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Investigatory art: Real-time systems and network culture

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[A]rtists are ‘deviation amplifying’ systems, or individuals who, because of psychological makeup, are compelled to reveal psychic truths at the expense of the existing societal homeostasis. With increasing aggressiveness, one of the artist’s functions [...] is to specify how technology uses us. – Jack Burnham^[1]

Investigatory research has played a central role in socially-engaged art since the late-1960s, particularly with respect to institutional critique and other forms of systemic analysis. Such work tends to shift emphasis away from objects *per se* and to make visible the invisible mechanisms of institutions. Like investigative journalists, artists involved in these practices research a specific topic, typically involving political corruption, corporate wrongdoing, or other forms of behavior that adversely impact a community but are hidden from view. The outcomes of ‘investigatory art’^[2] like those of investigative journalism, have no legal authority but can act as an agent for change by creating public awareness that instigates action. This essay begins by linking Hans Haacke’s investigations of social systems and art patronage with Jack Burnham’s 1969 theory of ‘real-time systems’.

Burnham’s systems theoretical approach to art (which greatly influenced Haacke) has been the subject of much literature.^[3] As a recent example, art historian Caroline Jones observes that ‘[b]y the 1990s [...] *systemic* artworks had emerged with a vengeance [...]. Burnham’s concerns [...] seem tailor-made for the contemporary art world.’^[4] Burnham noted in the 1960s that the proliferation of real-time systems was increasingly abstracting the concrete materiality of things into information. This tendency was mirrored by the so-called dematerialisation of art identified by Burnham and others at the time, just as its hypertrophy is reflected in more recent cultural practices and critical discourses.^[5]

Jones also claims that ‘[s]ystemic artworks dialectically reject or critically torque the virtual

ideologies of the Internet to *materialize* the links that join archival, research-driven, process-oriented, labor-intensive, recursive, informational social, and communicational aspects of art.’ [6] I argue that the current wave of interactive and telematic technologies – which has been explored and expanded in contemporary art since the mid-1990s – enables users to access and manipulate previously inaccessible data about complex (and often hidden) social relationships. Moreover, certain strategic uses of digital ‘real-time systems’ as artistic media provide modes of relating to and interacting with information that make it concrete in ways that are particular to network cultures. [7]

As examples, I shall consider work by Heath Bunting, Josh On, UBERMORGEN et al, Beatrice da Costa, and Michael Mandiberg from the mid-1990s to the present that explicitly incorporates new media concepts and techniques. My goal is to begin to map some of the similarities and differences in critical art making over a span of four decades as a result of technological innovation and emerging forms of sociability and cultural participation. By doing so, I hope to demonstrate parallels and continuities among various streams of practice that typically have been considered as categorically discrete. This transhistorical analysis thus aims to bridge the so-called ‘digital divide’ between contemporary art and new media. [8]

As an outgrowth of his earlier explorations of natural systems, Haacke’s investigation of social systems (including the art world) generated poignant institutional critiques. For example, *Visitor’s Profile* (1970) examined art audience demographics, provoking discourse on cultural institutions and their patrons. The version installed in the *Software* exhibition that Burnham curated at the Jewish Museum in 1970 encouraged visitors to interact with a computer by inputting personal information. [9] Questions ranged from age, gender, and education, to opinions on controversial issues such as, ‘should the use of marijuana be legalized, lightly or severely punished?’, and ‘assuming you were Indochinese, would you sympathize with the present Saigon regime?’ Answers were instantly tabulated to generate continuously-updated statistical data on the exhibition’s audience, which was then projected on a large screen in the museum. According to Haacke, ‘[t]he visitors, in effect, were producing a collective self-portrait in a participatory and self-reflective process.’ [10]

This interactive, digital, investigative artwork also exemplifies the artist’s concern with ‘real-time systems’, a notion that Burnham introduced into aesthetic discourses in 1969 in an *Artforum* article bearing that title and which can be seen as a pendant to his 1968 *Artforum* essay ‘Systems Esthetics’. [11] Burnham explained that ‘[r]eal-time systems gather and process data from environments, in time to effect future events within those environments.’ [12] As such, value accrues on the basis of an immediate, interactive, and necessarily contingent exchange of information. He contrasted this model with the traditional aesthetic notion of ‘ideal time’, in which the contemplation of beauty occurs in theoretical isolation from the societal and temporal contingencies. Burnham observed that, paralleling the introduction of computerised real-time systems into the operations of government, finance, and the military, some experimental artists (including Haacke) were increasingly approaching art with an emphasis on real-time issues. ‘What a few artists are beginning to give the public is real time information, information with no hardware value, but with software significance for effecting awareness of events in the present.’ [13]

In his entry for the *Software* catalog, Haacke articulated the significance of such ideas. Whereas the statistical data from the ‘unplugged’ iterations of *Visitor’s Profile* were tabulated by hand on a daily basis, in the electronic version

[t]he processing speed of the computer makes it possible that at any given time the statistical evaluation of all answers is up to date and available. The constantly changing data is projected onto a large screen, so that it is accessible to a great number of people. Based on their own information a statistical profile of the exhibition’s visitors emerges. [14]

On the technological component of Haacke's proposed piece, Burnham wrote that '[t]wo years ago Haacke would have balked at using this kind of technology; today, working more closely with events, it becomes a necessity.' [15] In fact, the artist had previously argued for using whatever materials and techniques are required in order to respond systematically to contemporary social issues and their wide range of informational contexts:

[t]he artist's business requires his involvement with practically everything It would be bypassing the issue to say that the artist's business is how to work with this and that material ... and that the rest should be left to other professions The total scope of information he receives everyday is of concern. An artist is not an isolated system ... he has to continuously interact with the world around him [16]

Although Haacke's subsequent investigations of social systems did not use instantaneous, computerised information processing, the concept of real-time persisted. The term appears in the title of his renowned installation *Shapolsky et al. Manhattan Real Estate Holdings, A Real Time Social System, as of May 1971*. By investigating and unearthing the nefarious dealings of a notorious slum-lord over a period of 20 years (and the business relationships within the real estate group), the work served as an *exposé* of a corrupt social and judicial system in which the rich exploit the poor. Similarly, Haacke's investigations into the complicity of cultural organisations and corporate public relations, such as *Solomon R. Guggenheim Museum Board of Trustees* (1974), *Mobilization, Good Will Umbrella* (1976), and *Creating Consent* (1981) reveal an unexamined exchange of capital: 'financial capital on the part of the sponsors and symbolic capital on the part of the sponsored', to use the artist's words. [17]

These three works demystify corporate sponsorship. They demonstrate that such patrons are not simply high-minded philanthropists but rather savvy marketing professionals. Moreover, they lay bare the material value gained by corporate patrons in terms of enhanced public reputation – an ephemeral form of cultural capital – in exchange for their financial outlay. Haacke drives this point home in his poster *Standortkultur (Corporate Culture)* (1997), which quotes Peter Littmann, President of Hugo Boss, who said, '[w]e are not patrons. We want something for the money we spend. And we are getting it.' [18]

All of these institutional critiques challenge the traditional aesthetic notion of ideal time and fit Burnham's conception of real-time in the sense that they undermine idealistic notions of aesthetic autonomy. Indeed, of the manual versions of *Visitor's Profile*, Haacke recently noted that they 'offered the audience an opportunity to recognize that art is not produced, viewed and traded in an awe-inspiring world apart but in a continuous social universe' [19] In other words, they insist on art's contingency upon, and participation in, larger cultural and social systems. Further in accord with Burnham's theory, they 'gather and process data from environments, in time to effect future events within those environments'. Despite its immateriality, information thus holds the potential to make a concrete impact on the future. This assertion applies as much to the critical insights revealed by investigatory art as it does to the good publicity garnered by patrons who support the arts.

Haacke's method has provided a model for a wide range of artists, from the Guerilla Girls to Mark Lombardi. However, more relevant to the concerns at hand, his early explorations of real-time interactive systems combined with his use of the instantaneous quality of digital computing can now be interpreted as a harbinger of subsequent production by artists that explicitly use electronic media as a platform for their own investigatory work. For example, Haacke's influence can be seen in the work of artist Heath Bunting, one of the early practitioners of net.art in the 1990s.

As suggested by the title of Bunting's now classic *Own, Be Owned, Or Remain Invisible* (1998), the ubiquitous economic underpinnings of the Internet are inescapable. The site consists of the artist's

biography, each word of which is a hotlink to that [word].com. Bunting thus expands the frame of critique to the Web in general, demonstrating that every word/domain is potentially for sale and every exchange on the Web is a possible financial transaction. Even www.sub-culture.com ‘may be for sale ... please contact the sales department at Jimmy.com’.[20]

Having visited Bunting’s site dozens of times over the years, I have been struck by how the Web demonstrates extraordinary mutability but also extraordinary consistency. The domains of many of the URLs have changed owners, fallen into disuse, or are for sale, but the economic subtext of ownership remains unchanged. For example, www.all.com currently is not being used but the domain name is appraised at \$1,000,000. www.rl.com is simply a front page that states ‘RL.com is owned by Richard Lau ... “Domainer of the Year” ... and not ... the Hong Kong star – Andy Lau, and NO this domain is not for sale.’

Like Haacke’s computerised *Visitors Profile* and in contrast with *Shapolsky et al*, the investigation undertaken in *Own, Be Owned, Or Remain Invisible* is not conducted by the artist and delivered as a *fait accompli* to the viewer; rather, it is performed in real time by the viewer, who is explicitly activated as a participant in the investigation. The relationship between the viewer and the information revealed by the artwork has been reconfigured. This is a key distinction that lies at the heart of the logic of new media technology, theory, and practice.

Lev Manovich notes that digital computing as a cultural form was conceived as a ‘fundamentally new kind of media [with] historically unprecedented properties ... that enable new relationships between the user and the media she may be creating’.[21] In particular, as Alan Kay and Adele Goldberg wrote in the 1977 manifesto of multimedia computing, ‘this new “metamedium” is *active* – it can respond to queries and experiments – so that the messages may involve the learner in a two-way conversation’.[22] The form of *Own, Be Owned, Or Remain Invisible* equally constitutes its message. The experience of exploring online data and discovering hidden connections between these ‘flickering signifiers’, to use Katherine Hayles’ term, endows the viewer/user/participator with a sense of agency – if not to impact the future, then at least to ride the wave of ‘changing modes of signification [which] affect the *codes* as well as the subjects of representation’.[23] In spite of its digital ephemerality, *Own, Be Owned, Or Remain Invisible* thus possesses an electronic tactility that parallels the real economic effects of e-commerce.

These characteristics are foregrounded even more prominently in *They Rule* (2001, 2004, 2011) by the artist Josh On. This Web-based artwork allows users to explore the highly interconnected nature of board members at top US companies. Haacke’s institutional critiques (like *Shapolsky et al*) generally focused on one target at a time, offering a more or less resolved revelation. In a similar vein, Mark Lombardi’s drawings, such as *George W. Bush, Harken Energy, and Jackson Stephens, ca. 1979-90* (1999), provide a static map of shady, if not criminal, corporate-government connections.

By contrast, *They Rule* combines the dynamic qualities of Flash software with a scrupulously-researched database, enabling visitors to investigate and create maps of myriad relationships between powerful individuals, corporations, and government. Users can post the maps they create on the site, thereby contributing their own investigations to the project, and see those posted by others. ‘The Magnificent Seven’, for example, visualises the connections between seven individuals who sit on 20 corporate boards and are but one degree of separation from the boards of 55 other Fortune 500 companies. As the site ominously intones, ‘[t]hey sit on the boards of America’s largest companies. Many sit on government committees. They make decisions that affect our lives. They rule.’[24]

During a talk in 2011, On explained that he was deeply influenced by mid-20th century psychiatrist Jacob Moreno’s sociograms, which graphically represent relationships between individuals and

groups using lines and arcs. Like Moreno, On wanted to ‘reveal the hidden structures that give a [corporation] its form: the alliances, the subgroups, the hidden beliefs, the forbidden agendas, the ideological agreements, the “stars” of the show’.[\[25\]](#) Moreno’s criteria for sociometric tests were also key for the artist: ‘[e]very participant should feel about the experiment that it is his (or her) own cause ... that it is an opportunity for him (or her) to become an active agent in matters concerning his (or her) life situation.’[\[26\]](#)

The artist could have included any number of algorithms to automatically arrange the data and generate graphic representations of various relationships. However, like Moreno, he explained that he was ‘more interested in what people would bring to this, with qualitative data. So I gave them the ability, to actually move things around as they want them ... , save that as a map, and to annotate it.’[\[27\]](#) As with Bunting’s *Own, Be Owned, Or Remain Invisible* the artist sets up a context for the audience to explore various systemic relationships, discover connections, and draw their own conclusions. This allows the viewer to become, in Moreno’s words, ‘an active agent’ in ‘reveal[ing] the hidden structures that give a corporation its form’.

This description aptly captures how the notorious art-hack *Google Will Eat Itself* (GWEI, 2005) revealed the hidden structures of Google’s commercial model of click-through ad revenues. This work of art analysed the search giant’s Ad Sense mechanism and used software to turn it in on itself. GWEI ‘generate[d] money by serving Google text advertisements on a network of hidden Websites’.[\[28\]](#) The artists mobilised their own extensive social networks as ‘active agents’ to register clicks and also deployed software robots that simulated site visits and clicks in order to produce revenue.

Whatever revenue GWEI earned was used to buy Google shares. In other words, GWEI progressively acquired ownership of Google via the search giant’s own advertisements. As the creators explained:

[b]y establishing this auto-cannibalistic model we deconstruct the new global advertisement mechanisms by rendering them into a surreal click-based economic model. After this process GWEI hands over the common ownership of ‘our’ Google Shares to the GTTP Ltd. [Google To The People Public Company] which distributes them back to the users (clickers)/public.[\[29\]](#)

At its peak, GWEI claims to have owned 819 shares of Google stock, valued at over \$400,000. At that rate of acquisition, the artists jokingly estimated that they would fully own Google in about 200,000 years.

Such work finds precedents not only in Haacke’s institutional critiques but also in Les Levine’s late-1960s conceptual investigations of the systems of art and commerce, such as *Profit System One*, which Burnham also described in ‘Real Time Systems’. Levine’s press release, self-written in the third-person, stated the following:

[o]n March 27, 1969, Levine bought five hundred common shares of stock in the Cassette Cartridge Corporation. After a period of one year, or at any time which it is deemed profitable prior to that, the Cassette Cartridge shares will be resold. The profit or loss of the transaction will become the work of art.[\[30\]](#)

The press release emphasised that *Profit System One* was a work about process. This process, according to the artist, ‘is a result of an open continuing system called the stock market, a system directly connected to our life style’. Eschewing making objects in a ‘society whose object needs are over provided at the present’, Levine claimed that ‘[w]hat is more important for the artist to deal with ... are the ambient systems and the software patterns which influence our culture.’[\[31\]](#) GWEI shares a similar approach. Moreover, in accord with Burnham’s ambitions for real-time art systems,

it seeks to ‘gather and process data from environments, in time to effect future events within those environments’.

Haacke also employed a real-time system to investigate and create public awareness of environmental pollution – a strategy utilised by numerous contemporary artists, including Beatriz da Costa and Michael Mandiberg. In Haacke’s *Rhine Water Purification Plant* (1972), glass bottles ‘filled with contaminated water from the Krefeld [Germany] sewage plant collected from the nearby Rhine’ flanked a purification system that cleaned the murky water so well that it could sustain goldfish, making visible the salutary effects of proper water treatment. Surplus purified water was pumped to the museum’s garden, offering an early example of gray-water reclamation.[\[32\]](#)

Tiffany Holmes has cited *Rhine Water Purification Plant* as a key inspiration for her own artistic work, which involves real-time visualisation of users’ environmental impact.[\[33\]](#) Haacke’s computerised *Visitor’s Profile* must also be recognised as an important model for recent artistic investigations that incorporate real-time information processing and exchange of environmental data. By inculcating themselves into web browsers and social media, the following works bypass official art institutions and weave themselves into daily life.

Da Costa’s *Pigeon Blog* (2006) deployed homing pigeons armed with miniature air pollution sensors, GPS units, and transmitters connected to a web-server. The avian investigators evaluated and mapped local air quality, blogging that data in real-time on the project’s social media website. As described by the artist,

[this] grassroots scientific data gathering initiative [was] designed to collect and distribute information about air quality conditions to the general public Pollution levels were visualized and plotted in real-time over Google’s mapping environment, thus allowing immediate access to the collected information to anyone with connection to the Internet.[\[34\]](#)

The homing pigeons serve as live ‘reporters’ that investigate and make visible the invisible presence of current air pollution levels. Moreover, like Haacke’s use of goldfish to demonstrate the possibility of a cleaner environment, *Pigeon Blog* sought to create a provocative spectacle that, echoing Burnham’s notion of real-time systems, would ‘spark people’s imagination and interests in the types of action that could be taken in order to reverse [air pollution]’.[\[35\]](#)

Mandiberg’s *Real Costs* (2007) gives real-time feedback on the environmental impact of travel; it consists of a Firefox plug-in that anyone can download and install in their browser. When searching for flights from commercial travel websites such as Expedia.com, the plug-in inserts Co2 emissions information into the results. When looking up airfares the user retrieves not only the price in dollars but also the ‘real cost’ in terms of carbon emissions for the journey by plane, car, bus, and train, as well as the number of tree-years required to offset the pollution and the annual *per capita* carbon emissions by country.

By providing the user with instantaneous feedback about the environmental consequences of their travel choices, *Real Costs* harnesses the potential of real-time systems to, in Burnham’s words, ‘gather and process data ... in time to effect future events within those environments’. Indeed, similar programs have been adopted by municipal public transportation systems, such as the HKL in Helsinki. In this example, an artist’s innovative work not only creates awareness in an art context but also anticipates and provides a model for similar applications in a larger social context.

Investigatory art strategies involving institutional and systemic critiques can be seen among diverse practices spanning more than four decades. Although the discourses of mainstream contemporary art typically shun the explicit use of new media tools,[\[36\]](#) the works discussed in this essay demonstrate that, regardless of medium, similar approaches are deployed to create awareness and instigate

change. Building on Haacke's real-time systems, which have become enshrined in the canon of contemporary art, the more recent examples enable users themselves to uncover myriad hidden relationships and agendas that underlie the dynamic behaviour of museums, government, corporations, and environmental pollution as systems. In this respect, the work of Bunting, On, UBERMORGEN, da Costa, and Mandiberg extends central concerns of contemporary art in ways that are analogous with emerging forms of sociality and participation in network culture, in which individuals become increasingly involved in the creation and critique of culture and society.

Walter Benjamin claimed that '[j]ust as the entire mode of existence of human collectives changes ... so too does their mode of perception. The way in which human perception is organized – the medium in which it occurs – is conditioned not only by nature but by history.' [37] In other words, social transformations parallel perceptual transformations, which correspond to historical changes in prevailing media. Combining this claim with Burnham's observations in the epigram, strategic uses of new media – the prevailing media of our time – may offer precisely the perspective required to 'reveal psychic truths' and 'specify how technology uses us'. While such rhetoric overstates the case, I hope that I have demonstrated that meta-critical approaches that *use new media to interrogate new media* do provide a particularly useful method to reflect on how new media tools, theories, and practices are deeply embedded in modes of knowledge production, perception, and interaction, and are thus inextricable from corresponding epistemological and ontological transformations.

As sociologist Saskia Sassen has argued:

[t]he digital is imbedded in the larger ... systems within which we exist and operate Through this embeddedness, the digital can act back on the social so that its specific capabilities can engender new concepts of the social and of the possible. [38]

In this way, the explicit use of new media in and as art may offer artists and art audiences an advantageously embedded position from which to investigate myriad hidden connections in network culture and to contemplate central perceptual and existential transformations of the early 21st century.

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Edward A. Shanken writes and teaches about the entwinement of art, science, and technology with a focus on interdisciplinary practices involving new media. He is the Dorothy Kayser Hohenberg Chair of Excellence in Art History at University of Memphis, a member of the Media Art History faculty at the Donau University in Krems, Austria, and core visiting tutor at Piet Zwart Institute, Rotterdam. Recent and forthcoming publications include essays on art and software, land art, investigatory art, sound art and ecology, and bridging the gap between new media and contemporary art. His forthcoming book, *Inventing the Future: Art, Electricity, New Media* will be published in Spanish, Portuguese, and Chinese in paper and e-text. He edited and wrote the introduction to a collection of essays by Roy Ascott entitled *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness* (University of California Press, 2003). His critically praised survey [Art and Electronic Media](#) (Phaidon Press, 2009) has been expanded with the multimedia *Online Companion*: www.artelectronicmedia.com. Many of his essays are available on his website: www.artexetra.com.

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Wardrip-Fruin, N. and Montfort, N (eds). *New media reader*. Cambridge: MIT Press, 1999: 394.

[1] Burnham 1969.

[2] An earlier form of this paper entitled 'Investigatory Art and Technology 1969/2009: Institutional Critique, Real-Time Systems, and Participation' was first presented as part of the panel 'Tracking the Movement of Investigatory Art' chaired by Martin Gantman and Gina Dabrowski at the 100th Annual Conference of the College Art Association, Los Angeles, 19 February 2012. My use of the term 'investigatory art' is informed by the panel theme.

[3] See Shanken 2010.

[4] Jones 2012, p. 116.

[5] Lippard & Chandler 1986, pp. 31-36, and Hayles 1999.

[6] Jones, op. cit.

[7] My use of the term is informed by the work of Geert Lovink and the Institute of Network Cultures. See <http://networkcultures.org>.

[8] Claire Bishop (2012) recently recapitulated and reinforced this schism, provoking a substantial rebuttal waged by multiple authors in the online talkback forum at <http://artforum.com/talkback/id=70724>. An archive of literature on this topic can be found at <http://hybridge.wordpress.com>. For a comprehensive analysis of the antipathy of canonical art history to digital media, see Murray 2007.

[9] For more on the Software exhibition, see Shanken 1998.

[10] Haacke 2009.

[11] Burnham 1969, pp. 49-55. For a more elaborate interpretation of Burnham's essay, see Gere 2006.

[12] *Ibid.*, p. 29.

[13] *Ibid.*, p. 30.

[14] Haacke artist statement in *Software*, 34.

[15] Burnham 1969, p. 30.

[16] Haacke, from a talk delivered at the Annual Meeting of the Intersocietal Color Council, April 1968 (quoted in Burnham 1969, pp. 30-31).

[17] Bourdieu and Haacke, *Free Exchange*, p 17.

[18] Doyle 2012.

[19] Haacke 2009.

[20] www.sub-culture.com (accessed on 9 July 2012).

[21] Manovich 2008.

[22] Kay & Goldberg 1977, pp. 31-41. Wardrip-Fruin & Montford 1999, p. 394

[23] Hayles 1993.

[24] On 2008. This quotation, cited on 28 May 2008, was no longer published on the site when last accessed on 9 July 2012.

[25] <http://en.wikipedia.org/wiki/Sociometry>.

[26] Moreno 1951. Quoted in Wikipedia entry on 'Sociometry' at <http://en.wikipedia.org/wiki/Sociometry> (accessed on 3 February 2012).

[27] On 2011.

[28] UBERMORGEN.COM (Hans Bernhard and lizvix), Alessandro Ludovico, Paolo Cirio *Google Will Eat Itself*, <www.gwei.org>.

[29] *Ibid.*

[30] Allan 1969-71; Levine & Vanet & Latham 2002, pp. 106-122.

[31] *Ibid.*

[\[32\]](#) Holmes 2006.

[\[33\]](#) Holmes 2008.

[\[34\]](#) da Costa 2012.

[\[35\]](#) Ibid.

[\[36\]](#) See note 7.

[\[37\]](#) Benjamin 1935-38, p. 104.

[\[38\]](#) Sassen 2006, p. 344. Slightly abridged from quotation in Murray 2011.

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