

The Public Interface as an Art-Making Enabler

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KEYWORDS Application programming interface (API), art culture, art making, cybernetics, data aesthetics, digital collaboration, interface, networking, open-source data, public interface, web communication, web connectivity

ABSTRACT Cyberspace supports opportunities to capture cultures through machine and human interfaces. Art disciplines, particularly media arts, are not only enhanced by such a network of connectivity, they have become significantly changed through it. The Internet, as a public interface, is becoming the place to foster the development of media art disciplines. This is because the transmission and moving of data through the interface have permitted artists to develop new ways to capture, access, and select content. Well beyond simple conversations, networked information exchange and working transactions allow social issues and cultural production to be facilitated in a rich and transparent manner. Ultimately, this leads to new creations made fundamentally possible through the interface and its ease of use. From these resulting collaborations the interface can alter the way we understand “data” generated in the public domain. Via reuse and reproduction into another form the data is able to “live” again in many different ways respective to each artist’s, designer’s, and scientist’s reinterpretation. The public interface becomes a dynamic of network culture and further advances new levels for artistic and cultural purpose.

INTRODUCTION

In 1982 the science fiction novelist William Gibson coined the term cyberspace; the word embodied his vision respecting the rise of a technically-enabled culture through a massive, non-physical, networked system. Online communication has become the essential part of that vision, now realized. We entered the information age in the 1980s, and by the 1990s the explosive growth of the Internet, supported by technologies, advanced open standards, and web browsers, led to the networked globalization that has realized Gibson’s prediction. Now the community and the communication has exceeded the focus on the network or technology itself. The Internet is part of our daily life, indeed, a necessity for many people.

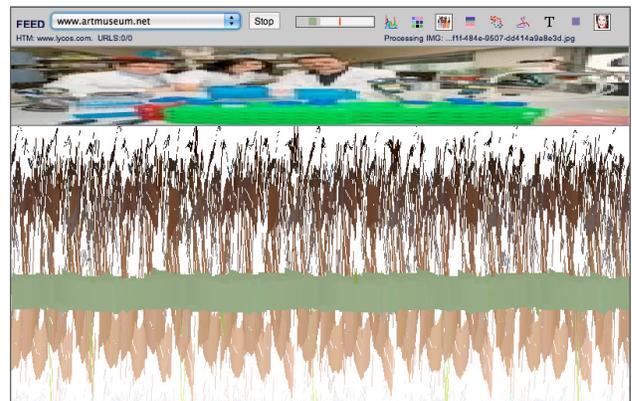
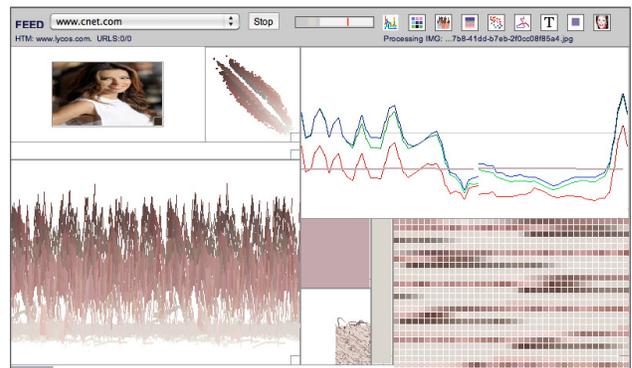
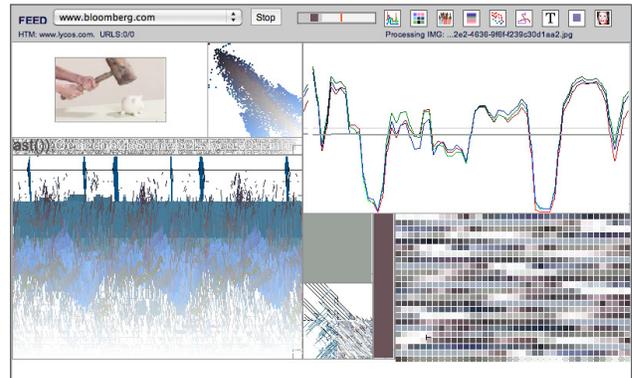


FIGURE 1A–1C: Three screen captures from FEED, an “anti-browser” created by Mark Napier. The name is a play on the term data feed; in this case the content is accessed for the purpose of parsing it into visual displays such as graphs, tables, text boxes, etc. The application continues to follow all the given links from the starting URL, in this manner, from link rich sites, it can read and display indefinitely. The objective is not to present information, but to render metainformation for display only. Three examples are shown here, with starting URLs being: bloomberg.com, cnet.com, and artmuseum.com. Each was “captured” about 30 seconds into the runtime.

Everyday we leave “traces” of ourselves throughout cyberspace merely through our on-line interaction. These “traces” include our recorded conversations via email and instant messaging as well as our information exchange through the act of surfing the net, watching videos, generating business transactions, paying bills, etc. The data from many of these activities collect to a “Meta-data” that can be retrieved, manipulated, and moved from place to place through computer commands.¹ Through Internet Application Programming (i.e, Internet Application programming for the Internet, API) this data can be harnessed and processed to myriad uses. Some of the uses are practical, many supportive, others exploitive, beyond these there is an opportunity for artists to make use of this data. Lev Manovich uses the simple term “visualization” to generalize the concept of mapping from data to another type of representational modeling.² Such visualization can be used for functional design, analysis, or artistic expression. Importantly, and taking the collected data outside of the internet boundary, it is not necessary that these visualizations remain on a monitor, it is possible to transfer the results into installations. Artists’ can explore a wide range of possibilities for re-presenting the found materials of the digital world. The public interface, with its rich source of found metadata, specifically and fundamentally fosters the development of new-media art disciplines.

The internet generates round-the-clock network activity at a millisecond level. This ever-expanding social networking does not regard geography, time zones, or social status. The collective reinterpretation of this activity leads to new meanings and new methods. The stored data is not just archived away but can come to live again through artists’ and collaborating artists’ vision and efforts. A complex and dynamic relationship is built upon the public domain as artists and viewers explore the poetics of cyberspace. According to Gibson such a convergence of human and machine achieves “unthinkable complexity,”³ this goes beyond education, daily necessities, and entertainment.

THE PUBLIC INTERFACE

Although the term interface suggests the meeting point between any two things irrespective of technology, today the term is generally associated with computer technology. It is a point of interaction between two (or more) entities. By coupling the word with “public” the sense of scale and scope of human social networks emerges.

The discourse between individuals via such technologically-based interfaces can be discussed via aspects of the “front end” or the “backend” of these enabling technologies. The front end aspects allow us to experience directly.

In other words, it is a straightforward matter to interact with various media types (text, image, sound, and composed, multimedia) without major concerns of how the system is performing such tasks. Designing for the front end includes an investigative study of how these “cultural” objects are organized, navigated, and displayed in an efficient way. Designers must be concerned with what kind of sensorial experience the access and navigation of these things will generate for the user. Research supports the idea of the interface as an aesthetic realm where form and content is inseparable.⁴ The backend design must support all the required functionality, and must allow machines to interface with shared protocols.

When we consider the idea of a public interface the focus shifts from individuals to data negotiation across a connected cultural system—a collective of users intent on searching, navigating, filtering, and extracting toward a communal or public means. Such effort may not be explicitly seen. The backend design must support these collective endeavors. This is a large, cross-disciplinary subject that involves data-mining, technical knowledge, art, as well as social and humanities fields. The front end and backend serve together as a massive, varying-language translator; this allows interaction between entities with totally different languages (be these formal languages, cultural aspects, worldviews, and even workflows). The public interface becomes a ubiquitous transporter and translator, establishing a connection that is simultaneously real and virtual depending on the needs of the individual and the collective.

THE PUBLIC INTERFACE AS AN ART-MAKING SYSTEM

API development protocols are widely shared among computer scientists, programmers, and web developers, though every system will have different parameters, the structure is almost the same. These standards are made available to support compatibility, for example, both Google and Facebook have published various APIs allowing open access to their databases. This permits common workflows between applications throughout a network culture. An example of such a common workflow might be how addresses and directions are displayed on a map—by using Google’s API for displaying geospatial data all users, across a wide spectrum of purposes share all the last-best data associated with that location, even road construction, delay data, etc. To allow such an API to function, you need a network protocol to transport data. The shared development of API is a consequence of the availability of Transmission Control Protocol (TCP) and the Internet Protocol (IP), invented by

Vinton Cerf and Robert E. Kahn in 1974. This allowed a network of networks creation and point-to-point communication.⁵ Today, most computers have this software pre-installed. This TCP/IP shared protocol, permitting internet connectivity and destination party reliability allows immediate connectivity of new users and greatly supports interoperability.⁶

Some aspects of the web are more conducive to collaboration than others, for example the “web-hit,” when first introduced, indicated web traffic, but this API was originally for internal use—the information was not available to non-privileged users. The concept of web 2.0 was that data would be more fluid from user to user, particularly in terms of collective data compositions. The web permitted this anyway, but the 2.0 idea was a concerted intent to create APIs that engendered collaborative, non-walled, data sharing. “[the] concept of interactive content universally accessible through a standard interface.”⁷ This was facilitated through increasing speeds for internet connectivity, and lower costs of access for users and consumers. As speeds/data volumes increased and costs decreased the demand for internet and web browsing significantly increased. As people started to use web habitually to form community, and further, to use this platform for storing and sharing data about their daily experience, opportunities for web 2.0 outcomes became the norm. Images, text, and video began to flood the Internet. The real starting point for this was the “World-Wide Web”⁸ in 1992. Then, in 1994 “GroupLens” was introduced: GroupLens is a system for collaborative filtering of “netnews,” this allowed users to find relevant articles from the huge stream of available articles” by implementing a rating system.⁹ It acted as a prioritizing content aggregator. With an open architecture netnews meant that anyone could create and distribute content through a customized rating system. This was a major step in the public interface concept, allowing users to not only query and filter data, but republish and re-represent that data in an open source environment.

ARTIFACTS WITH ART SYSTEMS

As this potential for the public interface advanced its potentiality for art-making purposes emerged. The use of the Internet began to affect the way we view “artifacts.” Theorist Jack Burnham commented upon the shift of focus from artifacts to “art systems” due to technology shifts. The change is transited “from an object-oriented to a systems-oriented culture. Here change emanates, not from things, but from the way things are done.”¹⁰ He further elaborated, “A systems viewpoint is focused on

the creation of stable, on-going relationships between organic and nonorganic systems, . . . any of the other matrices of human activity.” From this we see things in a collected context far more readily than previously. His thinking is based on the general system theory, as scientifically proposed in the 1950s: “thinkable relationships abstracted from any concrete situation or body of empirical knowledge” that forms a coherent system.¹¹ This relationship is an ongoing process. It is also dynamic in nature, changing over time and through experiences. The system theory has been a thought catalyst for art-making. “In evaluating systems the artist is a perspectivist considering goals, boundaries, structure, input, output, and related activity inside and outside the system.”¹² For groups such as “net.art” the impact of technological change in conjunction with the accumulation of data promoted the idea of an “art system” rather than discrete art objects. In a larger sense, the Interface itself, obvious but hidden, advances this concept of the artifact and the art system—in fact, the art is only sustained through the collective. Burnham further linked up the art system with data and information processing in his article “Real Time Systems”¹³ published in 1970; “Such information is only obtained by expanding the energy of systems outside the one receiving information. Thus the art system has maintained its vitality by constantly reaching outside of itself for data.” The artwork is not only viewed from the perspective of form and content, but also for its informational processing structure.

The impact of the collective nature of the public interface cannot be under-estimated, “An artist will tend to take an existing system (environment, network, musical instrument, law of physics) and manipulate it.”¹⁴ By selecting and extracting data from the Internet, which is already a highly volatile system, data is constantly reprocessed. This forms new meanings, groupings, and expressions. In the early 90s, artists required to have strong technical background in order to access and manipulate data from the Internet as it was coded in hypertext markup language (HTML), invented by Tim Berners-Lee in 1990. A script was required to fetch HTML programmatically and parsing out the required content. Art projects required heavy code writing, such as a the pioneer work for net.art project FEED¹⁵ as illustrated in FIGURES 1A–1C. This was developed by Mark Napier in 2001. FEED acts as a web “spider,” an automated process that searches the web and grabs information from webpages. This data is then processed and generated as a visual representation. A special Java program was developed to read both text and images from the web page sources.

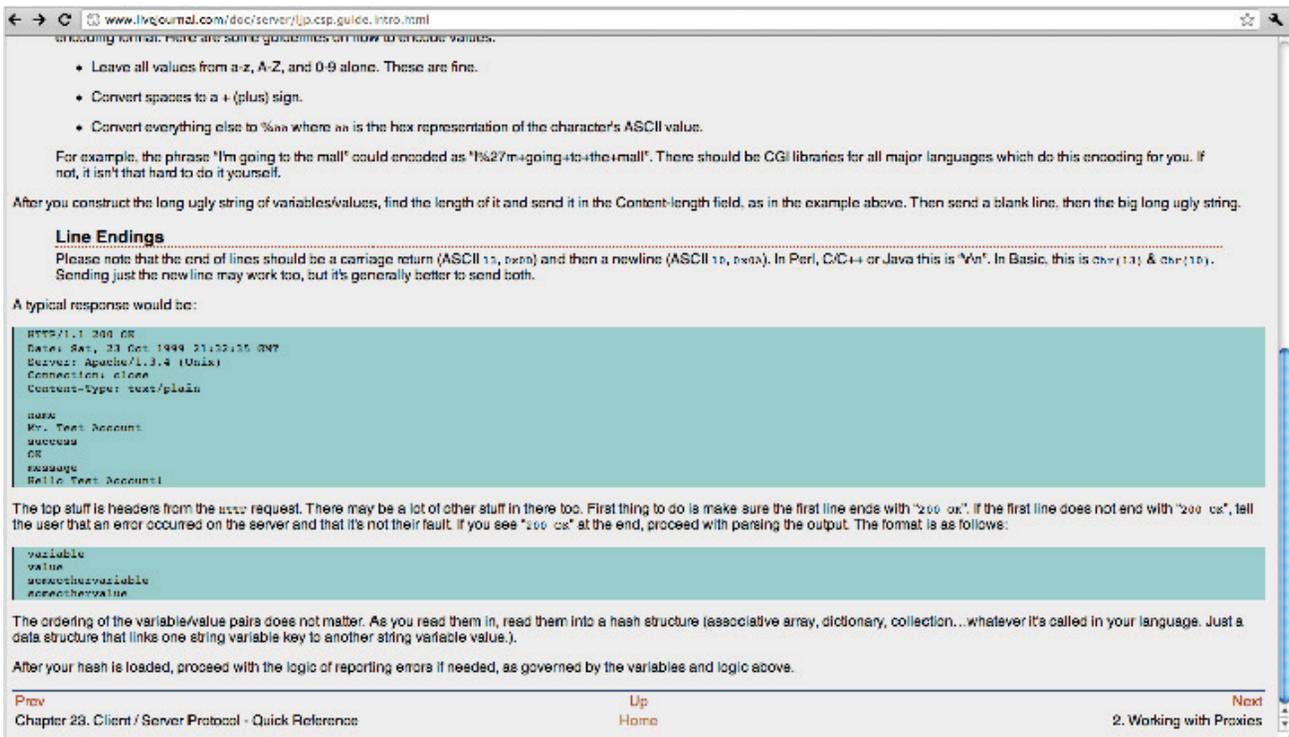


FIGURE 2: *Sample HTTP request (2001) from Livejournal website*

Once the Web 2.0 concept took hold content became more user-friendly to access. “LiveJournal”¹⁶ is a community publishing platform initiated in 1999. LiveJournal draws from more than 16 million online journals, accessing postings and blog feeds, thus contributing to a massive public domain. LiveJournal offers various types of interfaces, appealing to different levels of developers or programmers, content is accessible in multiple formats: raw HTTP request, XML-PRC interface, Atom API, Blogger API.¹⁷ They are an example of a provider offering public interface over the Internet (FIGURE 2). Additionally, they make available Really Simple Syndication (RSS). RSS is being widely adopted for content distribution. First programmers, then artist/programmers, then artists became involved in collecting, interpreting, and publishing from the Internet; they include metadata as part of their artwork creation. As the technical barriers have been removed, the public interface is a major resource for artistic, creative, and technological practices. The results of such work reveal the complex behavior and patterns of the metadata world. In this manner, it is a representational metaphor for cultural itself. According to Katherine Hayles in *My Mother was a Computer*,¹⁸ she illustrated a very simple example on the iterative on/off square grid represented status update as

suggested by Stephen Wolfram on his cellular automata research. The argument is that very simple rules can form “emergent behaviors in which astonishingly complex patterns appear”. Perhaps the artist is curious in the flow of extensible data and interaction within the poetics of cyberspace that can generate behaviors in the social cultural system. This is what she called a “generative cultural dynamic.”¹⁹ In that case, the public interface could be a technological means to access the system, as well as a metaphor in artistic practices that constantly reshape cultural patterns. Hayles also claimed this in her book:

“Computational universe works simultaneously as a means and metaphor in technical and artistic practices, producing and also produced by recursive loops that entangle with one another and with the diverse meanings of computation as technology, ontology, and cultural icon (Hayles 2005:4).”

Another example of how the public interface is accessed, interpreted, and visualized is exemplified by “jsut code.”²⁰ jsut code is a collaborative installation exploring the notion of the public Interface, produced by the author and Helen Pritchard in 2011. It is an artwork composed with the elements of static and dynamic

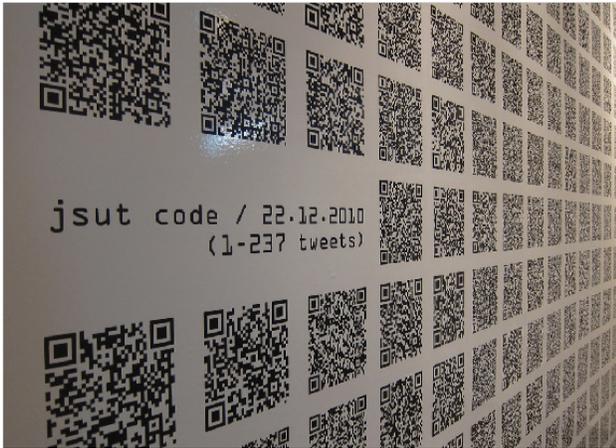


FIGURE 3: Static Tweets icons in “jsut code,” 2011

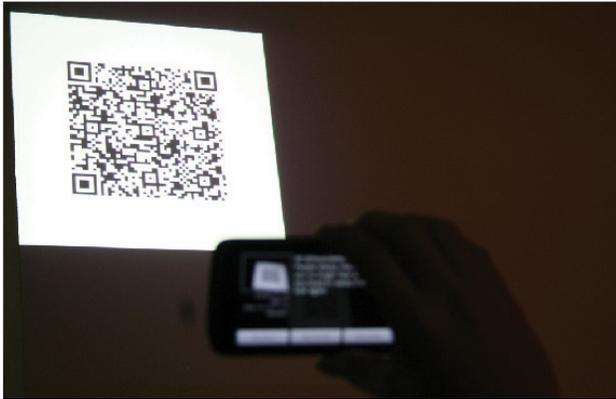


FIGURE 4: Dynamic Tweets icons in “jsut code,” 2011

| Rules | Parameter | Value |
|--|-------------|--------|
| The content should be in English Language | lang | en |
| Only extract the sentence with keyword “live” | q | live |
| Only the most recent results will be responded | result_type | recent |
| Only 2 tweets to return per page | rpp | 2 |
| Only 1 page to return | page | 1 |

FIGURE 5: The rules that define the generative system in Twitter API

representation as are happening within cyberspace (FIGURE 3 & 4). Statements on life and death were gathered in real-time, provided by the social media and micro-blogging site Twitter via the standardized API. The code constantly retrieves data and displays it as a geometric Quick Response (QR) Code images. This installation displays the matrix barcodes allowing the audience to use a mobile device and decode the message on the fly. Therefore, the QR code conveys a language of pattern and meaning that is activated by the reader. By using the public interface, the installation is demonstrating a continuously evolving and mutating text via the representation and animation of imagery.

The mechanics of the readily accessible official twitter API²¹ was used in the project. Through the URL as “http://search.twitter.com/search.format,” you can specify different parameters such as the language of the tweets, keywords search, and also the period of the content etc. The table shown in FIGURE 5 presents the rules, parameters and values from the project.

In order to parse the returned data for further manipulation programming language needs to be created, so, in a sense, the complete shift to fully manipulatable data from the public interface for non-programmers is still in the future. In this project, Google Chart Tools,²² another public interface was used to convert to a QR image from the twitter text message.

The code used was accessed from:

http://search.twitter.com/search.json?lang=en&q=live&result_type=recent&rpp=2&page=1

CONCLUSION

Massive amounts of digital data can now be researched, collected, interpreted, reformatted, and displayed for the purpose of art-making. This gives data a chance to be reborn toward aesthetic, communicative, or social purposes. Perhaps the simplest idea of this new art is the idea of copy and paste, allowing digitalized data to move from one location to another. From this core idea the rise of an internet culture, and network capabilities expands this to global dissemination of content. From here, the dynamics of this network culture permits artifacts to become art systems. All these aspects are dependent on the technological capacities. The technologies support these three aspects: cut/paste, networking and dissemination, and artifact/systems while simultaneously advancing the ease by which they can be performed. In this manner the collaboration is growing in both the number of participants as users and the number of participants as

creators. Still, due to human practice and change through learning, our relationship to technology is always in fiery negotiation. The public Interface can be regarded as a technological construct as well as a cultural artifact as the elements in cyberspace (such as the dialogue and logic/language patterns) become revealed via the interface. The art-making public interface is both the media and the message composited, it allows for sharing and repurposing. In this respect it fosters its own cultural artifact—art-making that can be examined in its own right. The importance of this collective must be acknowledged as a heretofore unknown thing; this public interface has led to a new art system. This is the foundation of a network aesthetic that will continue to evolve.

Note: This document has been significantly edited from the original. This paper may be cited generally, or, if text passages are cited the following citation should be used, “The Public Interface as an Art-Making Enabler” by Winnie Soon, author, W. M. Bevington, editor, *PJIM*, The Parsons Journal for Information Mapping, Volume III, Issue 4, Winter 2011.

BIOGRAPHY

Winnie Soon is a transdisciplinary artist, researcher, and digital media practitioner born in Hong Kong. She completed her Information Systems Degree and Media Cultures Masters Degree at City University of Hong Kong. Ms. Soon was awarded with a scholarship and completed her second graduate degree in Digital Art and Technology at University of Plymouth (U.K.).

Ms. Soon investigates culture and data aesthetics through her work. Her artistic practice ranges from digital print, to interactive media, to installation art with an emphasis on the interplay between media, culture, and communication. Her artworks has been exhibited at IFVA (Hong Kong), Mobile & DMB Festival (South Korea), Stuttgarter Filmwinter Festival for expanded media (Germany), International Digital Art Festival (Bulgaria), Peninsula Arts Gallery (U.K.), and PhotoPark (China) amongst other locations.

She currently teaches at the Savannah College of Art and Design (Hong Kong) as well as the Chinese University of Hong Kong.

NOTES

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