywords: Artist as a Hacker, Constructionism, Collaborative Effort, Collective, Data Redundancy, Knowledge Building, Laboratory Environment, Mailing List.

Definition

The term *ExpyeZp* was coined by this author to denote efforts around new music and related expressions on the time domain. The word is cast by “expy” which is an abbreviation of the word ‘expression’, but on mathematical terms is the exponential function, key to Euler’s identity, and a basis for audio signal processing. The other side of the word namely “eZp”, can be interpreted as the *Z-Transform*, a tool to aid obtaining spectral components on a signal like a sound. In addition to engineers several composers have used tools of this kind to shape and find expression on their sounds. This term implicitly joins those paths of a scientist, technology and ingenuity on a creator’s mind.

From an operational standpoint *ExpyeZp* can be called a club, a fraternity or simply an interest group. But on its workings, it is a community with several objectives in relation to new expressive forms of music ranging from a composition perspective as well as performance, including development of new instruments or controller interfaces, and related technologies, old and new. Members of this group put an effort on helping understand novel expressions to others not so acquainted. They also assist on research and experimentation for implementing technologies that somewhat constrain traditional performers and composers.

Technological innovations in this context translate to new ways of performance live or mediated. *ExpyeZp* aims to share knowledge gained on rehearsing and experimentation

by sharing and complementing ideas. Worth mentioning creative work and productions from any of its members are not rated or valued. All work is presumed to be good.

Avoiding Data Redundancy

A common definition of data is that of a sequence of symbols that can acquire meaning by specific acts of interpretation. Furthermore data is related to communications and information. “If a bit of data doesn’t have meaning, it is not information” (Pierce, 1980). Robert Gray on his work on *Entropy and Information* infers about information sources as “mathematical models for physical entities produced by a succession of symbols organized in a random manner” (Gray, 2011). These sequences may be a series of numbers, voltage measurements and even vectors of intensity for an image among many applications.

Data redundancy occurs when there are different values for a single attribute or when the source of information is duplicated. This can have benign effects as when reconstructing a signal or as in backing up a record in a database. But redundancy can also be a source of inconsistency while deciphering what its correct value. Data redundancy is also used in signal processing for compressing and de-compressing audio and video files. For our purposes this paper treats data redundancy as the duplication of information and memory. Here is used as a metaphor for not duplicating efforts and ideas while pursuing constructivism or knowledge building.

In our context data redundancy occurs when two or more people are working on the same idea. Inconsistencies of this type usually are product of individual efforts, and when language is not well understood (e.g. when a single person is trying to build a rocket or an airplane engine). Redundancy of this type is typical of individuals reinventing the wheel. Consequently collaborative efforts in contexts like *ExpyeZp* work against duplication of ideas but in favor of contrasting and building upon sets of ideas. To a great extent we consider this kind of approach ecological.

Collaborative Model

Lessons learned by this author while carrying a job at laboratory environments like MOX (Centro de Computacion Avanzada at Los Andes University) and at CCRMA (Center for Computer Research in Music and Acoustics at Stanford University), have shown that these are optimal contexts for generating and confronting thoughts. Given a lab environment it can be assumed that there are not bad ideas or better ideas than others. This framework has historically worked in places like Bell Labs and Xerox PARC in the U.S. and where many innovations of modernity saw their dawn (Gertner, 2012).

ExpyeZp appropriated the lab model because of the notion of an artist as a hacker (Reyes, 2004). This concept portrays a person whose creative work is product of experimentation and where the easel is given up for a lab space full of gadgets like electronic instrumentation, printed circuit boards, monitors, speakers and cables. An artist’s studio can be

converted into a lab provided that there is any sort of cooperation and collaboration between the artist and the community. Artists hackers know that technology is embraced as in group therapy. There are hacks that have become pieces of art and there are works of art that are merely a hack(Holtzman, 1994).

Peter Samson and other members of MIT's TMRC, Tech Model Railroad Club of the sixties in the U.S. posted the notion of hacking as an art process: "A project undertaken or a product built not solely to fulfill some constructive goal, but some wild pleasure taken in mere involvement, was called a hack" (Levy, 2010). While student in his quest for some sort of computer music, and in addition to writing a hack for converting Arabic numbers to Roman, Samson wrote a program so that a mainframe at MIT will play music. Subsequently on the seventies he developed the *Samson Box* which was a computer mainframe completely dedicated to music production and installed at Stanford's CCRMA(Loy, 2013).

Additionally *ExpyeZp's* collaborative model is thought after computer connectivity first saw on ARPAnet in the seventies. This was a system of interconnections where anyone could work at any computer as if were sitting at a terminal on a distant mainframe(Hiltzik, 2000). With this model people sent high volume of electronic mail to each other, swapped technical data, collaborated on projects, and formed closed hacker friendships with people they didn't know in person(Raymond, 1994). Another source of inspiration for *ExpyeZp* came from *CVS(concurrent Versions System)*, a program that allows a code developer save and retrieve different versions of source code. This software permits a team of software developers share controls of different versions of files in a single an common repository(Vesperman, 2006).

CVS works in tandem with the ideas of Richard Stallman, mentor of the Free Software Foundation and developer of the *EMACS* text editor. Stallman believed that software should be free to anyone, provided that people will give back all modifications they made as to help the program improve(Stallman and Others, 2015). *CVS* was widely used by the Open Source movement while developing, debugging and implementing applications for Linux and Unix operating systems. Open Source software like Pd -as in public domain or pure data-, CSound, Processing, Open FrameWorks Arduino and Wiring among others is widely used by the *ExpyeZp* community.

Chronology

First steps toward a collective around new music, its performance and a new vision were taken at *LabNuMus*, Laboratorios de Nuevas Musicas. This venue was a gathering of professionals and students coordinated by the Institute of Culture at the City Government of Bogota, in cooperation with three major universities and the Conservatory at the National University of Colombia. Its program included talks, workshops and concerts. There were master classes given by international guests and a "new music composition" contest with prizes awarded by the city government. *LabNuMus* program was extended over a week. After this event Colombian Composer Roberto Garcia, Juan Luis Restrepo (then director

of the Music Office at the Institute of Culture) and this author sat down to analyze and think ways of sustainability for efforts of this kind.

An alternative sprout from these meetings. This was called *ArteLab* and also was a joint effort between academic centers and the City Government. It was thought of as a neutral zone where any creative person was able to make points without constraints of school tendencies. The approach this time went for a program spread through the year and where any creator will express any artistic view. *ArteLab* included workshops and a colloquium where artists will confront their ideas. It did not include exhibits or concerts left to institutions and other initiatives. Topics presented dealt with art and technology and the concept of Artist as a Hacker as previously described. Most of programmed events took place at Teatro Colon de Bogota. A second instance of the venue took place at universities, gaining on diverse participation (Reyes, 2005).

After a session on the subject of the *Fourier Transform* at the National Conservatory people from other cities of Colombia and from countries around Latinamerica showed interest in participation. Teleconferencing and uploading of videos were thought of as an option but because of their lack of live interactive means were ruled out. They also added costs and bureaucracy on the productions of each sessions. Posting of slides and tutorials on the Web were another option but they also lacked live interaction. Through the days *ArteLab* gave way to other ventures in Bogota that similarly opened windows of opportunity, but its group of people remained intact and gearing around.

Suggestions came as to sustain the idea alive. The idea was now *ExpyeZp* and a continuation of *LabNuMus* and *ArteLab*. For days members were sharing thoughts through email, just like in the ARPAnet days. Colombian Artist and Educator Gabriel Zea, and Colombian Composer Daniel Prieto led the way for casting an electronic mailing list. Zea further proposed to install a mail server with names and contacts for *ExpyeZp* including those in other countries and cities. In less than a month physical gatherings were swapped with discussions on the list at any time, anywhere in the world. Instructions for installing software, for debugging, or to make examples work were being exchanged around a Spanish speaking context. In perspective after more than seven years, the mailing list option has proven to be a feasible and a productive way of staying in touch. This while being a collective, an interest group or a community effort in harmony with objectives for knowledge sharing, constructive exchanges, and avoiding redundancy as explained above.

Sharing of Knowledge

ExpyeZp assumes that “new music” is not isolated from experimentation and laboratory testing. A standpoint because music and technology on their methods and procedures can be overwhelming, even in academic contexts. This initiative is framed inside a neutral zone where no theory needs to be proved but where confrontation of ideas occur. Being a context it assumes that questions and problems posted require group-work instead of individual efforts. As an electronic forum and electronic mailing list, it is an efficient way of sharing knowledge, confronting ideas and eventually building upon a local state of art.

As a result posts have provided paths to people who otherwise would not even know that given technologies exist. They have also widened scopes and visions for what new music should be, being a composition method, a performance technique, sound synthesis, or a new instrument or controller. Other posts have set 'English tech slang' within the reach of many because most people communicate in Spanish. Assumptions for not reinventing the wheel are taken seriously because it is common knowledge that: "somewhere sometime ago perhaps anyone has thought of that idea before", thus avoiding redundancy and duplicate efforts.

Group Interaction Example

To illustrate a *modus operandi* a good example on the subject of *Amplitude Modulation* for live performance of new music comes to mind. Artist and Electronic Music Performer Emiliano Hernandez had asked for an Open Source software solution to this concept. Video Artist and Performance advocate Paula Velez, was also keen to the concept because of her mixture of video, music and signal processing of saxophone sounds for live real-time works. Having Paula in Medellin and Emiliano in Caracas, the only way to respond to their issues was through email or by posting answers, tips or examples on Web pages. *ExpyeZp* as forum implicitly provided means for this solution.

Several people on the list have worked with Open Source signal processing software like Pd (Puckette and Others, 2015). Already in its documentation and on Miller Puckette's book, *The Theory and Technique of Electronic Music* (Puckette, 2007), there were examples and tips for *Amplitude Modulation* in English using technical terminology. Why should we reinvent the wheel? Examples only needed and Spanish down to earth explanation. A common application of this kind of sound modulation is referred to as *Ring Modulation*, through the list several reinterpretations of Puckette's example were shared and explained.

In a matter of days, not only Hernandez and Velez but several more people were sharing versions of this application (Various, 2009). For months if not years, Pd's ring modulator has been heard on a lot of live performances on the region. The same can be said of other topics like mappings for Algorithmic Composition, Dynamical Systems, Sonorification and sensor applications, among others.

Constraints and Problems

On group efforts the more participants the better. At *ExpyeZp* we wish more people were collaborating as in group cooperation on all discussions. Given a topic, there is gravitation towards certain circles of people thereby few discussing the post. It will be desirable to have as many points of view as possible but we find that a great percentage restraint from participation. Possible causes range from lack of knowledge, to shyness and intimidation in addition to lack of time. In spite of globalization efforts, Latinamerican culture is not

used to “give-and-take”. More often is take rather than giving. It can happen that some topics are beyond the scope for a majority and the same otherwise. Further it has been sensed that there is a narrow spectrum of technology fright and apathy to new forms of expression working against posted objectives of this collective. Other people read posts but don’t participate because they still follow individual paths and traditional customs. Consequently it seems that the notion of “Artist as a Hacker” is not so widespread in the region.

Conclusions

ExpyeZp provides a space for joining people to engine creation, in addition to generating information for people participating in gatherings, exhibits, conferences and festivals. First thought as a venue, this effort still is a source for fueling other venues. There is a small Web page which serves as a blueprint for new music creation activities, by providing basic references, bibliographies and several tutorials on music and technology (Various, 2006). On the planning there have been publications, compact discs and cycles of concerts and exhibits. Additionally there is a project for publishing a compilation of articles by *ExpyeZp*’s authors on subjects like new music and cooperation. These plans have not been achieved because of better fund raising efforts or a suitable partnership for support. However there is hope they will happen in the near future. On the meantime mailing lists archives are available to anyone and posts are welcomed all the time. Common belief even if only a grain of salt, interactions at *ExpyeZp* have helped steering new music in addition to knowledge building and constructionism on this side of the planet.

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