



**“Trade Routes of the Mind”:**

A Brief History of Information Art in Canada

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## INTRODUCTION

*Time*'s nomination of "You" as its 2006 Person of the Year is a memorable signpost of the recent social turn in representations of information and the "Information Society": "It's a story about community and collaboration on a scale never seen before," wrote *Time* reporter Lev Grossman.<sup>1</sup> *Time*'s celebration of the wisdom of crowds registers the emergence of the *multitude* as an actor in a marketplace driven by information and social media. Critical theorist Tiziana Terranova has explored the multitude as the object of new techniques of "soft control," which seek to maximize the productivity of the turbulent systems characteristic of "Network Society."<sup>2</sup> According to Terranova, the Internet economy harnesses the affective capacities and potentially limitless creativity of the multitude through a marriage of algorithms derived from biological computing and reformed management theories, which stress flexibility and decentralization.<sup>3</sup> Though marking a break with previous articulations of Information Society by international theorists—who have generally emphasized the economic, occupational, or technological dimensions of this formation—Terranova's prioritization of affect and biopolitics as defining attributes of the information age is surprisingly consistent with an indigenous tradition, or rather counter-tradition, of Information Society discourse in Canada that has consistently left its mark on the work of artists engaged with information in this country.<sup>4</sup>

In Canada, the unprecedented power of the multitude unleashed by social media and associated techniques of soft control is instantiated, on one hand, by YouTube sensation Justin Bieber—the Stratford, Ontario, native with the famous hair—who went viral when his homemade music videos were discovered by producer Scooter Braun in 2008. YouTube's efficient propagation of affect illustrates Richard Dawkins' influential theorization of the cultural replicator, or "meme," embodying—like DNA—the selfish imperative: *Copy me*.<sup>5</sup> The power of distributed affect is also evident in more troubling documents of Network Society, such as the cell phone images of protestors captured by crowds of onlookers during the G20 protests in Toronto, in the summer of 2010, subsequently submitted to police as part of an intensified regime of digital surveillance. Following Terranova's lead, we can identify Bieber and the G20 fallout alike as symptoms of the emergence of a Network Society in Canada that thrives on a turbulent biopolitics of affect and information.

The notion of an Information Society is typically credited to either Austrian-American economist Fritz Machlup (1902–1983), who studied the emergence of "The Knowledge Industry" in the United States in the early 1960s,<sup>6</sup> or to Japanese scholars who employed the term *joho shakai* to describe a communications-oriented society in the pages of the journal *Hoso Asahi* as early as 1964.<sup>7</sup> It is remarkable that Canadian communications scholars Harold Adams Innis (1894–1952) and Marshall McLuhan (1911–1980) rarely appear in contemporary Information Society scholarship (except, in the case of McLuhan, in the dubious

guise of media “prophet”), though both theorists made the emergence of an “Age of Information” a primary focus of their research.<sup>8</sup> In his 1964 international bestseller *Understanding Media*, McLuhan revisited Innis’ astonishingly early description of the “information industries” in *The Bias of Communication* (1951).<sup>9</sup> Whereas Innis was primarily interested in the effects of informationalization on the economic organization of industrialized societies, McLuhan conceptualized information technology as an extension of the human nervous system: “We see ourselves being translated more and more into the form of information,” he wrote.<sup>10</sup> Already more than a decade prior to his breakthrough publication, McLuhan had identified the shift in perspective disclosed by the later work of Innis—“from the trade-routes of the external world to the trade-routes of the mind”—as a basis for wide-ranging speculations on the effects of information technology on perception and the *mentalité* of an emergent electronic society.<sup>11</sup>

Innis’ early writings explored the effects of “staple” commodities such as fur, cod, and timber on the development of Canadian institutions. For instance, his celebrated 1930 text, *The Fur Trade in Canada*, traced the origins of Canadian federalism to the commercial network and governance structure of the Hudson Bay Company.<sup>12</sup> Later, Innis identified “information” as the economic motor of post-World War II society.<sup>13</sup> In recognizing the media of communication as primary commodities in the Age of Information, McLuhan was thus following later Innis: “technological media,” he wrote, “are staples or natural resources.”<sup>14</sup> McLuhan’s writings from the mid-1950s onwards extend his earlier concern with the effects of market research on the affective economy of consumer society in *The Mechanical Bride* (1951) to encompass the contribution of information technologies to the formation of a cybernetically interconnected “global village” of instantaneous information movement. In often striking ways, McLuhan’s later writings on information anticipate the features of Network Society described more recently by Terranova<sup>15</sup> and Manuel Castells.<sup>16</sup>

Despite McLuhan’s near absence from critical histories of contemporary art, his impact on the art of the 1960s and 70s is clear from primary documents such as curator Kynaston McShine’s catalogue essay for the landmark 1970 exhibition *INFORMATION* at the Museum of Modern Art, which characterized the late 1960s as “[a]n intellectual climate that embraces Marcel Duchamp, Ad Reinhardt, Buckminster Fuller, Marshall McLuhan, the I Ching, the Beatles, Claude Lévi-Strauss, John Cage, Yves Klein, Herbert Marcuse, Ludwig Wittgenstein, and theories of information and leisure.”<sup>17</sup> McLuhan’s theorization of the effects of information technologies was keenly felt in Canada in particular, where IAIN BAXTER& (AKA Iain Baxter, 1936– ) and Les Levine (1935– ) creatively transformed the media scholar’s concepts through technologically ambitious artworks. Contemporary Canadian artists such as Benny Nemerofsky Ramsay and Kathleen Ritter have demonstrated an acute attentiveness to the affective politics of soft control characteristic of this new environment. Yet, notwithstanding the occasional catalogue essay addressing an isolated component of this ensemble (the

preferred theme being surveillance), to date, information and the Information Society have been largely absent from Canadian art theory and art historical discourse. The present essay represents the first attempt to develop even a preliminary history of information art in Canada—let alone one that places McLuhan’s treatment of affect, embodiment, and what we might now recognize as biopolitical processes of “cybernation” front and centre.

The present work is necessarily preliminary and partial. It sets out to establish a basis for the future study of information art in Canada through a selective grouping of case studies; these are organized thematically in anticipation of further elaboration and debate. The themes which frame the case studies register changing conceptions of information and the information age in Canada, as reflected in the indigenous theories of Innis, McLuhan, and Hans Selye (1907–1982). Recent, revisionist accounts of information theory and Network Society by international theorists such as N. Katherine Hayles, Patricia Ticineto Clough, and Terranova, as well as changing concepts of information itself in the fields of biological computing and theoretical biology are also examined.

This essay argues that the work of Canadian artists engaged with information reveals a persistent focus on the constitutive role of affect, biology, and the multitude that reflects the distinctively biopolitical construction of information in the indigenous Information Society discourse of Canada. It must be emphasized, however, that several of the artists and theorists in question—particularly those active prior to World War II—would not recognize this contemporary terminology, “biopolitics,” being Michel Foucault’s (1926–1984) term for the “administration of collective bodies.”<sup>18</sup> (Likewise, those active in the post-war period would have thought along cybernetic, rather than strictly “biopolitical,” lines.) Nonetheless, a distinctive genealogy is evident, for which Foucault’s articulation of biopolitics serves as a convenient placeholder. Recurring themes of biology, embodiment, and population in Canadian information art from both halves of the twentieth century appear prescient in light of recent theories of Network Society. At the same time, Canadian Information Society discourse and information art depart from more established (particularly American) narratives, which tend to stress the economic and technological dimensions of the transformations associated with the rise of an informatic régime (consequently conflating it with “Post-Industrial Society” and the growth of service-sector labour). The title of this essay—which pays tribute to the visionary insights of Harold Innis—underlines Canadian artists’ tradition of paying attention to the commodification of affect and community under the impact of information technologies and informatic models of communication.

This essay also sets out to situate the present contribution to *H&IT ON* of BAXTER&—a global innovator in information art since the mid-1960s—within a specifically Canadian narrative of information aesthetics and the Information Society. However, this essay is explicitly not *about* IAIN BAXTER&, nor does it analyze specific works included in *H&IT ON*. Rather, it describes the broader artistic, discursive, and historical context of the artist’s longstanding and prescient

engagement with information, information technologies, and the Information Society—and their mutual influence on affect, embodied experience, and social attitudes—as a framework for placing the artist’s latest intervention within an informatic configuration.

This essay follows the example of critical histories of the Information Society articulated by Christopher May,<sup>19</sup> Frank Webster,<sup>20</sup> and others who view contemporary processes of informationalization as extending the logic of (as opposed to marking an epistemic break with) the bureaucratization and economization characteristic of theories of scientific management developed in the late nineteenth and early twentieth centuries. Therefore, rather than beginning with the information theory of the American Claude Shannon (1916–2001), this essay traces the origins of an “info-aesthetic” in Canada to early-twentieth-century figures such as Bertram Brooker, Emma Gendron, and Marian Scott, whose work registers an awareness of statistical techniques and proto-cybernetic theories developed by market researchers and biologists to describe and influence the affective behaviour of populations.<sup>21</sup> In the recent work of David Rokeby and BAXTER&, cybernetic metaphors give way to new perspectives on embodiment and population dynamics derived from robotics, biological computing, and theoretical biology. It is felt that this *longue durée* is particularly appropriate to the study of information art in Canada given the strong indigenous tradition of interdisciplinary theory exemplified by such figures as Brooker (marketing), Innis (communications/economics), Selye (biology), and McLuhan (communications/information), which treats information as a technology for the representation of biological systems—especially human populations—as statistical patterns. The emergence of Information Society discourse in Canada is thus situated in these pages within a continuum of population management techniques based on statistics developed by private and government interests since at least the 1920s.

Finally, a brief word on the relationship between art and theory. Given that the theories of Innis, McLuhan, Selye, and other figures discussed in these pages have not been employed as art historical tools in the existing literature on Canadian art (at least not with reference to information and the Information Society), considerable space is devoted to an explanation of those theories. Yet, artworks are never treated as mere illustrations of concepts. Rather, the majority of case studies below explore how artists have consistently read concepts and theories against the grain, turning statistics, cybernetics, and theoretical biology inside out. Indeed, Canadian artists reveal a remarkable capacity to adapt, and creatively transform, information technologies, as well as concepts drawn from information theory and Information Society discourse, in unforeseeable ways.

## MARKETING INFORMATION AS AFFECT

Patricia Ticineto Clough has characterized the contemporary situation as an “affect economy.”<sup>22</sup> Her evocative term describes processes of commodification that

target the biopolitical “organization of bodies.”<sup>23</sup> Eclipsing the representational economy of “disciplinary” societies analyzed by Foucault,<sup>24</sup> an affect economy is characterized by the marketization of moods, “subindividual bodily capacities,” and body parts.<sup>25</sup> Rather than deriving value from the manufacture and exchange of physical products, profit in an affect economy is generated through the management and manipulation of the affective thresholds of demographic bodies through information technologies. Clough’s characterization of the affective dynamics of contemporary capitalism resonate with Terranova’s description of the function of biopower within systems of soft control, as well as with McLuhan’s earlier observations on the role of media as channels for the transmission of transpersonal affect—in his words, “the recipes and formulas for reducing everybody to the same pattern”—in *The Mechanical Bride*.<sup>26</sup> The Canadian artists analyzed in this section display an analogous engagement with statistical bodies as sites for the production of affective surplus.

The work of Toronto-based artist, author, and advertising executive Bertram Brooker (1888–1955) reveals an engagement with media and statistics as conduits for the communication of transpersonal affect that sets the stage for the subsequent critical writings of McLuhan on market research and information technologies, as well as the contemporary studies of Clough and Terranova on subindividual capacities and the multitude. Born in a working-class suburb of London, England, Brooker immigrated to Canada with his family in 1905,<sup>27</sup> initially settling in Portage la Prairie, Manitoba. Prior to embarking on a career as a journalist and graphic artist—first in Neepawa, Manitoba, and later Winnipeg—in 1912 Brooker opened a movie house in Neepawa with his brother. While managing the theatre,<sup>28</sup> Brooker wrote at least a half-dozen scenarios for silent films that were produced by the Brooklyn-based company Vitagraph.<sup>29</sup> Brooker’s exposure to the affective vocabulary of popular entertainment through his work designing advertisements and writing film scenarios prepared him for his subsequent career as an advertising executive and marketing theorist in Toronto.<sup>30</sup> These experiences likewise informed the artist-advertiser’s early abstract canvases (the first to be exhibited in a solo show in Canada).<sup>31</sup> Brooker’s visual art was also influenced by his early articulation of a personal physics based on a dynamic conception of matter animated by affective capacities (a study he submitted to the Royal Society in England).<sup>32</sup>

Brooker moved to Toronto in 1921 to take a position with *Marketing* magazine, which he purchased in 1924, and edited until 1927. In the pages of *Marketing*, Brooker introduced Canadian readers to new statistical techniques of market research, urging fellow ad men to employ a combination of government census data and private surveys to obtain a composite portrait of “the average Canadian consumer”<sup>33</sup>: “Certainly people are eccentric, but even their idiosyncrasies are discoverable and measurable,” he wrote.<sup>34</sup> The resulting demographic bodies described by Brooker recall the famed “average man” of Belgian statistician Adolphe Quetelet (1796–1874), and clear a path for the intoxicating statistical curves of the “love-goddess assembly line” subsequently analyzed with dystopian



Bertram Brooker, Green Movement, c.1927, oil on paperboard, 58.8 x 43.2 cm. Purchased with assistance from Wintario, 1978.

© Estate of Bertram Brooker/  
Art Gallery of Ontario.



relish by McLuhan in *The Mechanical Bride*.<sup>35</sup> Works by Brooker such as *Chorale* (1927), *Green Movement* (1927), and *Fugue* (1930) hum with the transpersonal affect of demographic bodies: alien chorus lines of streamlined body parts visualize the subindividual capacities of the multitude theorized by the artist-advertiser in his day job as the common currency of an affect economy encompassing advertising and visual art alike. What we might now recognize as the biopolitical contours of Brooker's early abstractions of idealized "average" bodies and masses of machine-like body parts represent a significant but overlooked indigenous precedent for McLuhan's later representation of "[s]tatistics and production charts [as] the dithyrambic poetry of industrial man."<sup>36</sup> In retrospect, Brooker's proto-informational understanding of media as channels for the transmission of affect can be seen to have set the stage for McLuhan's cybernetic representation of the new media of radio, film, and television as "aid[ing] us in the recovery of intense awareness of facial language and bodily gesture."<sup>37</sup>

Geometric abstractions by Brooker such as *Energy is Eternal Delight—Blake* (1927), overflow with vibrant formations of atomic particles seemingly agitated by affective forces. Such images redeploy the "dynamic matter" posited by the artist-advertiser in his youthful speculations on physics as a support for the economy of statistically-defined affective capacities and body parts analyzed by his marketing texts.<sup>38</sup> Brooker's celebration of affect and multiplicity was a critique of the behaviourist psychology that informed American advertising, which Brooker hoped to replace with a qualitative understanding of communication that he dubbed "humanics." This project was fuelled by his familiarity with the writings of French philosopher Henri Bergson (1859–1941), and the Bergsonian-inspired, vitalist modernism of Britain.<sup>39</sup> Brooker's advertising textbook, *Copy Technique in Advertising* (1930), reveals that the literary writings of former Bergsonists Katherine Mansfield, Walter de la Mare, and John Middleton Murry provided a model for the artist-advertiser's distinctively empathic approach to advertising, which complemented his statistical definition of markets with a recognition that "markets are people."<sup>40</sup> Brooker's participatory advertising techniques—which included pioneering marketing contests for radio—are striking antecedents for McLuhan's later reflections on the conditions of audience "involvement" produced by electronic media.<sup>41</sup> Brooker's redeployment of Bergsonian *virtuality* as a support for articulating the motor capacities of an active consumer sets the stage for McLuhan's later analysis of the statistical "behaviour patterns" of cybernetic society.<sup>42</sup>

Much as Innis later explored the role of the information industries in the production of new "monopolies of space"—the geographies produced by commercial interests through their occupation and representation of space—Brooker's writings for *Marketing* sought to give geographic definition to the demographic bodies captured by the advertiser's statistical toolbox.<sup>43</sup> Canadian geography is depicted as a "big commodity" in advertisements and visualizations by Brooker, as it is, according to Arthur Kroker, in Innis' staples histories.<sup>44</sup> Moreover, Brooker's sensitivity to the impact of statistics on the social production

of space in his late, unpublished text *The Brave Voices* (c. 1954) resonates with the spatial theories of Innis.

Though written in a spirit of critique, Brooker's advertising writings sometimes served to reinforce entrenched systems of domination. Special features devoted to the Quebec market published by *Marketing* during Brooker's tenure as editor incorporate a variety of visualization techniques—including innovative charts and maps—to bring the spatial distribution of demographic data into representation.<sup>45</sup> *Marketing's* Quebec features, with their application of demographic instruments to identify potential markets for manufacturers in English Canada, anticipate Innis' subsequent research on the role of the information industries in the production of colonizing and neo-colonial monopolies of space. Ironically, the marriage of statistical profiling and Bergsonian techniques of empathic communication propagated by *Marketing* is coterminous with the merger of participatory marketing and spatial monopoly found contemporaneously in the pages of a magazine of a very different political stripe: *La Revue de Manon*. Owned by author, illustrator, and screenwriter Emma Gendron (1904–1952), and edited in collaboration with filmmaker Joseph-Arthur Homier (1875–1934), *La Revue de Manon* was a women's magazine with a pioneering mix of columns devoted to home décor, fashion, celebrity gossip, and short fiction (some of it authored by Gendron).

*La Revue de Manon*—which also ran one of Canada's first regular columns of film criticism—is notable for its appropriation and reworking of the affect economy of Hollywood to define an “imagined community” of francophone readers.<sup>46</sup> Gendron—who had first-hand contact with American celebrity culture during a stint at Paramount Studios in New York, in 1923—filled the pages of the Montreal-based *La Revue de Manon* with remarkably DIY photo-collages of American film actors created by Homier.<sup>47</sup> A 1926 contest hosted by the periodical, “Le Grand concours de les vues animées,” recruited non-professional actors and potential producers for a film project in development at the time. The maverick editors of *La Revue de Manon* enticed prospective stars to audition for their production with headlines such as: “Devenez un maître de l'écran; Soyez célèbre, riche et admire” (“Become a star of the screen; be rich and famous”), “Êtes-vous photogénique?” (“Are you photogenic?”), and “Voulez-vous faire du cinéma?” (“Do you want to make movies?”)<sup>48</sup> Contest features coached female readers in the affective vocabulary of Hollywood—the repertoire of facial expressions and bodily gestures performed by the starlets of the silver screen.<sup>49</sup> The subject matter of the unrealized *Les Fils de la liberté*—the Patriote rebellion of 1837 to 1838—reflects the political commitments of Gendron, who subsequently ran (unsuccessfully) as an independent candidate in the Montreal federal riding of St. James in 1935.<sup>50</sup>

If Brooker's empathic advertising techniques and contests encouraged consumer involvement in an emergent affect economy, “Le Grand concours” of Gendron and Homier likewise transformed celebrity culture into a participatory event, inviting audience members to insert themselves into the fictional action of the enterprising pair's projected film. A collage of contest hopefuls, “Qui sera

# NOTRE GRAND CONCOURS DE VUES ANIMEES

## PHOTOGRAPHIES DES CONCURRENTS.

### TROISIEME SERIE

Nous annoncerons prochainement le titre du scénario, duquel sera tourné le film de "La Revue de Manon". Ce grand concours sera bientôt clos et encore une fois nous invitons ceux qui désirent jouer dans les vues animées, de s'inscrire immédiatement et de nous faire parvenir une bonne photographie qui sera publiée dans cette Revue.

N'oublions pas que "La Revue de Manon" est envoyée à tous les grands studios américains, ce qui est un immense avantage pour ceux qui nous envoient leur photographie.

Il nous est impossible de publier des photographies d'amateurs.

Envoyez-nous une bonne photographie et ceurez la chance d'être choisi.



QUI SERA CHOISI ? 5



1.—Mlle Annette Comeau  
2.—Mlle Simonne Lévesque

3.—Mlle Berthe Frenette

5.—Mlle Lizette Hugo  
4.—Mlle Duchesneau

Arthur Homier and Emma Gendron, eds., *Qui Sera Choisi?*, "Notre grand concours de vues animées: photographes des concurrents," *La Revue de Manon*, vol. 2, no.7 (1926): 15.

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choisi?" ("Who will be chosen?"), gives graphic form to the editors' ambition to forge an imagined community of francophone readers by poaching and overcoding the symbols (and especially the expressions and gestures) of a colonizing culture industry.<sup>51</sup> While Gendron and Homier did not utilize the sophisticated statistical techniques deployed by *Marketing* to give geographic expression to their nationalist aspirations, the participatory features developed by the magazine's editors—culminating in "Le Grand concours"—appropriated the conventions of an affect economy defined by the very demographic instruments pioneered by Brooker, and later criticized by McLuhan.

Gendron's appropriation of marketing vocabulary to articulate an imagined community also suggests parallels with the early performances of General Idea (1969–1994). Formed in 1969 by AA Bronson, Felix Partz, and Jorge Zontal, General Idea parasitically inhabited the structures of the art world and mass media.<sup>52</sup> First staged as part of the 1970 Festival of Underground Theatre at the St. Lawrence Centre in Toronto, *The 1984 Miss General Idea Pageant* evolved through a series of performances and architectural mock-ups, culminating in the 1977 "destruction" of *The 1984 Miss General Idea Pavilion*.<sup>53</sup> General Idea's *Pavilion* provided a mythical "frame of reference" for its "viral" inhabitation of the glamorous symbols of celebrity culture: "a framing device within which we inhabit the role of the general public, the audience, the media."<sup>54</sup> Whereas much commentary on General Idea has focused on the semiotic and structural dimensions of the group's appropriation and transformation of heteronormative representations disseminated by consumer media, it is the group's redeployment of the informatic language of market research as a platform for the counter-hegemonic affect economy of its performances that is singled out for attention here. Viewed through this lens, the ubiquitous figure of Miss General Idea emerges as the Mechanical Bride of an affect economy bound by proprietary statistics:

Our seemstress [sic.] extraordinaire is stretching the tape beyond the measuring point and getting bruised in the process. Haute Culture. Catch her re-enacting the getting caught in the measuring act. She is leaving behind a trail of interrupted decimals on the cutting room floor.<sup>55</sup>

In 1984, General Idea reflected back on its early deployment of statistics to define an ideal audience profile in the absence of a thriving art scene in 1970s Toronto: "instead of servicing and addressing our peers in the Eternal Network we came to be talking demographics."<sup>56</sup> An early engagement with the statistical techniques of market research, *Orgasm Energy Chart* (1970) was a mail-art project that invited participants to record their personal information and to chart their sexual activity for a one-month period using a questionnaire to be returned to General Idea Headquarters in Toronto (then located only a few blocks from the former offices of *Marketing*).<sup>57</sup> "General Idea's intent," curator Fern Bayer explains,

“was to make master charts, indicating distribution and frequency patterns.”<sup>58</sup> This utilization of statistical instruments to study the pre-individual capacities of an audience recalls McLuhan’s 1951 description of the Nielsen Audiometer—which “pieces together the [...] habits of a household into a single chart image”—and also matches Patricia Ticineto Clough’s recent description of contemporary affect economy.<sup>59</sup>

If General Idea’s pageants occupied the “empty shells” of dominant cultural forms, demographics, and effect were squarely the focus of performances such as *Blocking*, mounted at Western Front in Vancouver in 1974, as well as *Going Thru The Motions*, staged at the Art Gallery of Ontario in 1975.<sup>60</sup> In preparation for *The 1984 Miss General Idea Pageant*, *Blocking* rehearsed an audience in the affective protocols of pageant attendance.<sup>61</sup> *Going Thru The Motions* was a more elaborate rehearsal, which coached eight hundred participants in a repertoire of audience reactions.<sup>62</sup> As part of *Going Thru The Motions*, “The Parade of the Contestants” introduced General Idea’s aluminum *V.B. Gowns* (1975)—venetian blinds cascading in the group’s trademark ziggurat formation—which operated simultaneously as costume and architectural mock-up (of the projected *1984 Pavilion*). *Towards an Audience Vocabulary* (1977) introduced a new dynamic into these preparations by including two audiences: an on-stage “control” audience of thirty-five personalities, who re-enacted the earlier rehearsals of reactions to *Pageant* events for television cameras, and a second audience without a prescribed role.<sup>63</sup>

Much as Gendron and Homier’s 1926 “Grand concours” contributed to the formation of an imagined community in Quebec by initiating readers of the Montreal *Revue de Manon* into a common affect economy defined by statistical instruments, General Idea appropriated the demographic discourse of market research to enact a “counterpublic” (Warner 2002). “This hybrid audience was a real audience developed out of the lack of an art audience in Canada.”<sup>64</sup> The participatory aesthetic of General Idea’s rehearsals for *The 1984 Miss General Idea Pageant* noted by Frédéric Bonnet<sup>65</sup> emerges from this genealogy as a travesty of the ideals of consumer participation articulated by Brooker fifty years earlier in columns on Bergsonian advertising contests. In contrast to McLuhan’s deterministic representations of audience behaviour in *The Mechanical Bride*, the projects of Brooker, Gendron, and General Idea alike portrayed the affect economy of the multitude as a statistical construct permanently open to the contingency of shifting community behaviours. Similarly, Gendron and Homier’s appropriation of a colonizing affect economy to give shape to a nationalist imaginary in Quebec overturned the “monopoly of space” associated with American advertisers and newspaper publishers criticized by later Innis in works on the nascent information industries.<sup>66</sup>

## CYBERNATION

The North American continent, [is] like the Chinese toy box within box within box. And these boxes were all of a piece, all cut from the same stuff. They were part of the same organism, this new North American organism. Their cells would have the same response to a given stimulus.<sup>67</sup>  
 –Wyndham Lewis, *Self Condemned*, 1954

In his groundbreaking 2010 catalogue essay “Documentary Protocols,” curator Vincent Bonin identified the “‘cybernetic’ social-democracy” promoted by the Liberal government of Prime Minister Pierre Elliott Trudeau as a condition of possibility for the emergence of Conceptual Art in Canada.<sup>68</sup> Federal sponsorship of artist-run centres such as the Intermedia Society in Vancouver, A Space in Toronto, and Véhicule in Montreal encouraged new forms of decentralized self-administration. The cyber-nationalism of Trudeau, which responded to the separatist crisis in Quebec with policies emphasizing local governance, may have reflected the politician’s familiarity with the popular theories of McLuhan—who acted as an advisor to the prime minister from 1968 onwards.<sup>69</sup> McLuhan believed that “cybernation” would play a crucial role in effecting the transition to a utopian society of “autonomy and decentralism.”<sup>70</sup> McLuhan’s definition of cybernation as a “new environment consisting of a network of information and feedback loops” in turn registered the impact of contemporary cybernetic discourse on his thinking about the decentralized administration of populations under conditions of electronic communication and information exchange.<sup>71</sup>

Broadly defined as the study of regulatory systems, cybernetics was first explicitly formulated by the American mathematician Norbert Wiener (1894–1964), in the late 1940s, as the science of communication and control.<sup>72</sup> Growing out of research on self-correcting “servomechanisms” in anti-aircraft artillery during World War II, cybernetics sought to enhance the performance of systems through information relays—or “feedback loops”—designed to signal unplanned or unwanted statistical deviations in either the steady state of the system itself or in its environment.<sup>73</sup> In the early years of cybernetics, improved system performance—even when applied to electrical or mechanical systems—was frequently couched in the biological language of “homeostasis”: the stable condition of an organism’s internal environment.<sup>74</sup> Cybernetics’ conflation of biological and systems discourse endowed the new discipline with the aura of a social panacea, as Wiener was the first to recognize. As with the statistical language deployed earlier by market researchers, however, the social rhetoric of first-generation cyberneticians was far from neutral. Though cybernetics was first applied in the physical sciences and engineering, it was soon invoked as a rationale for prohibiting social behaviours coded as “deviations” from the norm—an outcome which Wiener, somewhat ironically, sought to deter as early as 1948.<sup>75</sup> Katherine Hayles has convincingly argued that the boundary politics of the Cold War period contributed to the



General Idea, *Going Thru The Motions*, performance staged at the Art Gallery of Ontario, Toronto, 18 September 1975.

Photo: Mary Canary.  
Courtesy AA Bronson / Art Gallery of Ontario and Art Gallery of Ontario.





paranoid resonance which the concept of “homeostasis” acquired in the first phase of cybernetic discourse: “clouded by the hysteria of McCarthyism, homeostasis implied a return to normalcy in more than one sense.”<sup>76</sup> In other words, cybernetics applied statistical instruments to enforce conservative community standards, posited as the “steady state” of a self-regulating social system. East-West tensions influenced the privileging of *self*-regulation by cyberneticians in this period, who somewhat paradoxically viewed the very loss of differentiation between organism and environment posited by cybernetics (through the boundary-defying notion of feedback loops *between* systems) as a potential threat to liberal/humanist subjectivity.<sup>77</sup> Such anxieties led to calls for the re-containment of the Western (male) subject through a reinforcement of boundaries and norms via cybernetic controls engineered to manage a potentially unruly multitude.<sup>78</sup> Cybernetics was thus viewed as both illness and cure.

Hayles argues that cybernetics established an interdisciplinary paradigm, which enjoyed currency across a broad range of fields in two waves: the first from 1945 to 1960, and the second from 1960 to 1980.<sup>79</sup> Only the first of these periods was associated with an emphasis on homeostasis, according to Hayles, yet the pre-eminence enjoyed by this concept in the writings of Canadians such as McLuhan and the Austrian-born stress researcher Hans Selye throughout the 1960s and 70s attests to the longevity of the homeostatic paradigm in cybernetic discourse in Canada. Although Wiener did not coin the term *cybernetics* until 1947, he dated the birth of the field to “1942 or thereabouts.”<sup>80</sup> An early participant in proto-cybernetic research, beginning no later than 1942, was neurophysiologist Warren McCulloch<sup>81</sup>; physiological research conducted by Selye as early as 1936, likewise reveals a proto-cybernetic approach to biological systems.

Fuelled by the homeostatic theories of Harvard physiologist Walter B. Cannon (1871–1945), Selye defined stress as “the nonspecific response of the body to any demand made upon it.”<sup>82</sup> In this formulation, stress is the body’s attempt to regain equilibrium when homeostasis has been compromised by stressors.<sup>83</sup> In Selye’s counterintuitive reading, the body’s *milieu intérieur* is represented in strikingly cybernetic terms: as a non-physical network of informatic feedback loops, or “reactons,” as Selye dubbed them.<sup>84</sup>

Russell Viner has documented how, beginning in the 1950s, Selye systematically recruited allies from corporate America and the US defence industry in response to the widespread skepticism with which his theories were greeted within the mainstream medical community.<sup>85</sup> In his role as “expert consultant” to the Surgeon General of the US Army from 1947 until 1957, Selye lectured to both business leaders and military academies.<sup>86</sup> In popular works on stress published in later years, Selye redeployed homeostasis as a metaphor for a population whose resources are channelled toward (self-)defence: “Stress was pictured as a weapon, to be used in the waging of psychological warfare against the enemy, and stress research as a shield or vaccination against the contagious germ of fear.”<sup>87</sup> Viner has shown that Selye’s theory resonated with right-wing readers because

his prioritization of personal adaptation was seen as validating capitalist values<sup>88</sup>: “selfishness is natural,” Selye reassured his security-conscious supporters.<sup>89</sup>

“Stress,” Selye wrote in *The Stress of Life*, “has its own characteristic *form* and *composition*, but no particular cause.”<sup>90</sup> The strongly aesthetic character of Selye’s modelling of physiological processes is given powerful expression in the mural which he commissioned in 1941 to decorate a proposed conference and reading room in the Department of Histology at McGill University, where he was then employed as an assistant professor.<sup>91</sup> Painted between 1941 and 1943, by Montreal artist Marian Dale Scott (1906–1993), the all-over composition of the massive (306 x 480 cm) *Endocrinology*—whose crystalline network of lines resembles Selye’s later depiction of reactons in his *Explorations* article—gives shape to the emergent systems orientation that informed the McGill researcher’s findings on human physiology.<sup>92</sup> According to Selye, his entire department collaborated in the research and development process;<sup>93</sup> this communal approach made Scott’s scientifically-accurate rendering of cellular development possible.<sup>94</sup> Viewed through the aesthetic lens of Selye’s articulation of stress, the compositional elements of cell, crystal, and spiral that dominate the all-over network of *Endocrinology* emerge as the “basic aesthetic units” of a proto-cybernetic inscription of biological regulation that clears a path for Selye’s later, fully cybernetic writings.<sup>95</sup>

But, whereas regulation is synonymous in Selye’s subsequent writings with phobic, boundary-conscious forms of *self*-regulation, Scott’s mural draws attention to the generative possibilities of deviation from homeostatic functioning. The mutant bodies circulating in the margins of Scott’s mural—putatively illustrating various changes in physiological functioning caused by hormonal fluctuations—celebrate the potential for creative evolution inherent in biological systems.<sup>96</sup> However far removed from the phobic norm promoted by Selye, Scott’s bodies nonetheless exemplify the transpersonal and statistical identity conferred on the subject under the proto-cybernetic régime legislated by the theories of the Canadian stress researcher through their mask-like features and “capture” by mathematically-defined processes of constant transformation. The anarchic values embodied by Scott’s permanently embryonic figures stand in sharp contrast to both the staunch conservatism of Selye, and the relentlessly centralizing political philosophy espoused by the artist’s husband, F.R. Scott, a co-founder of the socialist CCF party.<sup>97</sup> As a critical reworking of homeostatic models, her vision of an anarchically self-regulating “body-as-organism” offers a compelling alternative to Selye’s subsequent representations of a cybernetic “Fortress America.”<sup>98</sup> Seen in retrospect, the pattern of decentralized self-regulation established by *Endocrinology*’s marginal distribution of bodies anticipates the Selye-inspired social theories of McLuhan, which in turn (in Bonin’s analysis), influenced the development of Canadian conceptualism via the decentralized social policies of the Trudeau government. Finally, as an innovative exercise in *promotion*—a monumental advertisement for Selye’s theories auguring the flood of pop psychology that would eventually secure acceptance of the Canadian researcher’s



Marian Dale Scott?  
*Steroid Nucleus*,  
1940s? painted  
moulding. Strathcona  
Medical Building, McGill  
University, Montreal,  
Canada.

Photo: Adam Lauder. The  
same lattice or network of  
lines figures prominently in  
Marian Scott's nearby mural,  
*Endocrinology*, 1941-43.

stress theory within mainstream medicine—*Endocrinology* suggests parallels with Innis’ critique of the commodifying effects of information theory (in this instance, as adapted by cybernetics to produce an industrial pharmacopeia). The steroid nucleus positioned by Scott at the focal point of the mural crystallizes the network of “trade routes”—to paraphrase McLuhan’s interpretation of later Innis—carved by information systems directly onto the body.

Hayles has noted that Selye’s writings on stress influenced McLuhan’s cybernetic construction of the human sensorium.<sup>99</sup> Significantly, Selye’s description of reactons “as focal knots in a complex network of more or less rigid interactions” was first published in McLuhan and Edmund Carpenter’s journal *Explorations* prior to appearing in Selye’s popular 1956 publication *The Stress of Life*.<sup>100</sup> McLuhan drew on Selye’s cybernetic construction of stress to formulate his own theory of the media as “extensions”: “All extensions of ourselves, in sickness or in health, are attempts to maintain equilibrium.”<sup>101</sup> Similarly, McLuhan’s holistic vision of an emergent “global village” extended Selye’s early cybernetic discourse on human physiology to describe social phenomena from a media studies perspective that adapted the proto-Information Society discourse of later Innis.<sup>102</sup>

If political and commercial institutions take on a biological character by means of electric communications, it is also common now for biologists like Hans Selye to think of the physical organism as a communication network: ‘Hormone is a specific chemical message-substance, made by an endocrine gland and secreted into the blood, to regulate and coordinate the functions of distant organs.’<sup>103</sup>

Directly responding to the writings of McLuhan, the work of IAIN BAXTER& (1936–; known as Iain Baxter until 2005), as President of the conceptual enterprise N.E. Thing Co. Ltd. (NETCO), engaged another figure of the cybernetic paradigm: the *cyborg*. Created by BAXTER& in 1966, as the N.E. Baxter Thing Co., and renamed N.E. Thing Co. in late 1967, NETCO was legally incorporated in January 1969, and subsequently co-administered with Ingrid Baxter until 1978.<sup>104</sup> The cyborg substitutes the “corporate” embodiment of the network for the statistically-defined percepts and affects described by market research in the early twentieth century. NETCO’s cyborg identity is evident in the Company’s statement of incorporation, which foregrounds its distinctive stock-in-trade, “Sensitivity Information” (SI)—a term itself implying a suturing of human and machine:

The objects for which the Company is established are: —

- (i) To produce sensitivity information;
- (ii) To provide a consultation and evaluation service with respect to things;
- (iii) To produce, manufacture, import, export, sell, and otherwise deal in things of all kinds.<sup>105</sup>

Sensitivity Information was central to NETCO's cybernetic assemblage of human operators and nonhuman actors, which included the "moral person" of the corporation itself.<sup>106</sup> As a cybernetic choreography of company actions, SI recalls McLuhan's influential analysis of the informationalization of the subject in *Understanding Media*,<sup>107</sup> which drew upon his earlier critique of market research in *The Mechanical Bride* as well as the proto-cybernetic biology of Selye's early writings. SI also coincides with Katherine Hayles' gloss on the cybernetic renovation of the body as an information system:

Central to the construction of the cyborg are informational pathways connecting the organic body to its prosthetic extensions. This presumes a conception of information as an (disembodied) entity that can flow between carbon-based organic components and silicon-based electronic components to make protein and silicon operate as a single system. When information loses its body, equating humans and computers is especially easy [...].<sup>108</sup>

In substituting Sensitivity Information for the traditional criteria of aesthetic experience, NETCO effectively instituted a feedback loop between the organization and its environment. Much as Wiener's cybernetic subject lived under the constant threat of schizophrenic fusion with its environment, N.E. Thing Co. personnel pronounced that "art is all over"—internal Company communications and records thereby merging with the content of the environment at large.<sup>109</sup> This informatic implosion of organizational boundaries parallels the "reflexive" turn which defined the second phase of cybernetics.<sup>110</sup> NETCO's deployment of SI as a uniform language for describing both (internal) Company actions, and (external) states of the environment, thus corresponds with the radical psychiatry of Gregory Bateson (1904–1980), who viewed cybernetics as the transformative interaction of systems—particularly to the extent that the observer becomes implicated in the systems under observation.<sup>111</sup>

Another parallel can be drawn between NETCO's informatic business model and the management theories of British cyberneticist Stafford Beer (1926–2002). Beer, who spent extended periods in Canada (and delivered the 1973 Massey Lectures on CBC radio), saw analogies between the post-industrial organization and the organism.<sup>112</sup> Much as "Visual Sensitivity Information" (VSI) enabled the flow of information between NETCO's semi-autonomous branch plants or departments and their human personnel, Beer's "viable system model" (VSM) envisioned the cybernetic factory as an adaptive biological system: "Functions of management and control were envisaged on the lines of the human brain and nervous system. The brain and nervous system were simulated by a combination of information technologies and real human beings appropriately arranged."<sup>113</sup> Andrew Pickering argues that by instituting feedback mechanisms between all levels in the organizational hierarchy, Beer's VSM achieved a viable form of "democratic subpolitics."<sup>114</sup>

A social feedback mechanism embodying the democratic ideals which infused Beer's management theories is the "algedonic meter": a qualitative scale of affective response (essentially "yea" or "nay") that enables to respond to conditions engineered by management.<sup>115</sup> A similarly non-semantic and performative model of democratic corporate communication characterizes the *ACT* ("Aesthetically Claimed Thing") and *ART* ("Aesthetically Rejected Thing") certificates issued by NETCO: aesthetic judgements accepting or rejecting readymade phenomena selected by the company personnel from the contemporary "information landscape."<sup>116</sup> The company's notarized certificates instantiate a specifically cybernetic mode of democratic subpolitics, in which the affect economy of everyday information behaviours (e.g., scanning, and acting upon, the contemporary information milieu) is appropriated to generate a feedback loop with established art discourse—the majority of *ART*s being, appropriately, art objects. As in McLuhan's theorization of cybernation, NETCO's prioritization of "involvement"—its celebration of "active" viewing—insists that the politics of information is always also a politics of participation.<sup>117</sup> Representations of the Information Society in the work of McLuhan and NETCO alike thus reveal the imprint of second-phase cybernetics.

The reflexive turn of 1960s and 70s cybernetic discourse is particularly evident in McLuhan's analysis of the Narcissus myth in *Understanding Media*, in which the media-induced merger of observer and electronic proxy engenders a state of general anaesthesia.<sup>118</sup> Narcissus-as-servomechanism equally describes the corporate condition of NETCO personnel, whose subjectivities fuse with their executive offices, thereby dissolving in the "legal person" of the corporation. The conflation of subjectivity and electronic corporation embodied by NETCO marks a further stage in the progressive colonization of consciousness by information technologies described by Innis and McLuhan.

## SELF-ASSEMBLY

Andrew Pickering has described how cybernetic models of the brain, characterized by an embodied and performative understanding of cognition—for which the self-guided, light-seeking "tortoise" robots jerry-rigged by British cybernetician Grey Walter (1910–1977) are an abiding symbol—were rapidly displaced by linear and representational approaches to Artificial Intelligence (AI) in the mid-1950s.<sup>119</sup> AI sought to reproduce human consciousness through symbolic logic and by generating accurate, three-dimensional models of the external environment in real time.<sup>120</sup> Though initially receiving strong government support, GOFAI ("good, old-fashioned AI") began to falter by the mid-1970s.<sup>121</sup> The "situated robotics" embodied by Allen—Rodney Brooks' 1985 robot—represented a return to the adaptive concerns of Walter's tortoises.<sup>122</sup> Like Walter's performative brains—clunky machines that adapted to their surroundings by responding

to environmental stimuli in unforeseeable ways (rather than by executing pre-programmed, linear scripts)—the “biologically-inspired robotics” spawned by Brooks prioritized problems of movement and perception (navigation and object manipulation), usually associated with the body, above the cognitive problems of knowledge representation and symbolic logic privileged by classical AI.<sup>123</sup> In the “bottom-up” paradigm of robotics, non-cognitive functions associated in living organisms with musculature and sense perception supplant higher-order reasoning as primary technologies of self, thereby reversing the traditional hierarchy of mind over matter in humanist traditions of subjectivity (to which the top-down models of AI are the heir). In parallel with recent developments in theoretical biology inspired by information theory, robotics stresses the capacity of relatively simple elements to self-organize into complex, life-like systems.<sup>124</sup> The work of several contemporary Canadian artists registers this biological turn in computing.

Though engaging with themes of language, memory, and pattern recognition associated with AI, the computational installations of David Rokeby (1960–) are properly situated within the hybrid tradition of automata—a genealogy closely affiliated with the bottom-up robotics of Walter and Brooks.<sup>125</sup> Indeed, from early works such as *Very Nervous System* (1982–1990), Rokeby’s interests have closely paralleled the concerns of biologically-inspired robotics: a persistent interest in embodiment, movement, and the coevolution of artificial systems and living populations has complemented the artist’s development of interactive, artificial perception systems since the mid-1980s.<sup>126</sup> In opposition to the precise vision systems promoted by AI—designed to generate executable maps of the surrounding environment—Rokeby deliberately engineered *Very Nervous System* to mimic the non-optical, motion-sensing properties of a frog’s eye.<sup>127</sup> Rokeby’s system processes optical input—registering broad shifts in ambient illumination triggered by the motions of the participant(s), rather than the contours of objects—as raster images, which are subsequently translated into an unpredictable sonic output.<sup>128</sup> The resulting sound environment unfolds as an open-ended feedback loop between the participant(s) and Rokeby’s interface.<sup>129</sup> As such, Rokeby’s work conjures another concern of biologically inspired robotics: namely, the co-shaping of human and non-human actors.<sup>130</sup>

“I am very interested in time, the experience of time, the experience of changes across time, and the temporal behaviour of systems,” Rokeby has written.<sup>131</sup> Beginning with *Watch* (1995), the artist replaced the purpose-built vision system of *Very Nervous System* with live surveillance cameras as a means of documenting and influencing the movements of increasingly large populations through time. *Watch* processed surveillance footage of a street corner into two opposing images: in the first, stationary objects were masked in order to highlight the movements of people and objects; in the second, moving bodies were systematically elided to reveal a static backdrop.<sup>132</sup> A third image introduced a characteristically interactive and adaptive element: hidden camera footage of viewers in the gallery.<sup>133</sup> Subsequent projects by Rokeby incorporating surveillance techniques, such as *Taken* (2002) and

*Sorting Daemon* (2003), exacerbated the constitutive tension between control and interaction of *Watch*. Paradoxically, as the artist programmed his systems to be more and more selective—to operate within increasingly narrow parameters—in terms of input, the texture and shape of system outputs, in the form of dazzling collages of found imagery, became progressively more dependent on the unforeseeable minutiae of participant attributes and behaviours. “The issue of who is controlling whom becomes blurred. The intelligence of the human interactors spreads around the whole loop, often coming back in ways they don’t recognize, causing them to attribute intelligence to the system.”<sup>134</sup> In *Sorting Daemon*, contingencies of human behaviour and dress both populate and warp the pre-defined coordinates of the artist’s taxonomy—a spatial distribution based on the innocuously formalist, yet socially-charged, criterion of colour.<sup>135</sup>

Tension between program and performance is also constitutive of Rokeby’s 2004 work, *Gathering*. Created for the 26th Bienal de São Paulo, *Gathering* revisited the parameters of *Sorting Daemon*: mobile objects (predominantly bodies and body parts) were automatically extrapolated from live images captured by a surveillance camera situated within the Biennial pavillion. Image details were projected within an octagonal space according to attributes such as hue and brightness. Unlike the content of *Sorting Daemon*, which grew organically within predetermined coordinates and a fixed set of rules over the course of the exhibition period, the ordering principles governing *Gathering* were subject to constant variation.<sup>136</sup> The resulting temporary formations of found, partial imagery mirrored the shifting social groupings documented by the surveillance camera. As such, the formal characteristics of *Gathering* approximate the “network microphysics [...] made of temporary and unstable alliances and relations” analyzed by Terranova.<sup>137</sup> Terranova has identified such volatile population dynamics as the locus of new techniques of soft control which take the far-from-equilibrium conditions of the self-organizing multitude as their object: “The great discovery of the biological turn is not only that there exists an abstract machine that can facilitate, contain, and exploit the creative powers of a multitude (human and inhuman). It is also about the discovery of the immense *productivity* of a multitude.”<sup>138</sup> As in Rokeby’s ambivalent surveillance systems, soft control is achieved, in Terranova’s reading of network dynamics, without recourse to conventional (hierarchical) forms of population control. Creativity and emergence ensure the reproduction of the social system, rather than top-down power structures or cybernetic equilibrium.<sup>139</sup>

If Rokeby’s installations draw attention to the troubling dynamics of an emergent régime of soft control, the recent work of IAIN BAXTER& affirms the genuinely creative and socially responsible possibilities of self-organizing systems. BAXTER&’s adoption of the ampersand as both ubiquitous motif and personal logo (the artist legally affixed the ampersand to his name in 2005, subsequently registering the “&” symbol as a corporate trademark in 2008) serves as an advertisement of his commitment to connectionist principles of (non-cognitive and non-linear) bottom-up organization. This position is informed by the artist’s early





David Rokeby,  
*Gathering*, 2004,  
video camera, custom  
software, computers,  
projectors, aluminium  
and fabric structure.

Photo: David Rokeby.  
Courtesy David Rokeby and  
Pari Nadimi Gallery.  
© David Rokeby.

scientific training in the fields of ecology and zoology.<sup>140</sup> The holistic philosophy of Zen Buddhism has also been influential in shaping BAXTER&'s investigation of the interconnectedness of phenomena, and, in particular, the ecological ties that bind human and non-human populations.<sup>141</sup>

The expanding field of cellular automata (CAs), whose impact on a broad range of disciplines—from biological computing to theoretical biology—has been reported in a steady stream of popular literature (a constant resource to BAXTER&), provides additional insights into the sources and implications of the connectionist philosophy espoused by “the&MAN” (as the artist has recently dubbed himself). First formulated by computer scientist John von Neumann (1903–1957) in the 1940s, CAs deploy a bottom-up approach to universal computation that substitutes an abstraction defined by a minimal set of units, states, and “transformation rules” for the prescriptive and sequential programs of AI.<sup>142</sup> Consisting of a two-dimensional grid composed of “cells,” each of which must be in either an “on” or “off” state (equivalent to the binary values “0” and “1” of classical information theory), CAs evolve and reproduce through the local interaction of cells.<sup>143</sup> A rule might specify that if a cell has more than two neighbours that are “off,” then it too will be “off”;<sup>144</sup> changes of state are updated in discrete time steps.<sup>145</sup> From these modest premises, open systems of incredible complexity and life-like behaviour can emerge.<sup>146</sup> N. Katherine Hayles has emphasized that the global performance of CAs cannot be predicted in advance: the unforeseeable effects of the system can only be studied by running the simulation.<sup>147</sup>

Beginning in 1967, theoretical biologist Stuart Kauffman (1939–) applied CAs to simulate the behaviour of complex biological systems.<sup>148</sup> Today, CAs are increasingly employed to model the behaviour of human populations as well as turbulent systems such as market and fashion trends.<sup>149</sup> BAXTER& became aware of Kauffman's work during the latter's high-profile appointment at the University of Calgary—in the&MAN's hometown—from 2004 to 2009.<sup>150</sup> A 2000 work by BAXTER&, *OFF AND ON*—a banner-like hard-edge painting executed by a professional sign painter, with the words “OFF” and “ON” emblazoned in a bold sans-serif font—suggests the binary framework applied by Kauffman and other researchers to represent idealized gene networks and other (biological as well as social) systems. Similarly, BAXTER&'s deployment of the ampersand as a symbol of universal connectivity parallels the enabling role of Boolean functions in CAs' capacity to self-assemble and self-copy (“&” or “AND” being an operator in symbolic logic).<sup>151</sup> Copying and multiplication have always been central concerns for BAXTER&—an early adopter of such document duplication technologies as Telex and telecopier, who once cloned himself, along with NETCO Co-President Ingrid Baxter, by creating life-size dummies for an exhibition at the Sonnabend Gallery in 1971.<sup>152</sup> Today, the motif of self-replication signals BAXTER&'s interest in recent applications of information-theoretic models to biological and social systems. In this respect, BAXTER&'s recourse to the statistical language of CAs recalls the demographic manoeuvres of Brooker more than eighty years ago.

A white banner with red text is mounted on a light-colored wall. The text is in a bold, sans-serif font and reads "OFF AND ON". The banner is held up by small metal fasteners along its top and bottom edges. The background wall is a neutral, light color, and the floor below is a dark, grid-patterned tile.

**OFF AND ON**

IAIN BAXTER&, *OFF AND ON*, 2000,  
acrylic on canvas,  
365.76 x 106.68 cm.

Courtesy IAIN BAXTER&.

**ND ON**

IAIN BAXTER&  
*Universal Code*  
(Park proposal), 2000,  
ink on paper, 27.94 x  
35.56 cm.

Courtesy IAIN BAXTER&



UNIVERSAL CODE



Fin 2000

no [unclear]

Yet, true to his life-long penchant for satire, BAXTER&'s embrace of the self-organizing population dynamics of Network Society contains more than a hint of playful mockery: the ambivalent pairing of "off" and "on," or "zero" and "one," operating in equal measure as a celebration of the ecological, self-organizing power of systems, and as a satire of an attention-deficient, chronically web-surfing culture.

Recently, BAXTER&'s connectionist project has embraced DNA code. Building on the artist's earlier interest in binary (see, for instance, his as-yet-unrealized proposal for a McLuhan-themed sculpture park celebrating the universal code of zeros and ones)—recent language works engage developments in biological computing gleaned from a range of popular literature, including the work of James Gleick. Biological computing investigates the possibility of replacing the silicon circuits of conventional computing with the infinitely more malleable and energy-efficient media of DNA and protein strands. Recalling the statistically produced contours of Brooker's ideal bodies, biocomputers promise to transform the body itself into an analytical engine. Unlike conventional computers, biocomputers can bridge information gaps by spontaneously developing new neural connections—a facility that has sparked comparisons with the human brain. BAXTER&'s playful interventions within the code of life—revealing "D-N-A" itself to be a palimpsest of the artist's signature "A-N-D"—celebrate what Kauffman has termed the "ceaseless creativity" of biological systems.<sup>153</sup>

In the recent art of BAXTER&, the commodified "neural net" celebrated by Gleick and others supersedes the mental trade routes of Innis and McLuhan as a cipher of the Information Society. From his earlier engagement with cybernetic models of post-human, corporate subjectivity as President of the N.E. Thing Co., BAXTER& brings the narrative of information art in Canada full circle in his latest work by deploying algorithmic language reminiscent of the statistical techniques of market research, pioneered by Bertram Brooker in the 1920s, and subsequently critiqued by Innis and McLuhan in the early 1950s. However, BAXTER& departs from the affective vocabulary of Brooker, Gendron, and General Idea—who alternately celebrated and critiqued the role of statistics in a régime of mass economization—in his play with connectionist metaphors of genetic self-assembly deployed by contemporary complexity theorists to describe the unruly behaviour of the multitude. BAXTER&'s latest works stage a satirical theatre of far-from-equilibrium behaviours and trends characteristic of a Network Society.



N.E. Thing Co. Ltd., Iain Baxter using Telecopier to transmit artwork, 1969-70.

Courtesy IAIN BAXTER&.



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