# We Cannot Bid the Ear be Still

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Media Theory in North America and German-Speaking Europe

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Media Transatlantic: Conference Program

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CONTENTS

Ubiquitous and indispensable, media technologies have taken on an epistemological or even ontological significance: we learn what we know, and we become what we are, through print, TV, digital, mobile and other communications. "No part of the world, no human activity," as Sonia Livingstone says, "is untouched . . . Societies worldwide are being reshaped, for better or for worse, by changes in the global media and information environment." Seeing media as a lens or even as an a priori condition for understanding historical, social and cultural change has become increasingly prevalent and urgent on both sides of the Atlantic. However, with some notable exceptions, this work has been developing independently, producing a wide-ranging if fruitful heterogeneity. On the one side are the interdisciplinary and theoretically-engaged Medienwissenschaften (media studies), with over sixty programs in universities in Germany alone. On the other side is work developing out of the Toronto school and a variety of theoretical and disciplinary traditions. The purpose of this conference is to deepen and expand transatlantic dialogue between North America and German-speaking Europe (Germany, Austria and Switzerland) in the area of media theory.

—N. Friesen & R. Cavell, 2010

NOTE *All events at the Dodson Room at the Irving K. Barber Learning Centre unless otherwise noted.*

MORNING

| THURSDAY, APRIL 8 | FRIDAY, APRIL 9 | SATURDAY, APRIL 10 |
|---|---|---|
| 9:30 Coffee | 8:30 Coffee | 9:00 Coffee |
| 9:45 Opening Remarks (N. Friesen; R. Cavell)<br>10:00 **Katherine Hayles** (Chicago) *Tic-toc: Complex Temporalities in Digital Media* (Intro. N. Friesen) | 9:00 **Geoffrey Winthrop-Young** (Vancouver, UBC) *Kittler in the Anglosphere: 'German Media Theory' and other Collateral Damage in Trans-Atlantic Theory Wars* (Intro. R. Cavell) | 9:30 **Dieter Mersch** (Potsdam) *Beyond information theory and structural analysis. A new approach to the theory of mediation* (Intro. N. Friesen) |
| 11:30–12:30<br>CHAIR: **Bob Hanke**<br><br>**Tristan Thielmann** (Siegen) *Finding the Way over the North Atlantic Ridge: German Theory and American Practice of Geomedia*<br><br>**Michael Darroch** (Windsor) *Giedion and Explorations: Transatlantic Influences on the Toronto School* | 10:30–12:30<br>CHAIR: **Roberto Simanowski**<br><br>**Michael MacDonald** (Waterloo) *Martial McLuhan*<br><br>**Markus Krajewski** (Weimar) *Small Theory of the Time Table: Projectors, Technical Media, and Globalization around 1900*<br><br>**Daniel Gilfillan** (Arizona) *Knowledge Migration and Nomadic Broadcast: Flusser and Post-1989 Radio Space* | 11:00–12:30<br>CHAIR: **Till Heilman**<br><br>**Jaeho Kang** (New School, New York) *Tactility of Media-Space: Marshall McLuhan and Walter Benjamin on Synaesthesia and Technological Innervation of the Body*<br><br>**Jan Mueggenburg** (Vienna) *We Cannot Bid the Ear be Still. On Techno-Physiological Media and Bionic Ears*<br><br>**Nina Samuel** (Humboldt, Berlin) *"Die Bildszene" ("The Drawing—or Image—Scene"): Chaotic Morphologies. Otto Rössler, Chaos and the Materiality of Thought* |
| LUNCH | | |

AFTERNOON

| THURSDAY, APRIL 8 | FRIDAY, APRIL 9 | SATURDAY, APRIL 10 |
|---|---|---|
| 2:00 **Sybille Krämer** (Freie U. Berlin) *The messenger as a model in media theory. Reflections on the creative aspects of transmission.* (Intro. R. Cavell) | 2:00 **Kim Sawchuk** (Concordia, Montreal) *Bio-mediations: Incorporating photography, digitizing specimens and J C B Grant's An Atlas of Anatomy* (Intro. N. Friesen) | 2:00 **Hartmut Winkler** (Paderborn) *Processing: The Third and Neglected Media Function* (Intro. R. Cavell) |
| 3:00– 5:00<br>CHAIR: **Michael MacDonald**<br><br>**Christine Mitchell** (McGill, Montreal) *Language, Material Misfit*<br><br>**Till Heilman** (Basel) *Innis and Kittler: The Case of the Greek Alphabet*<br><br>**Twyla Gibson** (Toronto) *The Translation of the Word: Homeric Formulas, Platonic Forms, and Media Theory* | 3:30–5:30<br>CHAIR: **Jaeho Kang**<br><br>**Anthony Enns** (Dalhousie, Halifax) *Vibratory Photography: Integrating the Psychic, Perceptual and Photographic Apparatus*<br><br>**Darryl Cressman** (Simon Fraser, Vancouver) *Music as Media: An Innisian History of Western Musical Culture*<br><br>**Rainer Leschke** (Siegen) *McLuhan and Medienwissenschaften: Sense and Sensation*<br><br>**Roberto Simanowski** (Brown, Providence) *Against the Embrace. On Phenomenology and Semiotics in New Media Aesthetics* | 3:30–5:30<br>CHAIR: **Richard Cavell**<br><br>**Bob Hanke** (York, Ontario) *University Discourse Network 2010*<br><br>**Sean B. Franzel** (Columbia, Missouri) *The Lecture: A Case Study in the Intermediality of Academic Instruction*<br><br>**Catherine Adams & Patti Pente** (Alberta, Edmonton) *Teachers Teaching in the New Mediascape: Natural Born Cyborgs or Digital Immigrants?*<br><br>**Norm Friesen & Theo Hug** (Kamloops; Innsbruck) *Education of the Senses: The Pedagogy of Marshall McLuhan* |
| 5:15 Douglas Coupland (Thursday; Golden Jubilee Room) | | |
| 6:15 Reception (Thursday; Lillooet Room) | | |

MICHAEL DARROCH
*Windsor*

**Giedion and Explorations: Transatlantic Influences on the Toronto School**

In the context of examining the continuing influence of Toronto School thinkers on contemporary theories of media and the materialities of communication in German-speaking Europe, it is vital to recognise transatlantic influences on the development of the Toronto School in the first place. This paper examines the influence of the Swiss art historian and architectural critic Sigfried Giedion on the collaborative work that developed during the Culture and Communications Seminar (1953-55) and the publication of the Explorations journal (1953-59) at the University of Toronto. Funded by a Ford Foundation grant, and chaired by Marshall McLuhan, the graduate seminar was co-directed by cultural anthropologist Edmund Carpenter along with British urban planner Jaqueline Tyrwhitt, political scientist Thomas Easterbrook and psychologist D. Carleton Williams. They sought to develop interdisciplinary methodologies using a 'field' approach to discern the new grammars and environments created by electronic communications technologies. The radical interdisciplinary Explorations journal, edited by Carpenter and co-edited by the other seminar leaders, was launched as a means of "cutting across the arts and social sciences by treating them as a continuum," placing special emphasis on studying the effects of media on oral, visual, and post-visual cultures. Building on Harold Innis' thesis of the bias of communication, the group turned to the work of Giedion as a guiding theme. Connected to modernist architectural and town-planning movements—including Bauhaus and CIAM (Congrès international d'architecture moderne which he founded with Le Corbusier in 1928)—Giedion represented a postwar wave of humanistic, interdisciplinary scholarship that would have a profound influence on the group's direction. In McLuhan's well-known letter to Innis (14 March 1951), in which he first proposed the seminar, he noted that Giedion's two classics *Space, Time and Architecture* (1941) and *Mechanization Takes Command* (1948) were the central inspiration for this "experiment in communication." Giedion's writings on architectural history, town planning and the cultural history of mechanisation came to dominate the weekly seminar discussions and media experiments conducted by the group. In all his historical studies of architecture and everyday life, Giedion was committed to crossing the boundaries between science, technology and art as

a means to engage with history as a living process of "manifold relations" (1948, 3). *Mechanization Takes Command* was centred on a methodological approach to what Giedion called the 'anonymous history' of everyday objects and cultural phenomena that reveal the essential spirit of their period. In the age of mechanization, technological developments had severed our capacity to think from our capacity to feel, a rupture represented by the disjunction between natural and human sciences and their shared connection to human expression. As early as 1943, when McLuhan and Giedion began to correspond, Giedion promoted the belief that 'interrelations' between arts, sciences, and humanities must become the focus, and not the exception, of university research. In many ways, the Culture and Communications Seminar and Explorations journal represented such an attempt to bridge disciplinary boundaries. Giedion's ideas were represented in seminar discussions by Jaqueline Tyrwhitt, who served as translator, editor and arguably co-author of many of his writings over a period of twenty years, and who was herself an integral member of CIAM's British wing. She acted as a mediator between Giedion's conception of anonymous history and McLuhan and Carpenter's argument that electronic media were creating an acoustic post-visual cosmos. Under the influence of Giedion's work, a methodology grew out of the seminar that viewed the environment as an active rather than a passive space. For McLuhan, the encounter with different spatial disciplines (art history, anthropology, economics, architecture and town planning) would have a decisive impact on the conceptual frameworks he carried from English studies, placing an emphasis on both history and geography. Focused on culture as a landscape, the Explorations journal published writings by group members along with anthropological studies of media effects, experimental poetry, scientific studies, and urban studies. The journal was an experimental space, including contributions of many established and new scholars across the arts, humanities, social and natural sciences. The seminar and journal thus form an important starting point for defining the research agenda of the Toronto School and represent an important turn towards interdisciplinary research in Canada. Together, they helped initiate a Canadian tradition of studying culture, communication, and media. This paper is based on a close examination of Giedion's works and original archival research into the group's papers.

TRISTAN THIELMANN
*Siegen*

## Finding the Way over the North Atlantic Ridge German Theory and American Practice of Geomedia

Since we have been interacting with a gigantic, global, disorganized but incessantly expanding mass of "born-digital" data and cultural content in the last decade, German media theory has lost its international supremacy. Is it impossible to track the profound structural change from "New Media" to "More Media" with traditional methods of media and cultural analysis? Or, did German media studies miss the ongoing reconstitution, namely two complementary drives that are currently determining the fields of research at the international level—on the one hand, the social and cultural practices acting on their media and, on the other, the media acting on their practices? In fact, German media studies has not performed a praxeological turn yet. Instead, most researchers are still caught in a "Kittler cave," while all other disciplines are increasingly investigating medial or mediatized phenomena, with highly differentiated connections between place and cyberspace at center stage. Thus, social sciences like science and technology studies (STS) or geography are developing new praxeological methods for analysis and historicization in order to grasp the cultural effects of the digitalized presence and the constantly fluctuating character of digital artefacts. Furthermore, German media studies has refused to diagnose a spatial turn within its discipline. Even if time-axis manipulation is only possible when there is an occupation of place first, new media have been associated with a growing sense of dislocation over a long period of time. However, contrary to the assumption of an erosion of a "sense of place," Anglo-American phenomenological studies on mobile media practices show a trend toward re-enacting the importance of place as a geo-imaginary and socio-cultural precept. Thus, to talk about global and mobile media today necessitates the discussion of locality. While geography tries to characterize the mixing of code, data, and physical place as "DigiPlace" or "cyber place," cultural and media studies refer to "location-based media" or "locative media." However, the interweaving of both "location-based/locative media" and "cyber/digital places" is underway. A suitable umbrella term for both areas is "geomedia, or, as a discipline whose history is constituted in Germany, "media geography." Given its transport-scientific tradition, the geography of media can be traced back as far as the founding father of scientific geography, Carl Ritter, who was thinking about the spatial effects

of telegraphy very early on. Ritter derives from his essay "Ueber das historische Element in der geographischen Wissenschaft" (1833) the requirement for medial changes to cartographic spatial descriptions, "for example, through several transparent globular disks that slide across each other and can be moved back and forth." Media geography, such as it is more than 150 years later, seems to have moved substantially closer to this research aim. Google Earth or Google Maps exemplifies a version of this strategy, using one media format as an interface to another. In this case, a map serves as an interface to a media collection. However, German media studies need to import a theory of media practice that has been further developed in an international context. As such, actor-network theory constitutes a theoretical framework for media geography and space-biased media studies, as it tends to conceptualize places prior to the network of heterogeneous agents. It reveals itself to be a suitable heuristic for the subject area of geomedia as, on one hand, the actor-media theory permits the sketching of locative media as a kind of manifestation of what Bruno Latour means by the "Internet of Things"—by geotagging objects instead of people and having these objects tell us their stories, locative media create an awareness of the genealogy of actants and agencies. On the other hand, the actor-network theory puts us in a position whereby mediated localities can be described as if there were nothing more in the territory than what is on the map—or, more concisely, using the words of November, Camacho-Hübner, and Latour (2010): "the territory is the map." Geomedia seems to reconfigure our understanding of mapping in the manner that the mimetic interpretation of maps recedes behind the navigational use of digital maps and globes. Once the mapping impulse is reinterpreted in the navigational way, there is no projection of a territory or of a Euclidian space any more. With the digital ubiquity of mapping, we are entering a new "Transatlantic territory," bearing in mind that there is nothing in the notion of territory that is not in the medium.

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**Innis and Kittler: The Case of the Greek Alphabet**

TILL HEILMAN
*Basel*

Harold Innis and Friedrich Kittler are exemplary thinkers, if not founders, of two quite distinct fields in communication and media studies: The Toronto School of communication theory and German discourse analysis of media (Diskursanalyse technischer Medien). Though their work is separated by time, space, and intellectual

heritage, for Innis as well as for Kittler the Greek alphabet holds a unique place in history and in their respective theoretical understanding of media. Innis was among the first scholars to ground the study of communications in the analysis of media and to consider the effects different technologies had on culture and society. Emphasizing the materiality of media—particularly that of writing systems—Innis developed his now well-known concept of time- and space-biased communication. The notion of time- and space-bias, in turn, is derived from Innis' distinction between oral and literal tradition. It is in the context of this distinction that the Greek alphabet stands out: According to Innis, the alphabet's simple code and flexible notation of speech make possible a perfect meeting of the spoken and the written word. Of all writing systems, Innis contends, only the Greek alphabet can truly represent the oral tradition and therefore 'erase' itself, so to say, as a medium of communication. In Innis' view, the cultural triumph of ancient Greece is based on this self-effacing technology. Kittler, following his analyses of technical and digital media from the 1980s and 1990s, has in recent years also turned his attention to ancient Greek culture. In Kittler's mind, the greatness of pre-Socratic Greece and the singularity of its writing system are not due to the transparent linking of spoken and written language. The Greek alphabet is such an exceptional medium because its letters were once used to denote not only sounds of speech but also numerical values and musical notes. This feature—the integration of speech, mathematics, and music—forebodes the power of the digital computer which, through its universal code, can combine all former media. Thus, the Greek alphabet and the computer each mark a moment in history where 'being' as a whole is revealed in a single code. Innis' and Kittler's analyses tell two very different versions of media history. Seen through the eyes of Innis, history appears as the struggle between oral and literal tradition in which different media serve mankind as instruments more or less suited for the control of either time or space. In this, the Greek alphabet can be seen as a paradigmatic medium for balanced human communication and prospering culture. According to Kittler, on the other hand, history is the result of a circular evolvement of media and codes, only some which relate to human faculties. These technologies are not so much brought into being by humans as they themselves bring about, among others, beings such as speaking and writing humans. The proposed paper explores Innis' and

Kittler's examination of the Greek alphabet to highlight the similarities in their arguments as well as the fundamental differences in their divergent approaches to media studies.

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**Language, Material Misfit**

CHRISTINE MITCHELL
*University*

The study of media, culture and communication has undergone a theoretical and methodological turn towards 'materiality.' While language would seem to have been well accounted for in such materialist frameworks, it nevertheless sits uneasily within such discourses. This paper interrogates this discord by considering the theoretical/methodological provenance of 'materiality' and 'materialism' in approaches to language-based cultural forms. It then discusses a particular manifestation of this discord as it emerges in material/materialist contrasts between language and code(s) in studies of computers, software, and machine translation. The 'material' trajectory as it is encountered in media studies carries important traces of its movements through literary criticism and cultural studies. The overall result has been a "centering upon media" (Winthrop-Young & Wutz, xiv) which responds to a range of 'material' and 'materialist' imperatives. Chief among these was the deconstructionist impulse to disrupt, decentre and denaturalize speech. As Derrida had argued, conceiving of speech as disembodied essence, saturated with pure, original and interiorized meaning, had resulted from the neglect of the material sign. It prompted a cross-disciplinary retreat from texts and language, and a focus on things and media. The ensuing interrogation of a wide range of material artefacts and the networks of production and consumption by which they circulated further blended the 'material' with the Marxist 'materialist'. Add to this mix the more strictly technologically-oriented media and information materialist stances of McLuhan and Kittler, and a range of trajectories within cultural criticism might be properly relocated under an all-encompassing 'media studies' (Wellbery, xiii). As a reflection of this development, Winthrop-Young & Wutz propose updating the Derridean buzzphrase to: "il n'y a pas de hors-media" (xx). Despite this terminological update, however, the extent to which the substitution of 'mediality' for 'textuality' can do the theoretical (and political) work expected of a material/materialist stance is open to debate. Under closer inspection, we see that

studies positioning themselves under the banner of 'materiality' appear to be harmonized in neither conception nor application. At the same time, a familiar impasse challenges the 'material' at every stage: the philosophical and metaphysical dilemma of matter and mind. 'Materiality' emerges in relation to a range of 'others' (whether in speech, mind, idealism, abstraction, interpretation, meaning, etc). As Miller observes, "[i]t seems as though all theorists of materiality are doomed to reinvent a particular philosophical wheel" (14), by which one becomes ensnared in the circularity of distinguishing subjects from objects—in this case, the impossible task of separating language and minds from bodies and humans from machines. The point must be to acknowledge the co-constitution of the concept of materiality with its 'others.' Tellingly, Miller points out that "the definition of humanity has often become almost synonymous with the position taken on the question of materiality" (2). But as conceptions of humanity are closely tied to those of language, the integration of linguistic and technological processes pose a challenge for 'material' analyses of new media objects. In particular, the 'material' and 'materialist' study of code and programming practices prompts a re-naturalization of human language as something essential and ordinary, practically 'immaterial'. In particular, the material specificity ascribed to machine code and to software starts to strain the status of human language as materially-grounded in many accounts; the more urgent challenge is to account for the increasing sedimentation and miniaturization of code and programming languages, which are more often described as black-boxed, "inaccessible, inscrutable processes" (Raley, 2006). When it comes to critiques of Machine Translation software, the 'material' of the apparatus as conceptual centerpiece is rendered near-superfluous, overridden by attention to the 'materialist' critique of the capitalist and rationalist push for linguistic optimization. The drive to reveal the material constructedness of language is superseded by a commitment to protect human language from technological corruption. Thus, while the 'material' terrain is marked by certain convergences, the overall picture demonstrates that there are not only variable and newly-developing 'materialisms,' but that the invocation of materiality is often a shifting combination of method, strategic research posture and theory. While these approaches may not necessarily work at cross-purposes, the implications of such 'materialist' claims for the analysis of language-based technologies must be considered in all their variety.

Because technologies and systems for manipulating and processing language are progressively more ubiquitous—as are 'intelligent' devices that are conceived as extensions of human cognitive capabilities—reinstating a retrograde opposition between language and media threatens to become a serious methodological oversight for communication and media theory.

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NINA SAMUEL
*Berlin, Humboldt*

**"Die Bildszene" ("The Drawing- or Image-Scene"): Chaotic Morphologies. Otto Rössler, Chaos and the Materiality of Thought**

The emergence of a theory of complex dynamics in the 1970s would not have been possible without both analogue and digital computer technology as instruments of experimental visualization. Nevertheless, the pencil did not function merely as a supplementary tool of investigation but played a pivotal role in the formation of theories in this field. It was not in spite of but rather because of the emergence of computer-generated images that the pencil became an indispensable tool in the process of extracting a theoretical idea from the bulk of visualized data. In many cases it is the drawn line that enables the passage from experimentally-generated images to a concept: the linear was needed to understand the non-linear. This specific function of drawing is exemplified in the working method of the late French mathematician and eminent specialist in this branch of complex dynamics, Adrien Douady. With respect to his techniques, it can be asked to what extent the multi-faceted mannerist term *disegno* could be applied tentatively to different types of mathematical computer images and their interaction with drawings made by hand. In contrast, the use of drawings of German chaos researcher Otto Rössler seems to be far more radical. In some cases he even considers it to play a primal role in the computer-generated visualization. According to Rössler, a dynamical chaotic shape (or "Gestalt" as he calls it) has to be initially, "forced onto the paper, a process that can be compared to catching prey. When you are doing a drawing on paper, at some point something snaps into place in an almost audible way." "Force – snapping – death bite": Rössler uses dramatic and violent terms to describe the moment of finding the form. Only a process of taming creates the conditions for a reconciliation between material and analytical mind. After the adequate form has been found by means of drawing,

subsequent analytical reasoning proves to be trivial and simple. Rössler, himself a professed critic of the digital image, used paper and pencil in an accentuated physical and experimental way when developing his concepts on chaos and hyperchaos. He felt that the fingers' contact with any materiality and the pencil's abrasiveness on the paper function as material thresholds for thought ("*Denkschwellen*") that, in a performative way, can have a retroactive effect on creative ideas, whether artistic or scientific (like a feedback loop). In the process of drawing, thoughts can crystallize that defy the control of analytical intelligibility since their shapes relate to a realm of intuition beyond calculus. Accordingly, obtaining knowledge – and this also holds for mathematical knowledge – must be considered as a process that is dependent on both the materials and the media of representation. In modification of a famous saying of Friedrich Nietzsche, I would like to suggest for Otto Rössler that "drawing utensils co-operate our thoughts." To point out the role of materiality in the writing process, Friedrich Kittler called the scene of the scribbling Nietzsche an "*Urszene*." Rüdiger Campe later described this constellation emblematically in terms of a "writing scene" ("*Schreibszene*") that is historically and individually constituted within the framework of semantics, instrumentality (technology of writing) and gesture (the body who writes). Against this background I would like to introduce the notion of a "drawing scene" or "image scene" ("*Bildszene*") that will be devoloped with reference to the epistemic practices of Otto Rössler. The analysis of the interdependency of gestural, material and calculated images in Otto Rössler's work will be complemented and extended by results from research in the private visual archives of Benoît Mandelbrot (Harvard, IBM, USA), Yoshisuke Ueda (Kyoto, Japan) and others. More generally, the presentation aims at a juxtaposition of what could be called a "thinking with the hand" in complex dynamics with Joseph Beuys' corresponding notion of a "thinking with the knee," and their mutual contribution to an understanding of a performative model of thinking. However, the assumption of an autonomous mental inner "world" independent of the realm of sensuality, and of ideas, or concepts, which can be "retraced" independently of their material expression, seems to fall slightly short, especially when observing the practice of such a traditionally-abstract science as mathematics. One of the questions discussed at the conference could also be the function and responsibility of media questions and theories derived from current art historical studies outside the assumed "traditional" field of art.

**Small Theory of the Time Table. Projectors, Technical Media, and Globalization around 1900**

MARKUS KRAJEWSKI
*Weimar*

With nearly inflationary use, around 1900 the prefix "world" is placed before such diverse projects as Sandford Fleming's "unified world time," the implementation of a "world auxiliary language" (like Esperanto, Ido, or Volapük), the spread and circulation of a "world currency," and not least the standardization of various national units of measurement into a "world format." This unusual clustering of such heterogenous plans, all of which add the prefix "world" to their programmatic titles, constitutes a number of undertakings at the turn of the 20th century with maximum scope. One could speak of a real series of world projects whose roots and their common historical *a priori* this paper seeks to analyze. What conditions and contexts make such a boom possible? What are the the cultural technologies and technical media which produce such projects? And finally, what strategies succeeded in the translation of those plans into practice? In light of these central questions, the paper traces the development of technical transport networks in order to generalize this process to a small theory of the time table. Indeed, in that period of upheaval, specific processes like the consolidation of global traffic networks or the regular inventory of national economic power within the context of the World's Fair contribute to the feasibility of such ambitious plans and nearly demand their transformation into worldwide standards. What cultural and media-technological configurations, structures and figures of thought configure globalisation around 1900 and smooth the way from the local to the global—for travellers as well as for goods or information? One of the possible answers, which is held up as a leading proposition here, lies hidden in the formation of global transport. Its networks of cables, routes and shipping lines, of junctions, cross-overs and transfers which are differentiated ever more finely, merge into a highly integrated multi-media system or are bundled into a timetable ultimately become a requirement for the possibility of thinking the world as a project. At the fin de siècle, world transport restructures the wave of global reform projects like a unified world time in a specific fashion, and projectors like Sandford Fleming have no choice but to select the largest possible scope for their plans. In the second half of the 19th century, traffic interconnects into a network which, on the one hand, is persistently expanding to establish its functionality in constantly finer branches,

ultimately in worldwide scope. On the other hand, this network called global transport systematically smooths the principal difference of locomotion by land or sea. The question, then, is what precisely seems to have suggested to entrepreneurs around 1900 the notion of an all-encompassing scope for their ideas, in the wake of this interconnection of the disparate modes of transmission into a single integrated transit system. Or asked differently, what experiences on a regional level permit those world projectors to carry their plans over to the worldwide scale, what mechanism provides for the transition from the local to the global? The crux of the matter—to formulate an answer as a hypothesis—the actual innovation of global transit, which provides for multiple transmissions at each moment at the intersections of its network, lies in the moment of transition itself, in the nearly imperceptible change between the individual means of transit or media. What is decisive is that global transit as a system offers a multitude of "possible transport connections" at every junction, at each of its switchpoints. Each train station or harbor, through the crossing of various routes, possesses a great potential for contact, a high connectivity, which proves to the traveler to be the nearly limitless connectivity of the transport system itself. In other words, under the conditions of global transit, the itinerary of a journey can rely on a hitherto unknown contingency of routes which ultimately promise to bring everything together. None of the contemporaries of the fading 19th century gave better proof of this hypothesis than Phileas Fogg, perhaps the most famous connectivity traveller and stoic hero from Jules Verne's 1874 novel *Around the World in 80 Days*. Therefore, this paper examines and explores the promises of the global transit system with an exemplary reading of mainly two books: Verne's novel on the one hand, and on the other (inevitably) *Bradshaw's Continental Railway Guide* which is supposed to be the paper companion of every traveller around 1900.

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MICHAEL MACDONALD
*Waterloo*

**Martial McLuhan**

Although the work of Marshall McLuhan is enjoying a "renaissance for a wired world," as Gary Genosko aptly puts it, scholars still tend to dismiss McLuhan as a "guru," "oracle," or "metaphysician" who mistook the global information ecology for a "media Eden" (Virilio). Paul Virilio, for example, contends that McLuhan was "drooling"

over the spiritual properties of cyberspace, while Friedrich Kittler rejects McLuhan's ideal of "understanding" media as a mirage produced by the "silent theology" that governs his media theory as a whole: the dominant media of our time, argues Kittler, "control all understanding" (not to mention our very "schematism of perceptibility"), and for this reason understanding media remains an "impossibility." This essay will complicate this image of McLuhan as a "technological idealist" (Baudrillard) by exploring an important but neglected dimension of his work: his foundational contribution to the study of media technologies as vectors of political and military power. Far from ignoring the military aspects of media, as Kittler and Virilio suggest, McLuhan wrote extensively about the impact of communications technologies – from papyrus, parchment, paper, and printing press to telegraph, radio, television, and computer – on war, revolution, and "imperial political economy" (Innis). In fact, as this essay will demonstrate, for McLuhan it is war that reveals the deepest "epistemological and even ontological significance" of media technologies. I begin by showing how the military aspects of media technologies preoccupied McLuhan all the way from *The Mechanical Bride* (1951) and its description of mediatized subjectivity as a "patchwork quilt of occupied and unoccupied territory" to *The Global Village* (1986) and its definition of the atomic bomb as "pure information." With this context in mind I then argue (against Kittler and Virilio) that McLuhan's media theory provides a useful analytical framework for understanding contemporary forms of information warfare. As McLuhan noted at the peak of the Cold War (a de facto "hot war of information"), material war waged by men and machines (the "outer conquest of space") would become ever more closely allied with immaterial war waged by media and information against the mind and nervous system (the "inner conquest of spirit"): the decisive wars of the future will be "guerrilla information wars with no division between military and civilian participation." In the course of approaching McLuhan as a thinker of information warfare I plan explore the following topics: information and the softening or "etherialization" of military power; information as a kinetic weapon that "reprograms" the sensorium; satellites as vehicles of "womb to tomb surveillance" (Virilio's "pouvoir satelittaire"); infowar as a "battle" of icons, images and simulacra designed to destroy the credibility of target audiences; information as the new locus or center of gravity (Schwerpunkt) of military conflict

("real, total war has become information war"); infowar as a new mode of military conflict conducted by "subtle electric informational media – under cold conditions, and constantly;" the "irregularization" of conventional war in the age of nuclear deterrence ("all war is civil war in the global village"); the global village as a "global theatre" of war, a staging area for "maximal conflict" and "colossal violence"; infowar as "omnifrontal" war that dissolves the boundary between civilian and military media networks, public information and military deception, and even the boundary between war and peace; and others. By focusing attention on McLuhan as a thinker of media war (the martial McLuhan), this paper will offer a timely and original reassessment of the "most often cited – but least understood – theorist of the information age" (Deibert).

DANIEL GILFILLAN
*ASU, Arizona*

**Knowledge Migration and Nomadic Broadcast: Flusser and Post-1989 Radio Space**

Two live broadcasts produced by the ORF Kunstradio programme form the focus of this paper. Each engages conceptually with issues of globalization in the context of the growing European Union. Given Austria's geopolitical location and Vienna's imperial history as center of the Austro-Hungarian empire, these broadcasts provide a medial and artistic layer to understanding Austria's role in contemporary discussions about issues of migration within post-1989 Europe. State of Transition (1994) explores various geographical points and economic sites where human movement occurs (airport transit halls, market squares, border crossings) to diagnose larger questions of asylum, while Horizontal Radio (1995) combines the technical possibilities of radio transmission and the theoretical imagination of its designers to create a networked performance environment where artists from any of the 26 cities involved in the broadcast could collaborate. Radio space combines notions of an immaterial space known as the ether, the physics of electromagnetic frequencies, the clarity of disembodied sound, and the receptiveness of the listening subject to create a space of performance. This performance space transcends the physical limitations of the performing and listening body, blends the notional ideas behind the performance repertoire and the relational powers of the listening experience, and splices these out-of-body interactions onto equally imma-

terial electromagnetic frequencies to be broadcast by very real devices such as the radio receiver. Transition connotes movement in terms of physical location, state of mind, change in ideological structure, or emotional mien. Often it is associated with a forward progression, a move toward one thing and away from another; and hence it is always in flux and never frozen in stasis, always already retrospective, nostalgic for what was left behind, and anticipatory, expectant of what may lie ahead. The live performances and broadcasts of State of Transition (1994) and Horizontal Radio (1995) serve as aural and peripatetic documentations of these varying moments of transition. The projects are bound together with questions and problems of migration, a contemporaneous geopolitical issue facing much of Europe given the breakup of the former Eastern Bloc, the increased numbers of refugees seeking political and economic asylum, and the Bosnian war taking place in the former Yugoslavia. Each broadcast takes these issues at the forefront of the European mindset and connects them to the relatively unhindered flow of information along various networks associated with the burgeoning global telecommunications infrastructure. At the center of both broadcasts/performances are Vilém Flusser's communications theories, whose essays on migration, experience, and the telematic society form the basis of a complex process of dialogue and discourse, and assist in opening these broadcasts up to interpretation. This operative notion of dialogue/discourse combines the modes of thought and engagement that comprise our processes of knowledge creation and meaning-making with the networked structures of communication that comprise our contemporary telematic society. At the same time, his theories of experience embrace the ideas of transition and mobility, requiring a constantly itinerant mindset to take advantage of the high-speed data networks reshaping economic, social, political, and cultural practices and use them to create and enhance the full range of collaborative potential that non-networked modes of experience do not attain. This itinerancy seeks to unhouse the mind from the limitations of the physical body in an attempt to replicate the experience of the migrant, whose own sense of displacement and unsettledness offers a unique perspective to guide and shape our application of these network technologies. Flusser's approach intellectualizes the nature of exile and migration experience; transforming it from the negative sociopolitical connotation of the refugee and asylum seeker looking to beleaguer the social system of the new host country to an idea of the global citizen able to navigate

the spaces of experience that accompany the move from emigrant to immigrant and inhabit a space outside individual topographies. Ultimately, the paper will sketch out further the contours of several larger research questions: How does the subtraction of the physical body from within an exchange of ideas lead to changes in information reception? That is, does the removal of the physical body trigger the transformation of intellectual thought into information, and subsequently into commodity? How does knowledge become information for sale? And what role does artistic experimentation play in this intertwining of communication and economics? Finally, do Flusser's approaches withstand or evade the types of conglomeration and issues of access that have come to characterize the post-hype democratic potentialities of the network, or are they lodged interminably within these tautological constructions? These are viable questions that inform and are informed by these two live performance broadcasts.

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ANTHONY ENNS
*Dalhousie, Halifax*

**Vibratory Photography: Integrating the Psychic, Perceptual and Photographic Apparatus**

In the nineteenth century, physiologists frequently compared the eye to a photographic camera. Hermann von Helmholtz, for example, famously described the eye as a black box with a lens that perceives points of light just as individual grains are recorded on photographic plates. British physician Robert Hanham Collyer similarly argued that optical information is transmitted from the retina to the brain via the optic nerve in the same way it is recorded by a photographic apparatus, yet he also emphasized that its mode of transmission was vibratory. The notion of the eye as a camera thus led to speculation that the method of recording photographic images might also parallel the transmission of electrical impulses through the nervous system. This notion of photography as a form of vibratory transmission was reinforced by claims that the photographic apparatus was capable of recording phenomena invisible to the eye. In his 1844 book *The Pencil of Nature*, for example, William Henry Fox Talbot suggested that infrared and ultraviolet rays might be employed to photograph objects invisible to the eye, and this claim encouraged many photographers to conceive of photography as a form of extrasensory perception. In 1862, for example, German chemist Carl Ludwig Freiherr von Reichenbach

claimed to have recorded photographic evidence of an invisible energy field, which he called "od light." In France, Darget, Hippolyte Baraduc, Edmond Duchatel and Lefranc similarly claimed to have captured photographic images of etheric vibrations and cerebral radiation, which led to an explosion of interest in "effluviographs," "electrographs" and "thoughtographs" in the late nineteenth century. In the twentieth century, Hector Durville also claimed to have recorded photographic images of "fluid bodies," and similar experiments conducted by Semyon Davidovitch Kirlian in the Soviet Union resulted in a postwar boom in "aura" or "Kirlian" photography. By extending its mastery into the invisible rays of the spectrum as well as the electrical circuits of the nervous system, vibratory photography appeared to blur the boundaries between interiority and exteriority, visibility and invisibility and materiality and immateriality. This practice thus illustrates a broader reconfiguration of materiality and perception that occurred in the nineteenth century. As scientists discovered that certain light rays had a physical presence that remained invisible to the eye, for example, people became more aware of the limitations of their own sensory organs and the degree to which visual perception was the result of corporeal conditions of seeing. And because these invisible light rays could be recorded on photographic plates, the camera also appeared to serve as a prosthetic device that simulated the physiological functions of the eye while simultaneously compensating for its perceived limitations by increasing the range of human vision to a seemingly limitless degree. The ultimate effect of this new mode of perception was a shift from Cartesian perspectivalism, in which the act of seeing was linked to the notion of an interiorized subjectivity, to the realm of the "optical unconscious," in which the act of seeing becomes a highly subjective and hallucinatory experience. The history of vibratory photography thus reveals not only the fundamentally unreliable nature of optical media, but also the function of consciousness as an interface between the psychic, perceptual and photographic apparatus. Through a closer examination of this history, therefore, my paper will explore the ways in which vibratory photography was conceived as an integrated media system that directly connected brain physiology and communications technologies, which makes it an early precursor to contemporary virtual reality technologies and neuroelectronic links.

DARRYL CRESSMAN
*SFU, Vancouver*

**Music as Media: An Innisian History of Western Musical Culture**

One of the recurring examples used by Max Weber to explain the rational character of Western society is music. Rationalization, for Weber, is both a material process and a mode of thought, and in this way musical culture is instructive for understanding the object of Weber's sociological analysis. Asking, "why harmonic music developed from the almost universal polyphony of folk music only in Europe and only in a particular time period, while everywhere else the rationalization of music took a different path?" (1978, p.95), Weber identifies a number of characteristics unique to Western musical culture: orchestras, sonatas, symphonies, opera and instruments like the piano, violin, and organ, each known only in the occident. What is striking about Weber's proposed historical insights is what he determines to be the basis of Western musical culture, notation: "The specific conditions of musical development in the occident involve, first of all, the invention of modern notation" (1958, p.83). To point to notation as the beginning of Western musical culture is to argue that Western musical culture began not with music, but with media; that it began with an inscription, not a sound. Notation was the starting point of a millennium of musical culture characterized by the desire to make music permanent so as to reproduce it, control it, profit from it and disseminate it. Music became media after notation, a tradition that has shaped the musical culture we inhabit today.

Starting from this point, my paper will examine the history of Western musical culture as media through a framework influenced by the work of media historian Harold Innis (1950, 1951). Innis was concerned with the relationship between media and empire; in regards to musical culture, I pose the question: do different media result in different musical cultures? Is pop music, for example, possible because of the LP? Are complex harmonies the result of notation? My paper examines in detail what has come to be known as "absolute music." Emerging in the nineteenth century, absolute music, and the characteristics that are associated with it, still dominates the culture of classical music. Absolute music began with Hoffmann's musical criticism, the notion of werketreue (being faithful to the musical work), the idealization of instrumental music against opera and a quasi-religious

approach to listening that can lead to a transcendent aesthetic experience. This transformation of musical culture has been explained in a variety of ways. The rise of romanticism within musical aesthetics, the emergence of the public concert in the 19th century, and the ascendancy of the middle class as the leading cultural patrons within Western society. Yet, what is missing is the role that media played in naturalizing this particular musical culture. Referring to Innis, I will explain how this musical culture resulted from two media forms that helped it extend over both space and time: the printed score and the purpose-built concert hall.

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**McLuhan and Medienwissenschaften: Sense and Sensation (trans. Norm Friesen)**

RAINER LESCHKE
*Siegen*

McLuhan's concern with an economy of the senses is well known, as is his emphasis on their relation to mediatic forms and transitions. It follows that it should not be difficult to combine McLuhan's notion of a sensory economy together with an analysis of a media-system's functions –and in principle at least, to found a science of media (Medienwissenschaft) on that basis. But such an undertaking has yet to be ventured, and the potentially fertile ground presented by the senses remains conspicuously fallow. This paper explores why this is the case, and considers what might be gained or lost through different approaches to McLuhan's work and to media studies themselves. German media studies have at their origins the retrieval of mediality and technology that was forgotten in cultural scholarship (Kulturwissenschaften). But whereas such a retrieval is currently enacted in media studies through a mélange of scientific metaphors and borrowed Heideggerian profundity, an equally substantial forgetting of the senses has itself fallen into forgetfulness. And it is this lacuna that media studies, however configured, needs to address. McLuhan's work in this connection, however, is less helpful than it is ambivalent or aporetic. On the one hand, McLuhan outlines a tightly circumscribed dynamic of sensory intensities regulated through mediatic forces, and on the other, he celebrates the variegated adventures of a nearly universal concept of mediality. The former is characterized by a relentlessly normalized and normalizing bipolarity or multistability,

whereas the latter takes the form of the exploits of a figure larger than life, in which the stakes are never anything less than earthshattering. Given these two divergent possibilities—of the logic of the senses or the drama of media history—the choice of German media studies is not surprising: Only a more colourful and readily interpretable mediatic technics was seen as compatible with cultural scholarship. The obscurity of the senses, roughly shaded as they are in McLuhan's work, did not hold out same promise for interpretive expropriation. Media technology is conjoined with cultural scholarship under a singular disciplinary imperative –that of interpretive appropriation. And so we have, as long as we have undertaken media studies in German-speaking Europe, been interpreting technology. In contradistinction, the second possibility, that other disciplinary configuration adumbrated by McLuhan in the space between aesthetics and technology, is still relegated to academic silence, or left (as McLuhan would have it) to the flashes of insight provided by the artist-as-hero. But despite itself, German media studies finds itself revisiting its choice between a sensory economics and mediatic narratives. And since technohermeneutics has recently been declared dead, the logic of the senses, however conceived, is now having its last stand.

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ROBERTO SIMANOWSKI
*Brown*

**Against the Embrace. On Phenomenology and Semiotics in New Media Aesthetics**

In his 1990 essay "Is There Love in the Telematic Embrace?", British artist and self proclaimed "visionary theorist" Roy Ascott updates his concept of "Behaviorist Art", proposed more than 20 years before, stating: the traditional artwork, which "requires, for its completion, the viewer as, at best, a skilled decoder or interpreter of the artist's 'meaning' […] gives rise to the industry of criticism and exegesis, in which those who 'understand' this or that work of art explain it to those who are too stupid or uneducated to receive its meaning unaided." As the quote reveals, what is at stake in behaviourist, interactive art is not only the work of the artist but also that of the critic. While the 'democratization' of the production of the work in modern media art seems to fulfill old utopian expectations regarding new media, Ascott's utterance raises two central questions: Why should an interactive work not be the subject of criticism and exegesis?

Does interaction automatically supply its viewers with education rendering the assistance of critical and pedagogical professionals dispersible in any attempt to understand the meaning of a work? Ascott represents a particular point of view that is manifest in many approaches to interactive art, one that is marked by the unconditional 'embrace' of the event and materiality of the artwork and the resulting rejection of the critic. Interactive art is often conceived as a turn from content to event, from the communication of a message to the production of a space that inaugurates dialogue, or from the private symbolic space that traditional art provides to a period of experiential time that asks to be lived through. Yet such an approach often neglects that the inaugurated dialogue and lived through time itself embodies a symbolic space on which we may reflect. Meanwhile, the abandonment of reflection is in line with certain statements of aesthetic theory, which object to an overemphasis on content or to the exclusive role of hermeneutics in Western culture, favouring an attention to the materiality of the signifier over any examination of its deeper meaning. Such a move "against interpretation," such a "farewell to interpretation"—to invoke the titles of two relevant essays by Susan Sontag and Hans Ulrich Gumbrecht—can be understood as a corrective, opposed to a hermeneutics that weaves every element of an artefact into a net of meaning, taming the work of art through rationalization, as Sontag puts it in her essay. The response to the dominance of the Cartesian paradigm – which is also a response to the experience of the "postmodern condition" – resulted in an aesthetics of the sublime (Lyotard), the performative (Fischer-Lichte, Mersch) and the presence (Gumbrecht), which all more or less favour the quod (event) over the quid (meaning) and partly lead to a quasi-religious exultation of the moment. My essay discusses this development in aesthetic theory with respect to digital media art. I hold that especially interactive art requires attention to its phenomenological materiality and the event of its production. I also hold, however, that an approach to art beyond interpretation is not a particularly promising way to develop the discourse of a new object of critical attention such as interactive art within new media. I argue that the formation of media literacy eventually requires a move from phenomenology to semiotics, from description to interpretation and exemplify such move with respect to one or two works of new media art.

TWYLA GIBSON
*Toronto*

**The Translation of the Word: Homeric Formulas, Platonic Forms, and Media Theory**

The theory of media associated with a group of scholars known as the Toronto School of Communication—Harold Innis, Eric Havelock, Marshall McLuhan, and Walter J. Ong—relied on the arguments of Milman Parry and Albert Lord concerning the oral-derivation of Homer's formulaic poetry. Innis built on the Parry-Lord method of comparative history and warned that predominating technologies produce a distorting bias. Havelock argued that Plato's dialogues mark the division between orality and literacy in ancient Greek culture. The advent of the phonetic alphabet promoted changes in vocabulary, syntax, and basic categories of human thought that entailed centuries of development time and a long period of tension and interaction. For McLuhan, Plato "straddled the old Homeric world" and a "new, rational civilized world," and served as the paradigm for examining changes in thought, language, and culture that came with innovations in media in subsequent eras. These themes were reinforced by Ong's observation that Plato's dialogues represent a "disruption" and discontinuity in the "transformation of the word" from oral formulas to literate categories. In the decades since these pioneering researchers penned their arguments, there have been extensive revisions to oral-formulaic theory. Scholars have also uncovered formulaic patterns in Plato and there have been significant new findings concerning connections between Greek and Near Eastern literature and cultures. Raoul Schrott's (2008) recent research, Homer's Heimat, for example, presents a challenge to basic premises of the theory put forward by members of the Toronto School. Bracketing as speculative Schrott's geographical claims, his identification of formulaic patterns in Homer that parallel those in Gilgamesh suggests that oriental poetics influenced the Iliad and Odyssey and that the claims for the origin of the epics in primary orality may be exaggerated. The combined weight of this evidence indicates that the theoretical foundations of the arguments articulated by the Toronto theorists need reassessing. I point to an inconsistency between the premise of a prolonged period of tension and interaction and the arguments concerning an abrupt shift to literacy with Plato. The assumptions of a great divide in the tradition and of Plato's literacy are not consistent with the theory of a gradual change or the evidence. I propose that the theory is accurate but the assumptions concerning the Greek

philosophical texts require revision. With a re-aligned theory, the supposition of a great divide gives way to the more nuanced view of media changes as encompassing cultural borrowing, continuities, and smaller fractures in the tradition. The view of communication and cognition as an evolutionary ladder of progress, with Plato's literacy delineating the date when humanity stepped up to a higher, more rational, civilized—indeed superior level gives way to a view of the dialogues as a hybrid medium that translates the technologies associated with the previous medium into a revolutionary—but not evolutionary—new form. Plato's writings are a bridge and a break-boundary—not a break—between old and new media Thus, the division that justifies viewing our technological civilization as more "advanced" than cultures of the past, and the rationale for the domination, control, and often near-extinction of less technologically-oriented cultures in the present dissolves into recognition of the complexity and value of other languages and traditions. The presence in Plato of formulaic technologies with communication significance that went unrecognized by scholars in the modern era—including Parry and Lord and members of the Toronto School—is consistent with both the theory of profound changes in mentality as well as the blindness to the powerful distortions produced by media. Refinements make the premises of the theory consistent, both internally and with the evidence, so the model provides a more accurate and powerful lens for reviewing media history and philosophy, and for generating hypotheses and predictions concerning the change to digital media presently underway.

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**Tactility of Media-Space: Marshall McLuhan and Walter Benjamin on Synaesthesia and Technological Innervation of the Body**

JAEHO KANG
*New School*

*For the tasks which face the human apparatus of perception at historical turning points cannot be performed solely by optical means—that is, by way of contemplation. They are mastered gradually—taking their cue from tactile reception—through habit.—Walter Benjamin*

*Synaesthesia, or unified sense and imaginative life, had long seemed an unattainable dream to Western poets, painters, and artists in general . . . Yet these massive extensions of our central nervous systems have*

*enveloped Western man in a daily session of synaesthesia.*
*—Marshall McLuhan*

*The analyses of both Benjamin and McLuhan stand on the borders of reproduction and simulation, at the point where referential reason disappears and production is seized by vertigo.—Jean Baudrillard*

Within the tradition of German and North American media studies, there have been claims that key elements of Walter Benjamin's original account of the impact of the media on human perception have especially marked similarities with Marshall McLuhan's idea of the technological extensions of human body. However, those arguments on affinities between Benjamin and McLuhan put forward by authors such as Arnold Houser, Jean Baudrillard, Norbert Bolz, and James Carey, to name a few, fail to address a core tenet of their theories, that is, tactility of media-space. This paper's primary aim is to examine McLuhan's idea of synaesthetic function of electronic media with particular reference to the technological innervation of the bodily collective, a concept which Benjamin elaborated via his critical analysis of Surrealism and Russian avant-garde film movements during the 1920s and 30s. For this purpose, I concentrate the key elements in Benjamin's account of tactile aspect of cinematic experience that have parallels in the work of McLuhan. Such a comparative analysis helps to clarify important theoretical implications of media-space and its contributions to contemporary media theory. First, the paper examines McLuhan's idea of synaesthesia of media-space through his analysis of tactility of TV. For both McLuhan and Benjamin, the aesthetics of media indicates a study of human senses in conjunction with various forms of communication technology. Echoing Benjamin's account of the predominance of visual experience in modern society, McLuhan conceives of the rise of visuality as one of the key characteristics of modernity. In his view, civilization involves a process of the stripping of the senses and the isolation of one sense from the other by means of mechanical 'hot' media. The development of printing technology accelerated the isolation of sight from the other senses, resulting in the hegemony of pictorialization. In this respect, McLuhan's analysis of the shift from the aural to the visual and its connection to the uproot-

ing of tradition and the establishment of modern society seems to share similarities with Benjamin's account of the transformation from storytelling to the novel, and the rise of the information industry. McLuhan finds the emancipatory dimension of the media-space in the tactile function of TV, saying, it integrates the fragmented senses (vision, hearing, touch and smell). Yet, in his works, it is still unclear how the tactility of media-space can retrieve the alienated senses and enable the emergence of the new mode of the collective subject. Second, I endeavor to examine how Benjamin link the tactile aspects of cinematic experience with the theory of 'bodily collective innervation', a neuro-physiological theory which is initially developed by William James and further experimented by the Russian avant-garde movements during the 1920s and 30s. While exploring the emergence of post-auratic experience, Benjamin was deeply influenced by Surrealism, which offers him the means of aligning a distinct visual mode of perceiving the metropolis with the processes of dreaming and awakening. Although Benjamin gives centrality to the function of the 'politically educated eye' embedded in Surrealist visuality, he critically underscores the shortcomings of Surrealism, by arguing that contrary to what the Surrealists believed, the image-space (der Bildraum) created by technology can no longer be understood by optic contemplation. For Benjamin, Surrealist aesthetic experiments remain locked within ocularcentric hegemony and do not relate to the tactile dimension of new media-space. If we connect Benjamin's insight into the tactility of media experience with the biomechanical experiments, in which Sergei Eisenstein's theory of montage is rooted, the synaesthetic aspects of cinema-space can be understood more systematically in a sense of the neuro-physiological dynamics of tactile distraction. Third, this paper thereby argues that media-spaces for Benjamin and McLuhan come to be a prototypical space of play (der Spielraum) where technology, image, and the corporeal body are intertwined. For Benjamin and McLuhan, the electronic media-space is a multi-functional techno-space for the formation of a new subjectivity by means of technological innervation, a space where new experiences are configured, shattered and reconstructed, not only through visual perception, but more decisively through tactile perception of the body.

JAN MUEGGENBURG
*Vienna*

**We Cannot Bid the Ear be Still. On Techno-Physiological Media and Bionic Ears**

In his 1967 book *The Medium is the Massage* Marshall McLuhan expressively reinforces his famous dictum of technological media as "extensions of the human nervous system." As McLuhan argues, "by altering the environment media evoke in us unique ratios of sense perceptions" and since "any one sense alters the way we think and act" media structure the way we perceive the world. While McLuhan's concept of media as sensual prosthetics indisputably has been one of the most influential concepts in the history of media theory in the 20th century, much less attention has been paid to his general understanding of the workings of the human senses. However, from a remarkable quote at the bottom of the page 45 of the very same book we can get an idea of the importance McLuhan attached to the physiological senses: "The eye—it cannot choose but see; we cannot bid the ear be still; our bodies feel, where'er they be, against or with our will." Using this verse from a poem written by the British romantic poet William Wordsworth in 1798 McLuhan obviously expresses a strong belief in a general autonomy of the human sensorium. It seems that at the bottom of his media theory we find the assumption of a general superiority of the senses over the mind. Marshall McLuhan's early media theory coincides with a second wave of cybernetic research which emphasized the role of the sensory organs as self-organizing "biological computers." Between 1958 and 1974 scientists at the Biological Computer Laboratory (B.C.L.) at the University of Illinois at Urbana-Champaign tried to construct "bionic" machines in order to replicate the perceptive abilities of biological organisms. Experimenting with these analogue computers and combining ideas from cybernetics and biological systems theory with latest results in experimental physiology B.C.L.'s director Heinz von Foerster sought after "operational definitions" of universal physiological principles such as the "lateral inhibition" that were assumed to organize the complex phenomena of "hearing" or "seeing." Following the physiological works of Jerome Lettvin and Humberto Maturana these experiments were guided by the idea of an "physiological synthetic apriori" that predetermines our way of perceiving the world. One major group of B.C.L. projects was related to "speech recognition" and the general functioning of the "mammalian auditory system:" Following the work of the Hungarian physiologist

Georg von Békésy, who had claimed that the essential parts of the mammalian ear could be described as a "signal analyzer," a machine was built to model its performance. More specifically, the Dynamic Signal Analyzer was built on the assumption that the analysis of the travelling waves in the basilar membrane of the inner ear was "computationally equivalent" to a Fourier transform being performed on the acoustic wave. Within the machine this "precomputation" of the acoustic signal was realized through a series of spectrum analyses performed on an electrical current produced by a conventional microphone. The construction of an "artificial ear" thus followed the "discovery" that its living prototype, the mammalian ear, was functioning as a signal processing device which could be described by a well known engineering principle. Drawing on unedited archival material from the University of Illinois Archives in Urbana-Champaign and the Heinz von Foerster-Archives in Vienna I am going to present the Dynamic Signal Analyzer to exemplify the bio-cybernetic research conducted at the B.C.L. A brief but close examination of the actual experimental work sheds light on what I call the "discovery" of the senses as "techno-physiological media" around 1960. Obviously this bio-cybernetic approach of conceptualizing sensory organs as self-organizing "biological computers" that precompute visual or acoustic stimuli before they reach the brain was the starting point from where Heinz von Foerster and Humberto Maturana developed their reflexive Second Order Cybernetics. However, as I am going to show, Marshall McLuhan, who met Heinz von Foerster in 1964 at a conference at Georgetown University on "Cybernetics and Society," also developed his early media theory on the autonomy of the human sensorium against the background of the biocomputer-movement. Adding an important piece to the jigsaw it becomes clear that he cybernetic approach of a "techno-physiology" of the senses greatly contributed to the emergence of media theory during the 1960s.

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**University Discourse Network 2010**

BOB HANKE
*York, Ontario*

In 1957, Marshall McLuhan invited us to reconsider the education process by announcing that, with the advent of television, the "classroom without walls" had arrived. A half century later, we are working in the university without walls and the ICT "revolution"

is over. In "Universities, wet, hard, and harder," published in *Critical Inquiry* in 2004, Friedrich Kittler reviewed 800 years of European university-based media history to observe that "universities have finally succeeded in forming once again a complete media system." In this paper, I propose to offer a close, critical reading of Kittler's diagnosis and prognosis of the university. In contrast to his discontinuist interpretation of the discourse networks of 1800 and 1900, this paper imagines the future by tackling the European university's amnesia about its own past. Rather than focusing on invention of the printing press and the emergence of nation states, his account focuses on the hardware of the lecture, the library and the mail which enabled a "cumulative and recursive production of knowledge." In this account, what comes to the fore is the relation of recurrence between the Greek alphabet and binary code and the parallels between the hardware of the medieval university and the modern university. For Kittler, the good news is that ontology materializes into computer hardware and knowledge volatizes into software. Thanks to Turing's machine, and the diffusion of computerization from mathematics and science to the humanities, he foresees "happy consequences from the new uniformity of knowledges, disciplines, departments" (2004, 250). In this posthuman vision of the cultural sciences, the boundaries between humanities, science and engineering are dissolved. But if the alphanumeric future of the university appeared to be bright, a "new medieval darkness" was coming from the California-based computer industry during the Bush years in the form proprietary software and private intellectual property rights. Beginning where Kittler leaves off, how might we proceed with a project of determining the nature of the Canadian university discourse network 2010? To describe the existence and functioning of the discourse network of the university today, we could begin by looking past the desktop computers in every faculty office. The idealized realization of the university discourse network can be seen in the hidden "machine room" of computing and network operations. While the library remains as a print discourse network with electronic resources, archaeologies of the present-day university must take into account "data storage, transmission, and calculation in technological media" (Kittler 1990, 369). Even though the concept of discourse networks encompasses the network of technology and institutions, and all faculty have been thrown into the age of the Internet, Kittler insists that the "real connection

is not between people but between machines (Kittler, quoted in Armitage 2006, 35). His uptake of technological media gives due weight to the materiality of media, but there is more to university-based media than data and signal processing. Digital media and their networks are more than the production sites of data. What Kittler's descent into data processing and the Lacanian 'real' leaves out is the practice of using ICTs and what it means to be connected. Universities are institutions of selection and noise that raise problems of circulation and valorization in the so-called knowledge-based economy. In the 1980s, Kittler's attention to mediality required a detour through the technologization of information and the comparison of technological systems to make Foucault's archive visible. Today, all universities are media systems, but all public universities are in crisis (Cote and Allahar 2007; Newfield 2008; Arsenjuk & Koerner 2009). While we may accept Kittler's premise that "discourse" is inseparable from "discourse networks," any attempt to describe the Canadian university discourse network of 2010 will require a wide-angle lens on cultural technologies and a remix of theory to assess information and communication, power and knowledge in the academy.

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**The Lecture: A Case Study in the Intermediality of Academic Instruction**

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From early modern scholarly oratory to the streaming of university lectures online, the lecture has been both a central mode of knowledge transmission and a telling lens through which to track the intermediality of academic communication. The perception and practice of extended speech directed at a group of listeners/readers/viewers have been central to theories of pedagogy, media, and interpersonal interaction up to the present day. Indeed, the scholarly lecture has historically been thought (alternatively or concomitantly) to spread canonical doctrine; manifest the physical presence of original thought; make manuscripts available to audiences unable to purchase them; allow new kinds of virtual publics to emerge distinct from campus life; call ideal political communities into being, and more. In this context, I argue that rich and divergent accounts of the lecture's status across orality, print, radio, and the internet reveal how societies imagine the social and cultural functions of the scholar/scientist,

a figure who paradigmatically organizes information across a variety of media. The paper I am proposing for the "Media Transatlantic" conference will explore how the lecture becomes a site where differences between media are negotiated. Whether in romantic experiments in printing lecture series or in Heidegger's pronouncement in his Introduction to Metaphysics lectures that "das Gesprochene spricht nicht mehr im Gedruckten" ("the spoken no longer speaks in the printed"), whether in Adorno's critique of "mass media" even while broadcasting lectures on the radio or television or in contemporary debates about replacing face-to-face instruction with online courses, I am interested in how the scene of the lecture repeatedly serves as a key point of reference in theorizing the movement of scholarly discourse between media. The lecture is of particular interest because it shares certain features with dissemination through print and other media, for listeners/readers do not respond to the lecturer/author in kind. Indeed, this feature stands out to theorists and practitioners of the lecture: addressing a group of silent listeners is often seen to stand in a homologous relationship to engaging audiences through print, radio, or internet streaming. In this way, my examination of divergent configurations of the lecture (primarily in the German context from 1800 to the present) will enable new comparative perspectives on how North American and German media theorists such as Kittler, McLuhan, Ong, and others deal with related issues of medial competency, pedagogy, and socialization. This paper builds on the findings of my current book project (entitled *Fictions of Dialogue: the Pedagogy, Politics, and Media of the Romantic Lecture*), which looks at how the lecture is privileged around 1800 in the pedagogical and media-theoretical debates at the heart of German romanticism and idealism.

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**Teachers Teaching in the New Mediascape: Natural Born Cyborgs or Digital Immigrants?**

Andy Clark (2003) opens his *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* recounting the recent loss of his laptop, an experience he likens to "a sudden and vicious type of (hopefully transient) brain damage . . . the cyborg equivalent of a mild stroke" (4, 10). At a faculty development workshop on applying brain research to enhance instruction, a brief technical glitch

prompts the presenter to humorously remark, "If PowerPoint crashes, my IQ will drop 20 points!" Such anecdotes, jokingly hyperbolic in their account, nonetheless allude to the tight intimacies, the primordial interminglings, and, at times, the acute dependencies we find ourselves living with technology today. Our being-in-the-world is evermore adumbrated by, folded into, and transpermeated by the objects of our post-human world. We are, it seems, "natural-born cyborgs, forever ready to merge our mental activities with the operations of pen, paper, and electronics" (Clark 2003, 7). In this paper, we take up Mark Prensky's (2001) casting of teachers as "digital immigrants" to the new media landscape (and his matching presumption of students as "digital natives"), and reckon this popular metaphor with phenomenological understandings of human-technology relationships. Drawing on insights from media theorists (Hansen 2000, 2006; McLuhan 1964; Thrift 2005) as well as phenomenological philosophers of technology (Borgmann 2002; Dreyfus 2004; Harman 2007; Heidegger 1971; Ihde 1990; Introna 2007), we argue that today's teachers and students alike are more aptly (and less divisively) visualized as digital migrants or nomads bound to continuous traverse and settle new medial territories—turbulent mixes of old and new media spaces, each inviting and assembling other ways of being, thinking and doing in the world, and simultaneously inaugurating and mobilizing new dialects, fluencies and practices. Dwelling too long in any given world, the scene inevitably changes, the lived space shifts, and "naturalized" digital inhabitants find themselves once more "deterritorialized" (Deleuze & Guattari 1987). Digital worlds resist "old-fashioned attempts to put down roots, ways of being that sink into the earth in search of a sturdy foundation on which to erect a new life" (Buchanan 2005). Rather, teacher and students must each learn the supple art of swimming through these vocative landscapes, the difficult task of re-territorializing in new environments, and an open willingness to enter the flow again as the world shifts once more. Further, theoretical constructs such as digital immigrants, natives, and nomads, rest on a more fundamental post-human identity: the cyborg. Within the context of this more phenomenologically attuned purview, we posit the significances (and insignificances of) cyborg-teachers in the wake of new media technologies. Our interactions with new media, often via a screen and keyboard/mouse/controller, are direct, sensuous and mimetic. Software "affects our

experience first and foremost through its infrastructural role, its import occurs prior to and independently of our production of representations" (Hansen 2000, 4). In this way, our lived experience is being radically, but prereflectively re-habilitated; our intentional involvements perturbed and re-inscribed via the constraints and dispensations of pre-fabricated digital architectures. We are now well into an era of technological-becoming, our sensuous bodies quietly adapting to the inhuman rhythms of an evolving, digitally-inscribed and intensifying mechanosphere. Today's brick and mortar classrooms may persist for decades in one form or another, but tomorrow's digitally-enhanced teachers and students will increasingly interface, enfold into and inhabit digitally-enhanced environs and virtual spaces. As we grasp hold of these powerful new technologies with growing vigor, they too take hold of us, adumbrating new ways of being, doing and thinking in the world. It is imperative that we attend mindfully to the material, hermeneutic, and existential shifts that are transpiring as our worlds are daily extended, intensified, and complicated by digital technologies. The continued promotion of digital technologies as benign or necessarily progressive agents in the educational landscape—a foundational belief or "posit" of our current ontological epoch—imperils the normative project of pedagogy by concealing the instrumental constructs they materialize. Rather, these paratextual machines must be recognized as effective and affective mimetic interventions that prereflectively inform our being, knowing and doing in the world. Such a view necessarily burdens tomorrow's teachers with a renewed sense of professional responsibility, one sensitive to the fragile ecology of our classrooms in the wake of digital technology "integration," but more importantly, for the future well-being of our "post-human" children living in the midst of this brave new world.

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**Education of the Senses: The Pedagogy of Marshall McLuhan**

Next to media themselves, pedagogy or education—configured specifically as a "training the senses" (McLuhan & Leonard 1967, 25) or "sensuous education" (McLuhan 1964, 107)—is one of the most prominent themes in McLuhan's corpus. It is the focus of numerous articles published throughout his career and of two significant

albeit relatively obscure monographs that effectively book-end his work on electronic media (the 1960 *Project in Understanding New Media* and the 1977 textbook, *City as Classroom*). As Janine Marchessault says, McLuhan articulates "a specifically argued pedagogical enterprise" that is central to his "aesthetically-based, highly performative and historically grounded contribution to the study of media" (2004 xi, 10, 34). In this paper, we focus on this pedagogical enterprise specifically as it develops from McLuhan's unusual understanding of the senses. In doing so, we show how McLuhan's contribution to media is indeed aesthetically, historically and performatively charged, and make the case for the ongoing currency of his pedagogical enterprise today. Referring to Aristotelian theories of the senses from Aquinas to the early Enlightenment, we recapitulate four of McLuhan's basic points about media and the senses: First, that a medium has its effects primarily on a sense other than those with which it directly communicates; second, that this medatic effect is registered secondarily on all senses as an interdependent sensorium in terms of their equilibrium or ratio; third, that this ratio is constitutive of rationality or consciousness itself; and fourth, that an imbalance of the senses induced by media can deprive one of one's "rationality" or consciousness. The emphatically normative character of McLuhan's understanding of these senses and their (im)balance ensures a particularly important place for both pedagogy and praxis in his thought. If the intensification of some media can affect the senses in such a way as to alter "the matrix of thought and concept and value," then it is precisely a vigorous "training" of perception that is urgently needed to re-establish sensual interplay and unity. The "educational task," as McLuhan explains, "is to provide . . . the basic tools of perception," and also to utilize "sensory situations for the training of perception" (McLuhan & Parker 1968, 5), resulting in a kind of education that is "more concerned with *training the senses* and perceptions than with stuffing brains" (italics added; McLuhan & Leonard, 25). McLuhan's perceptual training does not occur simply by heightening the student's self-awareness and self-possession as is the case in various forms of media literacy and critique. Instead, it arises through the suspension of this kind of "normal" sensory experience. Presenting students with the "sensory situation" of a Gestaltist diagram in his *City as Classroom* textbook, McLuhan first points out the oscillation it compels in perception between two possible interpretations or visual figures. But then he asks

students to interrupt this multistability, invoking an experience in which there are "NO figures, just outlines and interfaces" (McLuhan, Hutchon & McLuhan 1977, 10). And he deliberately contrasts this to common "experience [in which you] are always the figure, as long as you are conscious" (ibid). It follows that in the experience in which figure is not foregrounded, neither is an accompanying sense of self-possessed consciousness. What McLuhan is seeking, in other words, is to counteract one form of hypnotism and trance with another: The hypnosis produced by the 500 year hegemony of print is to be counteracted by one that is more "in touch" with our wits and sensibilities overall. In an age of twitchspeed and twitter, multitasking and multimedia, such a cultivation of alternative sensual orientations in education is both current and compelling.

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