



Euphoria & Dystopia: The History of the Banff New Media Institute

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My talk today proposes that art + science (including the human sciences), and its correlative art + technology research has both an important and dynamic history in Canada and a critical role to play in our present times. I will explore this topic in the context of the history of the Banff New Media Institute, providing you with excerpts from the book/archive that Sarah Cook and I edited *Euphoria and Dystopia: the Banff New Media Institute Dialogues*.ⁱ The book/archive examines the major trends in new media practice and research during the period of 1995-2005, with consideration of earlier roots and later history. While Banff is the site of the book the practices and discourses described in it hale from an international perspective and set of practices.

First I will discuss the motivations for art+science+technology+design research that motivated the BNMI and retain currency, and then explain the reasons for the creation of the book and the seven themes that emerged through our analysis of the archive – themes that dominated the dialogues and practices of the 1990s and early 21st century. I am going to run a slide deck in the background that provides an overview of the BNMI and its larger themes.

Fundamental to the ethos of the BNMI was the concept that artists and designers should both be advanced users of technologies and inventors of technologies. Believing that “all forms of technology are designed,” it sought to provide cultural, humanist and post-humanist perspectives on technology research and development-design from the perspectives of human culture and respect for the natural world.ⁱⁱ BNMI hoped to facilitate artists’ access to and understanding of not only standard digital tools but to the science edges, where new technologies were emerging and where access was far more difficult to attain – virtual reality research laboratories, sensor technologies, biotechnology, and nanotechnology.

The BNMI was created as a space for action-driven dialogue and practice, a “third space.”ⁱⁱⁱ As the ethnographer Mark Muller states a third space acts as “the border or boundary region between two domains – two spaces – is often a region of overlap or hybridity.”^{iv} Dialogues across differences and within differences are even more powerful than those within, according to Muller, when these occur between, not within groups.^v Large-and small-scale conversations formed the heart of BNMI summits, which were carefully moderated affairs on which the exchange of knowledge in the field depended.

Hence, The BNMI grew into a cross-disciplinary home for the creative arts and design professions, for humanists, social scientists, computer scientists and engineers, mathematicians, physicists, biologists, chemists and medical researchers. With this interdisciplinary blend The BNMI could be prescient about the direction of new media – able to predict and at times to construct emerging practices. The summits played out side by side with international artists’ residencies, co-productions, transdisciplinary research workshops, new media exhibition and the incubation of commercial products and companies. By 2004 the Banff New Media Institute Co-Production catalogue indicated over two hundred and ten co-

productions, and the A.R.T. (Advanced Research Technology) laboratories comprised of a CAVE, with related visualization and virtual reality software, a collaboration laboratory and a mobile engineering and physical computing laboratory and supported research under the direction of Dr. Maria Lantin, Dr. Pamela Jennings and me.

The BNMI's "Banff Method" formed a means to produce this boundary condition. The goal was to undermine 'habitus' as Henri Bourdieu (1977, 2000a) would describe (structure of society) and throw a light on 'doxa', or systems of classification that reproduce class, create power relationships and are expressed through places and actions. Through emerging new forms of 'doxa' as Anna Cauquelin (1999) uses the concept – these are positive signs of social process that can stand in for idiosyncratic as well as formal behaviours. The doxa is a place to think together, through shared codes that allow us to communicate. Hence BNMI events always included experiential art works, body-and location-storming activities, parties, hikes, charrettes, meals, chance encounters.

Anthropologists and ethnographers use the concept of the "boundary object"^{vi}; these are transformational concepts and artefacts that join one world of understanding to another. In most instances, boundary objects are material gifts, but in cross-disciplinary dialogue, these gifts can be terms, maps, prototypes or other semiotic artefacts. These symbolize the boundaries or edges where new knowledge is produced. Gerhard Fischer notes that boundary objects are able to adapt to all groups: "They represent the domain concepts and ontologies that both define and reflect shared practice".^{vii} Original objects are reinterpreted through this process (for example terms like, "wearable" "technology") unsettling assumptions about both original terms (wearable technology bridges engineering, material science, fashion design, sculpture). The BNMI could be described as trafficking in the economy of boundary objects. Equally, the work of art, science and technology inhabits this third space. The very post-war specialization that led to a segregation of art and science has now led to recognition that contemporary science requires that these highly specialized disciplines combine to solve complex questions. Further than inter-disciplinary work, in which different fields address separate problems inside a common framework, transdisciplinary research involves a stronger "interpenetration of disciplinary epistemologies", as Michael Century, speaking at Banff in 1999 stated. Effectively, this means new fused horizons become possible — such as the fields of data visualization, social media, mobile experience design, wearable computing/design — beyond or transcending paradigms existing within single disciplines.

From its inception the Banff New Media Institute concerned itself with the developing language and considering the implications of new technologies as well as the creative investigation and applications of technology itself. The organizers of the large-scale Bridges events, created with the U Southern California's Annenberg School and the Rockefeller Foundation discovered that convergence manifested less through technology and more through the activities of people enabled by technologies.

The cultures that were brought to the table by researchers acted as mediating factors, sometimes inhibiting and sometimes enabling collaboration. *Bridges II* pinpointed collaboration itself as a skill to be identified, studied, and learned. *Bridges II* included explorations of language—its understanding and misunderstanding—as a critical factor in the success of collaboration. The emphasis for *Bridges II* was cultural context, as well as ethical and aesthetic dimensions and the practical challenges of research collaboration – I will pick this strand up later.

Anne Cauquelin, a French sociologist of culture, warns against a turn to “*techo-doxique*” forced in the name of technology onto art, resulting in cold technological aesthetics, a set of practices that could obliterate the aesthetic history and variability of art and its embodied references. She argues for a science and art engagement that is “*kinesthésiques, tactiles ou polysensorielles that can ‘permettant d’éprouver le sentiment de la présence de l’autre, et de contrebalancer ainsi la dureté des temps*” and that does not reproduce the separation of nature and culture.^{viii} This commitment to this particular approach can be constituted as a call for a much broader need for engagement of art with science in its broadest variance.

This is a goal worth considering while we explore the tensions between art and science that produce a rich ground for dialogue:

The philosophical bases of art, science and technology are different. As Jean Gagnon states in his essay in our book,

We know since Gaston Bachelard and Thomas S. Kuhn, that reference of the terms of scientific theories vary depending on theoretical contexts or *paradigms* to use Kuhn’s terminology. This is the relativistic and constructivist position whereby social constructs, economic and technical factors inform the construction of scientific theories. This points to the constructed character of reality itself.

Gagnon moves on to point out the many moments of observable tensions around realism within the debates at the BNMI, as the tenants of scientific realism still dominate much of science and propose that there is a universal shared world of perception that is a common sense, and discovery manifests this world through shared understanding.^{ix} Engineering, cognitive science, and artificial intelligence drive towards universality. The rationalist roots of scientific realism suggest that perception leads directly to action, and presupposes the alignment of reality and image. One can argue that the role of late twentieth and twenty-first century art has been to undermine confidence in the real and to insist on a contextual and relativistic relationship to truth and representation. Scientific aesthetics can reify realism or historical abstraction, while the art world moves on in a constant reappraisal of form and artistic language. Artists have posed important ethical concerns that critique technologies as well as use them, and insist on a culturally diverse or relativist approach to the use and even the design of technology. Examples include Mongrel’s “socially engaged software”, which in the 1990s that provided a search engine and authoring tool LINKER that sought out signs of Black cultural identity on the Internet. Art and science have different, long-standing relationships to failure. As Paul Godrey-Smith suggests, the scientific method embraces failure as a means to progress and establish the line between the potentially true and false—that which has failed.^x In the 1960s scientist Billy Kluver, at Bell Labs opened the door for artists to work with scientists and co-founded EAT (Experiments in Art and Technology) with Robert Rauschenberg. He argued for a willingness to accept failure in order to find ultimate success: “The artist’s work is like that of a scientist. It is an investigation which may or may not yield meaningful results; in many cases we only know many years later.”^{xi} This view challenges the art world’s requirement for a constant flow of successful new works.

Since the early twentieth century, artists have appropriated images, found objects, texts and ideas to underscore the constructed nature of these, to offer a critique, or to find inspiration in a fragment. Artists also appropriate scientific theories, such as complexity, making use of the theory’s conceptual framework as a metaphor rather than as a mathematical methodology.

Sometimes the creative interest is in the text alone, not the theory behind it. These divergent approaches can lead to clashes between the worldviews of science, when it seeks truth and art, when it seeks the contingent, contextual or metaphorical.^{xii} This can result in mutual dismissal, or it can be of value to research, as these productive frictions provide fundamental debates about the nature of reality.^{xiii} Thus, collaboration can result in variable or effectively overlaid methodologies.

In this decade, scientists hold variants views of reality and its analysis as contradictory and chaotic, with different worlds – episteme and ontology – side by side – in part because of their exposure to contemporary culture. New trends in science acknowledge phenomenology, complexity theory and emergence. There is recognition that complex systems are difficult to predict. Abstraction and synthesis are perceived as the new real. Contradictory views within science allow elasticity in aesthetics and provide fertile ground for artists and designers who choose to collaborate with scientists.

Leaders of the HCI community Bill Buxton and Saul Greenberg place extraordinary value on the methods of art and design to break a scientific gridlock of discovery.^{xiv} They express the concern that there is a crossroads in the process of discovery – human ingenuity needs to be privileged once again. They want to break the model of incremental research. Why have they turned to artists? Artists work in relatively speculative ways, drawing from technical methods and experiential, process-based methods as well as on studio critique. Artists embody, manifest and make material. They challenge “common sense” – the teleological assumptions of willful design leading to predictable outcomes that is fundamental to engineering. Designer Anthony Dunne argues that a convergence of design and science allows design to engage with science as a research-methods discipline (brainstorming, sketching, scenario building, etc.) and to take up a critical and ethical position in relation to science, technology and invention.^{xv}

The following examples provide a framework for art-science collaboration:

The first is mathematician Sha-Xin Wei at *Outside/Inside: Boundary Crossings*, 2004:

If I have an orange in my hand and I give it to you and I ask you, “What colour it is?” It is a trick question. You say it’s orange in this light. If you take it into green light, it will look black to the photometer; it will look black because green light doesn’t have orange in it. So, scientifically, it’s black. If you let people walk into a greenish room they will think that orange is still orange in colour. What’s real is really a power of imagination as far as physics and that’s part of this gap that we might be talking about. We are interested in the extent that technology is a performance.

This excerpt is from Theodor Krueger at *Living Architecture* (2000) who was a NASA researcher:

The thing that I am getting a little bit more excited about here – and I think is the human half of the equation – is the notion of adaptability. A lot of that comes from physiological adaptation I have become familiar with and working within the zero gravity environments...Perceptual adaptation – most of you probably know those studies. There are persons that reversed their visual fields, flipped these upside down, right, left, reversal. Surprisingly people found that after a time the world didn’t look upside down.

There is no image that would be upside down, which is interesting, because there is no image there.

How can we develop tools that are both human-centric in their interface and application and post-human, in their attention to sustainability (such as solar powered mobile devices)? In his history of science and studies of the emergence of techno-culture, philosopher-sociologist Bruno Latour has shown the ways that scientific and technical invention is represented as finished -- whole products whose inner working, or mode of development, cannot be seen. Society naturalises inventions and science appears as a free-floating enterprise, operating as an engine outside of society, "without people as carriers".^{xvi} The mystified and invisible processes of invention make the intentions and ideas behind each new stage of technology appear as absolutes. Olga Gotiunova, speaking at *Skinning our Tools: Designing for Context and Culture* in 2003 explains changing attitudes towards technology:

Within the philosophy of technology, technology was regarded more or less as a kind of a black box closed system... This kind of very pessimistic and deterministic thought can be found in Heidegger and in some Frankfurt School^{xvii} writings on analysis of how technology influences a society. Closer to the 1970s and in the 1990s, there appeared this idea that we can actually alter the development of technology, because it's shaped by human factors, and it becomes a black box only afterwards when it's already done. I think our interest in software, and all software art, is a part of this movement. It is also part of this larger change of focus that yes; you can basically influence the technology in the moment of its creation and also alter it afterwards. It's not some alien force driving you.

Technologies are material forces that enable and facilitate the behavior of their users. Technologies are engineered with assumptions about the identities of their users implicit in their design, as well as in the affordances of their components. These assumptions about users are active at every layer – in content produced for or by the technology, at the interface layer, in the software that runs on machines, right through to machine code and platform engineering. Assumptions in turn act back on users to construct the ways that they perform through and with the technologies, hence shaping their identity. This may seem to be a mechanistic approach. In fact, BNMI events provided consistent evidence that users are also disruptive, finding applications for technologies that defied these assumptions. As well, design has embraced usability, and user participation, broadening the personas represented by machine interfaces. The BNMI sought ways to excavate the identity forming mechanisms of technologies, looking at broad social impacts as well as the ways that individuals and groups used and adapted technology. At the second Bridges summit in 2002 Cheryl l'Hirondelle developed the concept of CREE++ - an object oriented software that would emulate the CREE world view.

BNMI participants were equally interested in how software was engineered. Simon Pope provides an example of open software:

I was presenting a piece of work that is called *Ice cream for everyone*. To give you some idea of why the idea of open-source / free software crosses my career path: I started to make ice cream with a colleague of mine several years ago. Having reverse-engineered some proprietary food products we decided to, in our terms, open the source code for that ice cream. At the launch of this project when we were giving away ice cream in a

pub in the east end of London^{xviii}, Richard Stallman came up to me and said, “Of course this is not open ice cream. This is free ice cream.”

Artists bring different aesthetics to the creation of technology. For example, in a hard-hitting critique of the underlying philosophy and aesthetics of artificial intelligence artist Warren Sack, at *Simulation and Other Re-enactments* (2004) argues for a shift from individual experience to hybrid group experiences and expressions. He argues that contemporary technology systems require an aesthetic that allows the emergence of new common and collectively constructed shared experiences and identities rather than a focus on individual cognition.

Euphoria & Dystopia chronicles the development of studio-lab or collaboratoriums as Michael Century named them through the last century and of which BNMI was one. These have taken many forms, from artist-run centres to large cultural institutions to university based laboratories.

The Book

The archive and book were created as a celebration of the 10th anniversary of the BNMI and then become a fifteen year chronicle, as it ended in the year 2010. (follow power point). The book attempts to capture the spirit of dramatically changing times—the heady rise of the digital age, its tumultuous descent, and its reformulation, as translated through the first ten years (1995–2005) of the Banff New Media Institute. To convey a sense of presence, the editors have excerpted moments from the vast array of audio recordings and resulting transcripts. These are drawn from an even richer selection of talks, presentations, essays, and images that contributors offered at the BNMI summits, workshops, and conferences. It was dependent on audibility, legibility of transcripts, whether events were recorded as well as relevance. Starting in 2004, extensive work was undertaken by guest archivists and work-study assistants to compile an archive of the BNMI’s activities, collating documentation, audio recordings, and commissioned reports from each of the events chronologically, and then making these documents available to the public online. Essays were commissioned by theorists or journalists who had a relationship to BNMI. Chapter introductions provide precise chronicles of motivations, activities and players – archival. There is an online and physical archive at Banff to encourage future research and an ebook will soon be available with hot links to all references. Horizonzero.ca – the publication of BNMI and Heritage Canada is released as a DVD with the book.

The book is organized into seven themes relevant to the previous dialogue that reoccurred (and overlapped) through the history of the BNMI:

The Material Known as Data

Throughout the 10 years, summits—such as *Navigating Intelligence: A Banff Summit* (1998) and *Artificial Stupidity/ Artificial Intelligence* (2002)—and panels on artificial intelligence (AI) contributed to this knowledge, understanding AI as a key methodology to structure and extract data. Speaking at *Living Architectures*, 2001, scientist Thomas Whalen stated: (AI)

So what are these “cognitons” then—these things that are known in the cognisphere? Knowledge certainly involves text and graphics in some way. It involves audio, video, and animations. It involves any method of presenting information—but we shouldn’t get hung up on that. That’s really losing the forest for the trees. The ways of presenting information are the trees. Knowledge is the forest. It’s the shape of the mass, the overall

pattern that emerges from the mass of information and the paths that we have through that mass of information.

Data as material to be cleaned, excavated, visualized, analyzed, theorized was a core driver of BNMI events. In her introductory essay to the chapter Katherine Hayles states:

As my title suggests, the overarching metaphor I have selected as a framework for this meditation is the *cognisphere*, a term suggested by Thomas Whalen in his presentation on the construction of intelligent agents and interactive narratives. The human capacity to discern visual patterns in the service of understanding abstract data flows that would be virtually incomprehensible if presented as numerical tables. In evolutionary terms, visual-pattern recognition was associated with immediate sensory stimuli in the environment, and the ability to discern patterns appropriately often had life-and-death consequences for early humans. Far from being left behind as we vault into the information age, this evolutionary heritage persists, investing visualizations with emotional content that has the effect not only of reifying visual representations but also of making them resonant with qualities we may not consciously recognize but to which we respond nevertheless. The very responsiveness to visualizations that makes them effective as analytical tools also makes us vulnerable to implications evoked by them that may not be justified by the data alone.

For example at the *Quintessence* summit co-moderated by physicist Anthony Zee, scientists were riveted when artists divulged their conceptual schemas, displayed their visualizations, and argued for abstract modelling rather than indexical representations of their theories.

The BNMI held conversations about subjects such as: the transition and translation of paper, photography, film archives, and archival finding aids into digital formats; decisions on what collections and objects to retain or dispose of; and the ways in which metadata has allowed and limited discovery throughout its history. Equally prevalent were concerns about the ephemeral nature of digital creation on one hand, and the overwhelming volume of information (or data) on the other. It was also important to distinguish between an “archive” and a “database.” There was a millennial preoccupation with history, memory, and loss.

In 2001 I explained the reasons for the moniker *Unforgiving Memory* for our summit: The term for this event is [to evoke] that notion of the persistence of the image and the panopticon framework of surveillance, then the problem of this ultimate state of over-recording and over-retrieval, and this problem of how time both loosens and reframes and reinterprets memory culturally, economically, socially, and psychically. So that’s just a start to explain the brutality of memory in the era of digital machines.

The summit was structured around four key questions, later described by reporter Mathew Kabatoff:

First was the consideration of [digital] media as an historical object whereby the physical qualities of recording provided both a new cultural artefact and at the same time questioned its longevity due to its ephemeral [ongoing] support. Second, what form does digital culture take when daily experience is founded on speed and recombination—when history is in a position of occurring both quickly and slowly? Third, what is the functional contiguity and discontinuity between archive and database, whereby the

database is dynamic, alive, and constantly being written to, whereas the archive is founded on a principle of exclusion? How can a comprehensive digital archive that is inclusive and is of high cultural value be constructed, and what are its primary elements? Fourth, how has the development of systems that produce experiences from four to twelve dimensions affect how humans perceive time?

While artists have always been interested in collections and archives, networked new media presents many more varied possibilities for making old data new or new data old. Theorists such as Lev Manovich have argued that databases—the organizing structures of information—are symbolic forms, subject to culturally specific modification and manifestation.

Access to data, early open data and open innovation were already concerns. *Digital Media Management* in 2000, John- Claude Guedon provided the example of the Paul Ginsparg open publication of physicists' preprints at Los Alamos, so that, "anyone doing research in the area, instead of going from lab to lab, could go one-stop shopping and get the stuff they wanted there... The preprint archives were attacked by publishers when physicists refused to take away their preprints once they had been printed. The strength of the community in the case of physics was enough to withstand the pressure of the publishers."

Physics, Perception, Immersion

Over the last three decades, technological change has reordered the relationship between visual perception and spatial experience, most markedly through 3D graphics production, photographic technologies, and presentation technologies, which have elided virtual and physical architectures. New tools that extend our perception include virtual-reality systems; optical, infrared, and millimetre-wave systems, and electron optical microscopy. Paul Kaiser (a 3D and motion capture digital designer who has collaborated with Merce Cunningham, William Forsythe, and Bill T. Jones) dubbed this domain "The Republic of Vision," suggesting the omniscient power of visual technologies, whether animation, visual effects, virtual reality, or photography.

The time-based nature of image capture and production characteristic of many of these technologies has conflated the domains of architecture, media art, and visual art. In addition, these technologies have invoked temporal and spatial considerations, as they are able to engage and immerse the full sensorium, incorporating sound, touch, and even smell. Hence, in order to take full advantage of the potential of discussions about emerging technologies, BNMI summits often searched for new methodologies to match these new technologies. For example, when speaking about his interest in designing intelligent systems at *Telus Presents: Out of the Box: The Future of Interface* (1998), Richard Lovelace suggested three interlocking methodologies:

The premise is to place ourselves in the realm of electronic imaging technologies and join in their play on their terms. The conceptual goal is to invert the traditional process of a human being using technology to create forms in visible light fields to one where technology uses human beings to create forms in an invisible light field. The technical goals are to create an apparatus that reciprocates a human performance by producing a delayed image of our participation.

As Jean Gagnon's essay points out, tensions around scientific realism, notions of truth, and vastly differing critical readings of imagery raced through the summits. At the same time, the

underlying physics—whether Newtonian or quantum—played in the background, and was fundamental to the comprehension of emerging technological capacities. Unexpectedly, when the BNMI held *Carbon versus Silicon: Thinking Small/Thinking Fast* (2003), it created an environment in which both physicists working with big physics and those concentrating on small worlds could come together to share their work, in what turned out to be a rare encounter. Optical physicists like Pierre Boulanger and Marc Rioux exchanged knowledge about the laws of physics at the subatomic and the astrophysical levels in dialogues with molecular nano-physicists such as Russell Taylor.

As a boundary term—capturing varied meanings from dispersed fields—the discourse of “architecture” held sway at many BNMI events. The term stood in for any space that was diagrammed, planned, structured, and built, and it referred to both the space and the time of that structure. The 2000 *Living Architectures* summit played off of the migration of the term “architecture” into software, network design, and virtual spaces, as well as the broader use of the term within many forms of systems theory, especially when the structure of a system is described, whether a system of living organisms, natural systems, or human-constructed biotechnologies. Bill Seaman defines a quadrangle of transformations as artificial and biological technologies converge on physical spaces: “The living architecture of negotiated spaces ... the living architecture of information ecologies, of the definition of nature ... the living architecture of consciousness.”

Becoming Machine/Staying Human

“Becoming Machine/Staying Human” reflects a preoccupation of the Banff New Media Institute from its very beginnings: the relationship of the body (including the mind) to the technological interfaces that mediate and redefine it. Closely related concerns placed human experience within the larger context of life itself, including significant shifts in cultural and social relationships to, and representations of, nature. This inquiry often focused on the intersection of the biological and the digital, whether through metaphor or technology. Science and art relied on variant philosophical traditions in their interventions around these issues—the BNMI would bring these fields into productive discourse and chart their intersections, within the dramatic physicality of the Rocky Mountains.

The BNMI considered ways in which the body itself had served as metaphor for technology, and as its active ground. After all, it could sing, speak, move, or fight. The summit *Human Voice/Computer Vox* corresponded with a gallery show entitled *Computer Voices/Speaking Machines*, and an Aboriginal spoken-word and performance-art series. It suggested that the voice was the oldest technology in human history, just as computer music was the first form of creative computational art. As participants in the summit explained, musical algorithms were the easiest cultural forms to create in the '60s and '70s, given the computation constraints of the era. In attendance was John Chowning, who is considered one of the grandfathers of computer music.

Computer Voice/Human Vox: John Chowning

The idea of naturalness was such a difficult issue in the first days of computer music. Remember this was the machine with infinite precision, and therein lies its richness, in a way. With this precision, it was not obvious to any of us how you use the computer to regain that kind of natural quality. I assert with vigour that our auditory system is tuned to these small changes of nature that we depend upon—as Sara [Diamond] said, the infant wants to detect the voice of its mother more than any acoustic signal on Earth. The way that an infant identifies and segregates that voice is determined by these small variances

and idiosyncrasies in the voice of the mother that are unlike other voices in the same range.

I was seduced by that idea that intuitive understanding was some sort of key to naturalness. Now, I don't assert that music that doesn't have these qualities is not music; that's not true at all. All I am saying is that for me it was extraordinarily interesting as an idea and it was a voyage of discovery, which led me to the idea of putting things together that have vastly different acoustic properties. But good musicians make good music with whatever they have.

BNMI also approached ethical issues. At *Smart, Sexy, Healthy Smart Sexy and Healthy*, Gregor Wolbring, biologist and disabilities advocate asked of scientists working on genomic research and virtual reality empathy systems:

What is a disease and what is the social justice system? What is acceptable and what is not? What is the social problem and what is medical problem?
We keep the biodiversity of animals and we keep the biodiversity of rice, but we don't keep the biodiversity of humans.

Carbon versus Silicon explored nanotechnology in relation to its connection to digital tools, substrates, and expressions and ultimately visioned a "dream" home represented in an issue of *Horizonzero.ca*. The summit was meant to consider the relationship between the carbon (life and material) and silicon (digital) sciences, in order to find a common ground for nanotechnology researchers (chemists, biologists, nano-physicists), space-time physicists, speculative fiction writers, ethicists, technology makers, artists, designers, and cultural theorists.^{xix}

The Art Formerly Known as New Media

Exhibition catalogue of co-production exhibition of the BNMI curated by Sarah Cook and Steve Deitz with essays by both of them and discussion of exhibition of BNMI works by Sarah Cook.

Social and Individual Identity in New Media

Identity—individual and collective, fragmented, conjunctural, or enduring—was articulated and theorized in almost all events of the BNMI and at specific events. Technologies are material forces that enable and facilitate the behaviour of their users. Technologies are engineered with assumptions about the identities of their users implicit in their design, as well as in the affordances of their components. These assumptions about users are active at every layer: in the content produced for or by the technology, at the interface layer and in the software that runs on machines, right through to machine code and platform engineering. Assumptions in turn act back on users to construct the ways that they perform through and with the technologies, hence shaping their identity. This may seem to be a mechanistic approach. In fact, users are also disruptive, finding applications for technologies that defy these assumptions. As well, design has embraced usability and user participation, broadening the personas represented by machine interfaces. The BNMI sought ways to excavate the identity-forming mechanisms of technologies, looking at broad social effects as well as the ways that individuals and groups used and adapted technology.

Until recently, much of the philosophy and science behind human-computer interaction (HCI), artificial intelligence, and interface design has been focused on the individual rather than the collective. Yet digital technologies—including social media, games, mobile technologies, and

the networks that connect them—have effects on group productivity as much as individual productivity. Contemporary technologies are often used in highly collaborative or social ways, forming identities well beyond the individual.

Early on in the history of the BNMI, Joshua Portway of Real World and I organized *Big Game Hunters* – an event for leading designers, publishers and theorists (no marketers allowed) with, in order to spur creative content and gaming, develop a critical vocabulary to evaluate the games experience, and re-evaluate the developer/ publisher economy. Portway and I dedicated a considerable portion of the summit to understanding the ways in which people play computer games and how playing transforms their sense of individual and collective identity. Speakers drew their commentaries from their empirical observations of gamers and from their own experience, applying post-structuralism, narrative theory, and game theory to the task.

Susan Bennett, performance theorist extraordinaire provided the following analysis: What performance studies is interested in—which I think film studies can't be interested in because of its medium—is the whole notion of presence. This is important to any evolving language around video games. The dimension of presence in performance, which is to say its “liveness” in some form or another, and also a psychophysical attractiveness of the actor in the performance.

What we have looked at specifically in performance studies is a kind of “lamination” process between the actor and the character. They're not interchangeable. They're not the same thing, but they're laminated in order for that performance to be a successful performance. We simultaneously see the actor and the character that's being represented. It strikes me, in thinking about video games, that that's a particularly fabulous medium where the spectator, in fact, becomes laminated to the character as actor—as the player of the game. Like no other medium that I can think of, it closes the psychic and literal gap between the actor spectating and the actor acting.

Intimate Technologies, Dangerous Zones focused on the growing invisibility and ubiquity of technology in daily life, as well as the aesthetic and ethical implications of this condition. Poised at the beginning of the pervasive presence of mobile phones, the summit premise stated that “The immaterial aura of signal and bandwidth influences the very fabric of our beings, moving us into a realm of constant connectivity—a dangerous, seductive zone where the frontier between liberty and control, mobility and invasiveness, utility and dysfunction, comfort and menace is blurred and leaking.

Cultural difference and gender were two points of continual assessment for the BNMI.

At *Bridges II* in 2002, Aboriginal methods and philosophy as applied to interdisciplinary practice and the construction of knowledge formed an important part of the dialogue. Delegates from Aboriginal and African cultures shared models of collaboration that integrated culture, science, and law. Respect for community, nature, and collective process were noted as key elements of grounded research. *Bridges II* ended with a desire to continue discussions along the line of the last theme at a further summit. In response, *Skinning Our Tools* was organized for 2003.

Christine Morris, *Bridges II*

Therefore, Indigenous people don't mind if this mob is doing the same thing as that mob; it is a matter of just letting everybody do their own thing and you let everybody try it out

and then, organically, it works out well. Like a body, you constantly have to think of how this body works. How can the liver work with the heart...And so, in communities, that is how it works. These communities now extend across the world. Our dream tracks are our networks, where originally we traded in intellectual property, and that is why we are the oldest continuous culture in the world. Basically, the West is just catching up to us now. And you are going to understand us, now. It wasn't that (our ancestors) couldn't understand technology; it is just that they focused a terrible lot on what it is to be a human and spent their whole lives being and becoming human. It is not something that you are born with. You must spend your whole life becoming a human.

Money and Law

Beginning in 1995, the fledgling Banff Multimedia Institute undertook the challenge of analyzing, influencing, and building the capacities of a creative digital economy that would support creative and experimental production, design-driven new technologies, and the effective translation of research into the commercial sector. The mission was fuelled by genuine curiosity about the dramatic new technologies of the digital age, the unanswered possibilities of monetizing new forms of interactive content, the Silicon Valley gold rush, and the apparent virtualization of the larger economy. It was clear that an ecosystem needed to grow, and that, in its infancy, conscious interventions and clustering would be critical factors. International companies and strategic industries required the innovation that lay on the edge, while small companies needed resources, test beds, and markets. Of particular urgency was the desire to assist creative new media to find financing and audience share; artists often lacked access to the market altogether. Business models were emerging and untested.

Over its 10 years, *Interactive Screen* first sought to bring together traditional narrative talent with the interactive-media industry, then addressed the international creative new-media community, and later focused primarily on independent creative digital artists from Canada and abroad. The events joined representatives from Canadian banks, technology companies, law firms, funding entities, and a sampling of Canadian commercial companies with producers, artists, designers, and open source advocates.

BNMI considered definitional questions, such as what each medium can achieve and what its limits are; how to recognize quality products; and how to categorize and analyze emerging mass platforms, such as games. It was equally important to analyze what audiences wanted and how they behaved in the context of machine-mediated experience.

The following is a classic quote from the first wave of convergence from Evan Solomen: *Marriage or Divorce, Television and the Web*, 1997, Evan Solomen:

I'll weigh in on my version of whether TV and the web is a marriage. I think it is a matter of incest. I don't think they should get married. We all know that incest isn't good. Television and the web are very close cousins—too closely related to be married, with all apologies to the Spanish royal family. I don't think that incest makes for good healthy children. That doesn't mean that they can't borrow from each other and talk a lot to each other and maybe spend holidays together. Family is important, but family shouldn't marry.

In 2012 the preoccupations that are present in the transcripts —the future of television, convergence, speed of adoption, intellectual property, business models, story structure,

effective user experience design, social media, strategies for monetizing content, and the interdependencies of content and technology—remain industry concerns, as they were for over a decade at the BNMI.

Production and Distribution in Models of Collaborative Practice

The meta-topic of all of the dialogues of the Banff New Media Institute: How do we produce and distribute new-media work and, moreover, how do we manage the inevitable collaborations that result through working in this field and what are the effects of the shifting spaces of cultural production—including, most critically, museums, galleries, the web, media labs, industry, universities, art and design institutions, and science labs.

The landmark *Curating and Conserving New Media* workshop held in 1998 was the first time that museum professionals, independent festival producers, and curators met to chart this new field of art production.

Of major importance were debates about open source/free software and proprietary software, open source content and copyright. Eric Kluitenberg writing in the chapter introduction states:

In the case of open-source software development (probably the most remarkable social experiment in collaborative digital networking thus far), the actors involved not only get access to a whole series of finished products, they can also access the very building blocks of those products and put them to their own use. This principle has created an extraordinarily productive form of intellectual collaboration and exchange—one that urgently needs to be extended into other fields of knowledge production.

The increasing ease of producing and distributing media with accessible online tools was also a constant topic of discussions at Banff. For example, at a brief period at the turn of the century, streamed media provided a burst of exciting alternate culture, mirroring the pirate-radio movement of bygone days. These events occurred well before YouTube and were a precursor to the popularity of online video that dominates the current period. *Synch or Stream* focused on the accelerated phenomena of streamed media—in particular, audio, video, and text on the World Wide Web. It consolidated the burgeoning culture of streamed audio and video on the net whether Thomax Kaulmann of Radio Internationale Stadt (Berlin) or Aboriginal streamed radio, considered technical and policy issues, and assisted in the development of emerging creative forms and subcultures.

The Beauty of Collaboration: Manners, Methods and Aesthetics (2003) summit was created in collaboration with INCITE (a sociology institute led by Nina Wakeford at the University of Surrey's School of Human Science). While the intention was to discover a new aesthetic that derived from collaboration in new-media contexts, there were a wide variety of key questions, including:

- Can we design “architectures of trust?”
- What is a computer-supported community?
- How do online communities differ from parallel physical communities?
- Can machines and software be designed to facilitate human collaboration with intelligent tools?
- How does cooperation differ with mobile platforms?
- Are new kinds of knowledge generated that have not been accessible before?

Are there new forms of expression and new identities that result?
 What can we learn from historical precedents such as chat spaces, role-playing environments, media-production cooperatives, artists' collaborations, and scientists' collaborations?
 What kinds of systems and tools can we design to facilitate collaboration?
 What are the protocols of these collaborative systems and tools?
 Do needs differ across cultures or disciplines?
 Can consensus bring about beauty?
 How do we evaluate cooperative initiatives?
 Is "collaboration" always a positive word or value?
 What about individual achievement?
 Can participatory cultures be built?

The summit *Participate/Collaborate: Reciprocity, Design and Social Networks* (2004), followed, a cumulative f2f and online event that completed the BNMI's creation and maintenance of the international New Media Collaboration Studies Network (NMCSN), funded by SSHRC. Other than studying collaboration, the network sought to understand how networks, technologies, and the use of various online tools and environments affect collaboration. It also compared face-to-face collaboration with technologically mediated contexts and networks.

Ending

The BNMI is gone, an artefact of context, it provided a needed role. The spirit of the BNMI however is alive and well. It lives in science's defence of experimentation, of speaking uncomfortable truths, of providing evidence and demanding action on the basis of evidence. Art and design act as a different kind of evidence – of imagination, integrated reasoning, of affect and experience. And it lives on in the many initiatives, such as the National Centre of Excellence GRAND and in academic programs such OCAD U's Digital Futures Initiative and many others.

Thank-you for your attention today.

ⁱ Completed in 2012 and available through <http://www.banffcentre.ca/press/39/euphoria-and-dystopia/> or <http://www.riversidearchitecturalpress.com/>

ⁱⁱ BNMI Program brochure, 2002.

ⁱⁱⁱ Homi Bhabha, *The Location of Culture* (London: Routledge, 1994).

^{iv} Mark J. Muller, "Participatory Design, the Third Space in HCI," *Handbook of HCI* (Mahway, NJ: Erlbaum, 1993), 1-32, 4.

^v See Muller.

^{vi} Star, S.L. & Griesemer, J.R. (1989) Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39. In: Lynch, M., ed. *Social Studies of Science* 19. London; New York: Sage. pp. 387-420., p. 388.

^{vii} Fischer, G. (2004) Social Creativity: Turning barriers into opportunities for collaborative design. In: *Proceedings Participatory Design Conference, 2004, Toronto*. New York: ACM. pp. 152-161. p. 157

^{viii} Anne Cauquelin, *L'Art du Lieu Commun: Du bon usage de la DOXA* (Paris: Editions du Seuil, 1999).

^{ix} See Godfrey-Smith, P. (2003) *Theory and Reality: An introduction to the philosophy of science*. Chicago: Chicago University Press for a thorough overview of the history of scientific philosophy.

^x Godfrey-Smith, P. (2003) *Theory and Reality: An introduction to the philosophy of science*. Chicago: Chicago University Press.

^{xi} Kluver 33.

^{xii} See Gadamar, H.G. (1960) *Truth and Method*. New York: Crossroads.

^{xiii} See Law, J. & Mol, A., eds. (2002) *Complexities: Social Studies of Knowledge Practices*. Durham: Duke University Press.

^{xiv} Greenberg, S. & Buxton, B. (2008) Usability Evaluation Considered Harmful (Some of the Time). *CHI 2008 Proceedings, April 5-10, Florence*. Florence: ACM, pp. 111-120

^{xv} See Anthony Dunne & Fiona Raby's *Design Noir: the Secret Life of Objects*. (Basil, Boston, Berlin: August/Birkhauser, 2001) and the citation of their work in Peter Hall's essay "Critical Visualisation" in Paola Antonelli's *Design and the Elastic Mind* (New York: Museum of Modern Art, 2008) 120-131.

^{xvi} Latour, B. (1998) *Aramis: The love of technology*. Boston: Harvard University Press. p133).

^{xvii} The Frankfurt School ([German: Frankfurter Schule](#)) refers to a school of [neo-Marxist interdisciplinary social theory](#), particularly associated with the [Institute for Social Research](#) at the [University of Frankfurt am Main](#) in the pre-Hitler era. Many of these theorists felt that traditional Marxist theory could not adequately explain the turbulent and unexpected development of [capitalist](#) societies in the twentieth century. Critical of both capitalism and [Soviet](#) socialism, and compelled by the pervasiveness of capitalism, they considered culture, psychology, philosophy and ideology as well as economics and politics and hence their ideas were embraced by twentieth century cultural theorists. Walter Benjamin is one of the most cited of the Frankfurt School. He was murdered by fascists. Other members were [Max Horkheimer](#), [Theodor Adorno](#), [Herbert Marcuse](#), [Erich Fromm](#), [Friedrich Pollock](#), [Leo Löwenthal](#) and [Jürgen Habermas](#).

⁹The Foundry, Old Street, London

^{xix} Speculative-fiction writers such as Noelle Nalo Hopkinson and Jim Munroe joined artists Mary Flanagan, Victoria Vesna, Diana Domingues, and Chris Cran; virtual-reality artist Maurice Benayoun; artist-biologist Ruth West; artist-mathematician Sha Xin Wei; architects Tania Fraga da Silva and Kathryn Saunders; intelligent textile and wearables artist Joanna Berzowska; and AL designer Jane Prophet and her team.