LEA is a publication of Leonardo/ISAST.

LEONARDO
THE INTERNATIONAL SOCIETY FOR THE ARTS, SCIENCES AND TECHNOLOGY

Sabancı Üniversitesi

Goldsmiths
UNIVERSITY OF LONDON

VOL 17 NO 2 VOLUME EDITORS LANFRANCO ACETI AND SIMON PENNY
CONTRIBUTORS STEPHANIE BOLUK, MAURO CARASSAI, KENNY CHOW, SHARON DANIEL, KRISTEN GALVIN, FOX HARRELL, SNEHA VEERAGOUDAR HARRELL, GARNET HERTZ, JI-HOON FELIX KIM, PATRICK LEMIEUX, ELISABETH LOSH, MARK MARINO, MICHAEL MATEAS, CHANDLER B. MCWILLIAMS, CARRIE NOLAND, ANNE SULLIVAN, NOAH WARDRIP-FRUIN, JICHEN ZHU

SPECIAL ISSUE

DAC 09

after media : embodiment and context

Copyright 2012 ISAST
Leonardo Electronic Almanac
Volume 17 Issue 2
January 2012
ISSN: 1071-4391
ISBN: 978-1906897-16-1
The ISBN is provided by Goldsmiths, University of London

LEA PUBLISHING & SUBSCRIPTION INFORMATION

Editorial Address
Leonardo Electronic Almanac
Sabanci University, Orhanli - Tuzla, 34956
Istanbul, Turkey

Email
info@leoalmanac.org

Web
» www.leoalmanac.org
» www.twitter.com/LEA_twitts
» www.flickr.com/photos/lea_gallery
» www.facebook.com/pages/Leonardo-Electronic-Almanac/209156896252

Leonardo Electronic Almanac is published by:
Leonardo/ISAST
211 Sutter Street, suite 501
San Francisco, CA 94108
USA
Leonardo Electronic Almanac (LEA) is a project of Leonardo/The International Society for the Arts, Sciences and Technology. For more information about Leonardo/ISAST's publications and programs, see http://www.leonardo.info or contact isast@leonardo.info.

Leonardo Electronic Almanac is produced by Passero Productions.

Making Inroads: Promoting Quality and Excellency of Contemporary Digital Cultural Practices and Interdisciplinarity

I would like to welcome you to the first special volume of the Leonardo Electronic Almanac. *DAC09: After Media: Embodiment and Context*, is a volume that generated from the conference by the same name that Prof. Penny chaired at the end of 2009.

DAC09: After Media: Embodiment and Context is the first of a series of special volumes of the Leonardo Electronic Almanac that are realized in collaboration with international academic, editors and authors.

Prof. Penny was inspired for this LEA special issue by the continuous developments in the interdisciplinary arena and in the fields of new media and digital art culture. He wanted to collate research papers that would provide the seeds for innovative thinking and new research directions. The authors featured in this volume, to whom we are most grateful for their hard work, will provide the reader with the opportunity to understand and imagine future developments in the fields of digital art culture and interdisciplinarity.

As I look at the electronic file of what we now internally refer to simply as *DAC09* the first issue of the revamped LEA, *Mish Mash*, printed and delivered by Amazon, sits on the desk next to my keyboard. The possibilities and opportunities of e-publishing, which also has physically printed outcomes, provide me with further thoughts on the importance and necessity of the work that is done by 'small publishers' in the academic field. The promising news of a new open access journal to be launched by The Wellcome Trust or the 'revolution' of researchers against Elsevier through the website http://thecostofknowledge.com/ with 9510 Researchers Taking a Stand (Thursday, April 12, 2012 at 10:57 AM) highlights the problems and issues that the industry faces and the struggles of young researchers and academics.

The contemporary academic publishing industry has come a long way from the first attempts at e-publishing and the revolution, if it can be defined as such, has benefited some and harmed others.

As the struggle continues between open access and copyrighted ownership,[1] the 'revelation' of a lucrative academic publishing industry, of economies of scales, of academics exploited by a system put in place by publishing giants (into which some universities around the globe have bought into in order to have an internationally recognized ranking system) and the publishers' system of exploitation structured to increase the share of free academic content to then be re-sold, raises some essential questions on academic activity and its outputs.

ISSN 1071-4391 ISBN 978-1-906897-16-1

The answers to these problems can perhaps be found in the creativity of the individuals who participate in what is, at times, an harrowing process of revisions, changes, reviews, replies and rebuttals. This is a process that is managed by academics who donate their time to generate alternatives to a system based on the exploitation of content producers. For these reasons I wish to thank Prof. Simon Penny and all the authors who have contributed to *DAC09: After Media: Embodiment and Context*.

Simon Penny in his introduction to this first LEA special volume clearly states a) the importance of the *DAC09* and b) the gravitas and professional profile of the contributors. These are two points that I can support wholeheartedly, knowing intimately the amount of work that this volume has required in order to maintain the high standards set by *Mish Mash* and the good reception it received.

For this reason in announcing and presenting this first special volume I am proud to offer readers the possibility of engaging with the work of professionals who are contributing to redefining the roles, structures and semantics of new media, digital art practices and interdisciplinarity, as well as attempting to clarify what digital creativity is today and what it may become in the future.

The field of new media (which are no longer so new and so young – I guess they could be better described as middle aged, slightly plump and balding) and digital practices (historical and contemporary) require new definitions and new engagements that move away from and explore beyond traditional structures and proven interdisciplinary partnerships.

DAC09: After Media: Embodiment and Context is a volume that, by collating papers presented at the DAC09 conference, chaired by Prof. Simon Penny, is also providing recent innovative perspectives and planting seeds of new thinking that will redefine conceptualizations and practices, both academic and artistic.

It also offers to the reader the possibility of engaging with solid interdisciplinary practices, in a moment in which I believe interdisciplinarity and creative practices are moving away from old structures and definitions, particularly in the fraught relationship between artistic and scientific disciplines. If 'cognitive sciences' is a representation of interdisciplinarity between artificial intelligence, neurobiology and psychology, it is also an example of interdisciplinary interactions of relatively closely related fields. The real problem in interdisciplinary and crossdisciplinary studies is that these fields are hampered by the methodological problems that still today contrapose in an hierarchical structure scientific methodologies versus art and humanities based approaches to knowledge.

This volume is the first of the special issues published by LEA and its appearance coincides with the newly revamped website. It will benefit from a stronger level of advocacy and publicity since LEA has continued to further strengthen its use of social platforms, in fulfillment of its mission of advocacy of projects at the

ISSN 1071-4391 ISBN 978-1-906897-16-1

intersection of art, science and technology. DAC09 will be widely distributed across social networks as open access knowledge in PDF format, as well as being available on Amazon.

I extend a great thank you to all of the contributors of *DAC09: After Media: Embodiment and Context* and wish them all the very best in their future artistic and academic endeavors.

Lanfranco Aceti
Editor in Chief, Leonardo Electronic Almanac
Director, Kasa Gallery

ACKNOWLEDGEMENTS

I would like to thank Ozden Sahin, LEA Co-Editor, for having delivered with constancy another project of which LEA could be proud. The LEA special issues are more similar to small books – 200 pages is not a small endeavor – that require special care and attentive selection.

I am very grateful to Prof. Simon Penny for the hard work that he has put into this volume and to the authors who have patiently worked with us.

To all of you my heartfelt thanks.

DAC09: After Media: Embodiment and Context is the first special volume of the Leonardo Electronic Almanac to be followed by many others that are currently in different stages of production, each of them addressing a special theme and focusing on bringing to the mainstream of the academic debate new forms of thinking, challenging traditional perspectives and methodologies not solely in the debates related to contemporary digital culture but also in the way in which these debates are disseminated and made public.

To propose a special volume please see the guidelines webpage at: http://www.leoalmanac.org/lea-special-issues-submission-instructions/

REFERENCES AND NOTES

1. Thomas Lin, "Mathematicians Organize Boycott of a Publisher," *The New York Times*, February 13, 2012, http://www.nytimes.com/2012/02/14/science/researchers-boycott-elsevier-journal-publisher.html (accessed March 20, 2012).

 ISSN 1071-4391 ISBN 978-1-906897-16-1

Two decades of Digital Art and Culture

An introduction to the LEA DAC09 special edition

by

Simon Penny

Director of DAC09
Professor of Arts and Engineering
University of California Irvine

This volume of LEA is composed of contributions drawn from participants in the 2009 Digital Art and Culture conference held at the University of California, Irvine in December 2009. DAC09 was the eighth in the Digital Art and Culture conference series, the first being in 1998. The DAC conference series is internationally recognized for its progressive interdisciplinarity, its intellectual rigor and its responsiveness to emerging practices and trends. As director of DAC09 it was these qualities that I aimed to foster at the conference.

The title of the event: After Media: Embodiment and Context, was conceived to draw attention to aspects of digital arts discourse which I believe are of central concern to contemporary Digital Cultural Practices. "After Media' queries the value of the term 'Media Arts' – a designation which in my opinion not only erroneously presents the practice as one concerned predominantly with manipulating 'media', but also leaves the question of what constitutes a medium in this context uninterrogated. 'Embodiment and Context' reconnects the realm of the digital with the larger social and physical world.

'Embodiment' asserts the phenomenological reality of the fundamentally embodied nature of our being, and its importance as the ground-reference for digital practices. 'Embodiment' is deployed not only with respect to the biological, but also with reference to material instantiations of world-views and values in technologies, a key example being the largely uninterrogated Cartesianisms and Platonisms which populate computational discourse. Such concerns are addressed in contemporary cognitive science, anthropology and other fields which attend to the realities of the physical dimensions of cognition and culture.

'Context' emphasises the realities of cultural, historical, geographical and gender-related specificities. 'Context' brings together site-specificity of cultural practices, the understandings of situated cognition and practices in locative media. The re-emergence of concerns with such locative and material specificity within the Digital Cultures community is foregrounded in such DAC09 Themes as Software and Platform Studies and Embodiment and Performativity.

The DAC09 conference included around 100 papers by an international array of contributors. In a desire to be maximally responsive to current trends, the conference was to some extent an exercise in self-organisation by the DAC09 community. The call for papers and the structure of the event was organized around nine conference themes which were themselves the result of a call to the community for conference themes. The selected themes were managed largely by those who proposed them. Much credit for the success of the event therefore goes to these hard-working 'Theme Leaders' : Nell Tenhaaf, Melanie Baljko, Kim Sawchuk, Marc Böhlen, Jeremy Douglass, Noah Wardrip-Fruin, Andrea Polli, Cynthia Beth Rubin, Nina Czegledy, Fox Harrell, Susanna Paasonen, Jordan Crandall, Ulrik Ekman, Mark Hansen, Terry Harpold, Lisbeth Klastrup, and Susana Tosca, and also to the Event Organisers: David Familian, Michael Dessen, Chris Dobrian, Mark Marino and Jessica Pressman. I am particularly grateful to Ward Smith, Information Systems Manager for DAC09, who for two years, as my sole colleague on the project, managed electronic communications, web design and the review and paper submission processes amid, as he would put it, a 'parade of indignities'. In the several months of final planning and preparation for the event, the acumen and commitment of Elizabeth Losh and Sean Voisen was invaluable.

I first published on what we now refer to as digital arts in 1987. [1] Not long after, I was lucky enough to have the opportunity to attend the first ISEA conference in 1988. Since that date I have been actively involved in supporting the development of critical discourses in the field, as a writer, an editor and an organizer of events. My role as director of the DAC09 conference gave me a perspective from which to reflect on the state of digital arts discourse and its development over two decades. As I discussed in a recent paper, [2] the first decade on media art theory was a cacophonous interdisciplinary period in which commentators from diverse fields and disciplines brought their expertise to bear on their perceived subject. This created a scenario not unlike that of various viewers looking into a house via various windows, none of them perceiving the layout of the house, nor the contents of the other rooms. In the ensuing decade, a very necessary reconciliation of various disciplinary perspectives has occurred as the field has become truly a 'field'.

While post structuralist stalwarts such as Deleuze and Derrida continue to be referenced in much of the more critical-theory oriented work in Digital Cultures, and the condition of the posthuman and posthumanist are constantly referenced, theoretical reference points for the field are usefully broadening. The emerging field of Science and Technology Studies has brought valuable new perspectives to media arts discourses, counterbalancing the excesses of techno-utopianism and the sometimes abstruse intellectualism of post-structuralist theoretical discourses. In this volume, Mark Tuters provides an exemplar of this approach in his *Forget Psychogeography: Locative Media as Cosmopolitics*, bringing Rancière and Latour to bear on a discussion of HCI, Tactical Media and Locative Media practices. Tuters provides a nuanced argument replete with examples which questions the sometimes, superficial and dogmatic re-citation of the originary role of the Situationists with respect to such practices. At DAC09, Connor McGarrigle also took a thoughtful revisionist position with respect to the Situationists. [3]

In this context, the new areas of Software Studies and Platform Studies have emerged and have been nurtured in previous DAC conferences. In this spirit, Chandler McWilliams attempt to "thread the needle between a reading of code-as-text that obfuscates the procedural nature of code, and an overly technical description of programming that reinstates the machine as the essential arbiter of authentic acts of programming" is emblematic of the emergence of Software Studies discourses which are quintessentially interdisciplinary and erudite on both sides of the science wars divide. Similarly, Mark Marino's meditations on heteronormativity of code and the Anna Kournikova worm call for what he calls Critical Code Studies, here informed by queer theory. In their proposal for an 'AI Hermenteutic Network' Zhu and Harrell address the question of intentionality, a familiar theme in AI critical discourse (i.e., John Searle 'Minds,

ISSN 1071-4391 ISBN 978-1-906897-16-1
ISSN 1071-4391 ISBN 978-1-906897-16-1

Brains and Programs' 1980). Citing Latour, Agre, Hayles and others, they offer another example of the science-wars-sidestepping technical development based in interdisciplinary scholarship noted in the discussion of Chandler McWilliams' contribution.

Another trend indicative of the maturation of this field is its (re)-connection with philosophical discourse. In this context, the deep analysis of Electronic Literature in terms of Wittgensteinian Language Games by Mauro Carassia is something of a tour de force. While a tendency to extropianism is here not explicitly discouraged, this discussion places such technological practices squarely as indicators of transition to post-human subjectivity, and in the process, open the discussion to phenomenological, enactive and situated critiques as well a drawing in the relevance of pre-cognitivist cybernetic theorisation.

One of the aspects of contemporary media arts discourse which I hoped to foreground at DAC09 was questions of embodiment and engagement with contemporary post-cognitivist cognitive science. Several papers in the current collection reflect such concerns, and indeed they were foregrounded in several conference themes. One example of the value of the application of such theory is evidenced in Kenny Chow and Fox Harrells leveraging of contemporary neuroscience and cognitive linguistics in their deployment of the concept of "material-based imagination" in their discussion of Interactive Digital Artworks. In a quite different approach to embodiment and computation, Carrie Noland discusses choreography and particularly the choreography of Cunningham, with reference to Mauss and Leroi-Gourhan, and with respect to digital choreographic tools.

The DAC community did not choose to make Game Culture a focal theme in DAC09 – perhaps because the field has grown so quickly and has built up a structure of conferences and journals. Nonetheless, gaming culture was referenced throughout the event, and was the subject of numerous presentations, such as Josh and Karen Tannenbaums reconsideration of 'agency as commitment to meaning', which addressed the acknowledged problematic of the tension between authorial and user agency in terms of a critique of the humanist subject. Like wise, phraseology such as Boluk/Lemieux's: "player performance in and around games has matured to the point of beginning to express underlying serial logics through heavily mannered gameplay mechanics" (in their contribution to this volume) signals the establishment of a mature and erudite critical theory of games and gaming. On a more technical note, Sullivan/WardripFruin/Mateas make an argument for enriching computer game play by application of artificial intelligence techniques to the authoring of 'quests'.

As Digital Arts became established as a practice the question of pedagogy inevitably arose – what to teach and how to teach it. Though rhetorics of convergence pretend to the contrary, one cannot dispute the profound epistemological and ontological dilemmas involved in attempting to bring together intellectual environments of such disparate communities as engineers, artists and critical theorists, in the classroom and the lab. Interdisciplinarity was therefore the ground upon which these programs were developed, and each context inflected that idea with its own color. My own reflections on the subject are published at *Convergence.* [4] It therefore seemed timely to address pedagogy at DAC09. In the process of elaboration of digital cultural practices, such emerging practices have themselves come into consideration as pedagogical tools and systems. In this volume, Elizabeth Losh surveys and discusses various pedagogical initiatives (mostly in Southern California) deploying digital tools and environments. In a contribution which crosses between the pedagogy thematic and concerns with cognition, Harrell and Veeragoudar Harrell offer a report on a science, technology, engineering, and mathematics (STEM) educational initiative among at-risk students which considers the relationships between users and their virtual identities.

In his essay, Garnet Hertz discusses the work of three artists – Reed Ghazala, Natalie Jeremijenko, and Tom Jennings. None of them 'media artists' in the conventional sense, they, in different ways and for different purposes, re-purpose digital technologies. Rounding out this volume is presentation of two online artworks by Sharon Daniels which were presented at DAC09. *Public Secrets* and *Blood Sugar* are elegant web-based art-works, both poetic and examples of a committed activist practice.

In my opinion, this collection offers readers a survey of fields addressed at DAC09, and an indication key areas of active growth in the field. Most of them display the kind of rigorous interdisciplinarity I regard as characteristic of the best work in the field. While the science-wars rage on in certain quarters, in media arts discourse there appears to be an attitude of intelligent resolution – a result in no small measure of the fact that a great many such commentators and theorists have taken the trouble to be trained, study and practice on both sides of the great divide of the 'two cultures', and to take the next necessary step of attempting to reconciling or negotiate ontologies traditionally at odds. This professional profile was very evident at DAC09 and is represented by many of the contributors in this volume. Such interdisciplinary pursuits are in my opinion, extremely intellectually demanding. The obvious danger in such work is of superficial understandings, or worse, a simple re-citation of a new canon of interdisciplinary media studies. Dangers that, happily, none of the papers grouped here, and few of the papers presented at DAC09, fell victim of. ■

The electronic proceedings of DAC09 are available at this link: http://escholarship.org/uc/ace_dac09

REFERENCES AND NOTES

1. "Simulation Digitization, Interaction: The impact of computing on the arts," *Artlink, Art+ Tech Special Issue* 7, no. 3 and 4 (1987).
2. "Desire for Virtual Space: the Technological Imaginary in 90s Media Art," in *Space and Desire. Scenographic Strategies in Theatre, Art and Media*, eds. Thea Brejezk et al. (ZHdK Zurich: Zurich University of the Arts, 2010).
3. This paper, and all DAC09 papers referenced here, are available as part of the DAC09 proceedings, online at http://escholarship.org/uc/ace_dac09 (accessed March 2010).
4. Simon Penny, "Rigorous Interdisciplinary Pedagogy: Five Years of ACE," *Convergence* 15, no. 1 (February 2009): 31 - 54.

ISSN 1071-4391 ISBN 978-1-906897-16-1
ISSN 1071-4391 ISBN 978-1-906897-16-1

Leonardo Electronic Almanac
Volume 17 Issue 2

 ISSN 1071-4391 ISBN 978-1-906897-16-1

ISSN 1071-4391 ISBN 978-1-906897-16-1

ELECTRONIC LITERATURE AS LANGUAGE GAME

a Philosophical Approach to Digital Artifact Subjectivity

ABSTRACT

As a theoretical endeavour to interconnect machinic intelligence and literary subjectivity, *the present paper discusses implications of a reconfigured understanding of recent digital literary artifacts within the specific frame of Ludwig Wittgenstein's late philosophy. The first half addresses some of the ways in which a Wittgensteinian inter-subjective model of interaction might apply in the case of selected digital works (Michael Joyce's* Twelve Blue *and Judd Morrissey's* The Jew's Daughter*) developed out of aesthetic possibilities specific to digital/computational media. The second half envisions critical consequences of reframing literary negotiations in terms of Wittgensteinian 'language games' for second-generation works of electronic literature.*

 ISSN 1071-4391 ISBN 978-1-906897-16-1

A work of art does not aim to convey something else, *just itself.*

— Ludwig Wittgenstein [1]

by

Mauro Carassai

University of Florida
mcarassai@ufl.edu

1. SITUATING E-LIT SUBJECTIVITY

Identifications between human and machinic intelligence have usually been contingent on cultural disjunctions involving objective or subjective model making in our scholarly attempts to define what counts as distinctively human. In such an interdisciplinary "contact zone" as the investigation of intelligence, positivist and constructivist attitudes have, however, not always been neatly divided along the distinct methodological concerns that have traditionally characterized the two fields of science and the humanities. In *Philosophy and Computing* Luciano Floridi offers a paradigmatic example of such dynamic when he remarks that "the study of artificial intelligence (AI), in strict relation to psychological and physiological investigations of the nature of biological intelligence and the philosophy of mind represents the oldest area of contact between philosophy and computer science." [2] We might argue that contact in this case has often meant friction since, figuratively speaking, science's alleged incremental 'knowledge building' methodology has regularly had to face the erosion of the recursive waves typical of 'philosophical thought'. Just like ancient, medieval and early modern antecedents of scientific realism (the assumption that the world is knowable through theoretical/experimental observation) were to be questioned by the Cartesian sceptic doubt (implicitly reprocessing the idea that the world might exist independently of its perceiver), positivist scientific methodologies (coexisting with and embedded *in* natural language) would be eventually faced with the problematization of language raised by Wittgenstein's philosophy. Such tendency is particularly evident in the field of artificial intelligence since, as Sam Williams observes, "unlike their counterparts in the chemistry lab or the physics departments, AI researchers have found their efforts to break down intelligence into a few foundational precepts continually rebuffed." [3] The process has, of course, also worked the other way around. As Noah Wardrip-Fruin explains in his introduction to Norbert Wiener's "Men,

ISSN 1071-4391 ISBN 978-1-906897-16-1

Machines and the World About", for example, before cybernetics, machines were conceived and analyzed as isolated objects defined in terms of "mechanics, differences of power and voltage, observable physical changes" [4] but once the study shifted to the analysis of structures and regulatory systems, the scientific-based scrutiny could equally be applied to the physical and to the social environment. In other words, cybernetics "created a framework for studying communication and control systems that spread across multiple entities." [5] As a result, the new type of study introduced by cybernetics had a significant role in undermining the stability of humanist ideas on subjectivity causing, in N. Katherine Hayles' terms, the "ongoing transition from the traditional liberal self to the contemporary posthuman subject." [6]

Crossing the boundaries between the supposedly separate spheres of science and humanities has, however, become more and more frequent in scholarly studies devoted to the analysis of various forms of digital literary artifacts connected with recent technological developments in networked and programmable media. In their reviving scholarly concerns for the way we, as language-using subjects, process information in relation to computer-based forms of representation, digital-born literary productions can, in fact, be seen as cultural intermediaries between intellectual energies at play both in scientific labs and in the classrooms of humanities departments. Such an overlapping can today be seen as taking place not only on the institutional level, but also on the methodological, conceptual and terminological ones. N. Katherine Hayles's use of neurocognitive terms such as "dynamic heterarchies" in her literary analysis, Matthew Kirschenbaum's fruitful "close reading" of the hard drive medium storage, Mark Hansen's focus on the "haptic", "kinetic", and "proprioceptive" constituents of our "sensorimotor" perceptions in examining digital art are just a few examples of the increasingly complex networks of empirical and speculative approaches required by the unprecedented "complexity" of the digital. [7]

As Adalaide Morris has remarked, "the term 'cyborg' and, increasingly, the term 'posthuman' [...] hold open a place for configurations for which we have as yet only a tentative vocabulary." [8] In the search of an operative phraseology for digital media creations in general and for "such amalgams as 'electronic literature' or 'e-poetries'" [9] in particular, the fundamental dichotomy *subject/object* is also starting to undergo conceptual reconsideration and consequent terminological readjustment. Despite the pervasive frequency of expressions such as "digital objects" and "digital artifact" in new media scholarly contributions, we can in fact observe a rising interest in (re-)defining text-based digital works by means of so-called "post-objectual" conceptualizations. I am referring to an increased attention, in the digital field, to that rather ineffable "before and after of the object", that "thingness" that, in Bill Brown's terms, "amounts to a latency (the not yet formed or the not yet formable) and to an excess (what remains physically or metaphysically irreducible to objects)." [10] Such re-conceptualizations have, however, mainly positioned digital objects "on the threshold between two states (subject/object)" [11] – as Davin Heckman puts it in the case of the so-called *e-ject* – and have rarely gone beyond such a liminal zone. Although often featuring algorithmic-based or time-based expressive modalities, electronic works have mainly been discussed through object-oriented ontological conceptualization models that have rarely resulted in their association with subjectivity as a philosophical construct. Interactive affordances in digital works, for example, have scarcely ever been conceived of as a form of philosophically-grounded textual subjectivity. And despite the remarkable number of highly relevant inputs on the issue, [12] studies have rarely gone in the direction of either envisioning a subjective dimension for digital literary entities or privileging the subject-related semantic field in their terminological treatment.

This paper tries to rethink the subject/object dichotomy by casting selected narrative-based digital productions into a conceptual configuration that sees them as nearer to subjectivity-endowed entities than to constituents of a theoretical constellation reflecting the persistence of object-driven conceptualization models. By discussing their role in reconfiguring our 'language use'-instantiated "form of life," in the sense expressed by Ludwig Wittgenstein in his *Philosophical Investigations*, the paper explores some of the ways in which it would be possible to conceive of electronic narratives as literary *post-machinic subjects*. The suitability of Wittgenstein's late philosophical work to the present elaboration of a process potentially leading to the envisioning of a digital textual subjectivity for digital-born literary works is a direct outcome of two main features of the late written production of the Austrian philosopher: one theoretical, the other formal. On the one hand, the fact that many a critic has stressed how Wittgenstein builds up a "community account" of the mind [13] makes his remarks particularly suitable to be put in conversation with the foundational work on distributed cognition in digital environments provided by N. Katherine Hayles. On the other hand, the loose character of Wittgenstein's philosophical observations in his late writings leaves open space for intellectual explorations that extend beyond the limits of any rigid exegetical treatment of his work. We need, in fact, more generally to clarify that, although largely drawing on a specific philosophical frame of mind, the paper is not going to address subjectivity from a disciplinary-specific philosophical point of view. The goal is neither to investigate what makes a human being into a human being (or a machine into a machine) nor to establish an inner correspondence between allegedly comparable machinic and organic informational systems. I am not interested in highlighting common substrata between the human and the digital in the guise of a shared essential(ized) complexity of internal processes as much as I am interested in drawing attention to the extent to which the theoretical frame of subjectivity might help us in understanding our current relation to digital-born literary works and, possibly, to the digital literary as such.

2. SUBJECTIVITY AND/AS LANGUAGE GAME

In "Intelligence without Representation" MIT scientist Rodney Brooks explained how to create artificial creatures without the encumbering tool of a preliminary abstraction process aimed at providing the machine with an elementary world representation. In Brooks's terms usually "the abstraction is done by the researchers, leaving little for the AI program to do but search." [14] The problem, in Brooks' view, is that such initial abstraction process, intended as preparatory world conceptualization/representation, *is*, in fact, the essence of intelligence. As a complementary observation, we can argue that literary artifacts, on the other hand, have long dealt – by definition and anthropological practice – precisely with forms of (either verbal or multimedia) representation produced precisely by what we *ipso facto* assume as our prototype of intelligent subjects.

What happens, then, to our notion of subjective intelligence when, as in so-called "second-generation electronic literary works" (Hayles), the abstraction process connected with world representation is partly delegated to digital machines via software, algorithmic, time-based, or expressive AI processes? In evaluating the retrospective effects of digital-born artifacts on our vision of literature as a whole, Hayles justly argues that, before the renovated focus on materiality encouraged by digital literary productions, "with significant exceptions, print literature was widely re-

ISSN 1071-4391 ISBN 978-1-906897-16-1
ISSN 1071-4391 ISBN 978-1-906897-16-1

garded as not having a body, only a speaking mind." [15] This consideration, however, draws implicit attention also to the complementary perspective according to which (despite Raymond Kurzweil's characterization of digital machines as currently on their way to reach the 20-million-billion-calculations-per-second capacity of the human brain) the evolution of computer machinery has rarely been regarded as the growth of more and more compelling "minds", but mostly as the updating process of the machine's chip-based body.

As a way to network between renovated attention to the body of literature and to sensational-sounding appraisals of computers' dynamic "cerebral" performance, I propose an analysis of digital literary artifacts that situates them against the background of an anti-essentialist account of subjectivity developed out of Wittgenstein's late philosophy. Without claiming relationality as the sole necessary or sufficient characteristic for subjectivity, such an account focuses on subjects as the embodiment of the multiple linguistic and extra-linguistic inter-relations operating both within the human/machinic subject and between the (human) self and the (machinic) other.

There are a number of reasons to justify the recourse to a Wittgenstein-ian account of subjectivity in the critical treatment of digital works. First, according to Wittgenstein, there is no actual philosophical need to envision a metaphysical locus where meaning and thought must reside as a necessary pre-condition for language-based interactions aimed at meaning production. Despite the tendency to characterize audiovisual responses on the output device as the mere outward manifestation of the machine's inward processing (taking place in a locatable hardware areas), digital representational signs can actually be said to *enact* the electrical switches between bits' voltage levels that constitute the digital work. As frequently remarked by Hayles the digital text exists not as a product but as a process (i.e. when the computer is *on*). Similarly, Wittgenstein's language games do not presuppose the hypothesis of a locatable "speaking mind" able to perform thought processing in the absence of language (i.e. before actual behavioural-based language manifestations). Secondly, although he uses the construct only a few times in his written work, crucial developments of the *Philosophical Investigations* stem from his idea that "the speaking of a language is part of an activity, or of a *form of life* [16] [emphasis added]." [17] Wittgenstein thinks about speaking as rule-guided activity. In his view, our language games are interwoven with non-linguistic practices in a totality that is at the same time both contingent and embedded in them. In other words, language has no essence, but is made of various phenomena multifariously connected in a texture of family resemblances. [18] As he points out, "I shall call the whole, consisting of language and the actions into which it is woven, a 'language-game,'" [19] and he explains that "to imagine a language means to imagine a form of life." [20]

As responsive literary devices involved in linguistic and extra-linguistic practices, it is worth asking how digital literary works partake in reconfiguring our rule-guided intersubjective behaviours at the level of literary negotiation. In other words, since in Hayles's view a technotext "mobilizes reflexive loops between its imaginative world and the material apparatus embodying that creation as a physical presence," [21] to what extent does any interaction with a dynamic technotext or interactive digital literary artifact also reconfigure the range of language-use instantiated practices in/on which our form of life is, in Wittgensteinian terms, embedded and contingent?

Although relatively dated as text-based digital narratives and although in many ways reminiscent of print culture's characteristic features when compared to more recent experiments in digital textuality, Micheal Joyce's *Twelve Blue* and Judd Morrissey's *The Jew's Daughter* can be seen as unconventional forms of procedural literature whose attributes seem to encourage patterns of reaction potentially beyond strictly object-targeted interactions. It is therefore possible to briefly sketch some of the ways in which such works can be seen as indeed engendering an inherent subjective conceptualization of the kind I am here proposing.

3. FACING 'TWELVE BLUE' AND 'THE JEW'S DAUGHTER' [22]

First of all, both works visually offer themselves to the reader as organic entities interweaving permanence and mutability. Both graphic interfaces, for example, provide the reader with the possibility of seeing each work in its entirety. The graphic outline of coloured threads constituting *Twelve Blue*'s initial screenshot *is*, in fact, the whole narrative. Impenetrable to the reader in its graphic form, the narrative only waits to be probed by the reader by means of progressive interrogation of its various sections. A similar dynamic is at play in *The Jew's Daughter.* The main screenshot – reductively titled "page" – provides, as a matter of fact, the whole narrative content as potentially *already there* for the reader to be gradually requested by repeated mouse-based 'brushing by'.

This comprehensive structural stance is not limited to the visual surface but can also be found at the level of narrative voice. Both works deal with setting up an evocative narrative atmosphere in which, rather than specific fictional characters, the digital texts themselves seem to enact the main narrative voices. Hayles highlights how "entering the flow of the screen narrative" in *Twelve Blue*, "one cannot help noticing how difficult it is to identify the characters. Pronouns abound while proper nouns appear sparsely, teasing the player with ambiguities and arousing the desire to probe more into the work." [23] Similarly, in *The Jew's Daughter*, according to Lori Emerson, "one can see that the references to the activities of 'she,' 'I,' and 'you' result in an indeterminate text that is not particularly about anything." [24] Such reconfigurable narrative chorus, in exploiting the disarticulated narrative modalities provided by the digital environment, often intrudes the meta-textual level making it possible to interpret words *in* the text as words offered *by* the text. In Morrissey-Talley's progressive reconfiguration of the

As responsive literary devices involved in linguistic and extra-linguistic practices, it is worth asking how digital literary works partake in reconfiguring our rule-guided intersubjective behaviours at the level of literary negotiation.

ISSN 1071-4391 ISBN 978-1-906897-16-1
ISSN 1071-4391 ISBN 978-1-906897-16-1

page often times words in themselves do not actually change; only punctuation does. Syntactic changes, then, implicitly transform what were previously statements into questions and what were previously questions into indeterminate reconsiderations.

In other words, sentences become different *behaviours* or, in Wittgensteinian terms, distinct moves within different language games regulated by different rules. It is not difficult to put this feature side by side with the consideration that most of *Twelve Blue*'s content is offered via a hesitant sentient-simulated narrative behaviour. The reader is frequently left only with hyperlinked three-dots suspension pauses: a suggestive equivalent of moments of silence requiring sensitive inter-subjective (literary) negotiations. Readers can ask the narrative to 'tell more' or decide to interrogate the cognitively more enigmatic graphic segment represented in the left margin of the screen – a language-game difference conceivable in terms of the difference between reading alphabet symbols and 'reading between the lines' of the work's graphic expression.

Moreover, these digital narratives at times explicitly *do* speak to the reader. "Follow me before the choices disappear" communicates *Twelve Blue*, with a fatalistic tone typical of unique events (at least within the time frame of the single reading session). And what matters most is that the sentence inevitably keeps its promise by visually hiding the link in subsequent encounters with the same lexia. Likewise in Morrissey-Talley's work, as Lori Emerson again suggests, "the 'you' could be both reader and writer" [25] so that the audience can be in many a passage assumed as the legitimate subject addressed by *The Jew's Daughter*'s words. Words placed in isolation at the centre of the page such as "I fall to pieces each time I see you again" in screenshot 140 fit particularly well the kind of reading interaction the work is supposed to encourage.

In addition, as a digital virtual storyteller, the work even reveals to the reader *secrets* about its own nature. On screenshot 24, *The Jew's Daughter* offers as a viable link only a parenthesis, something that potentially invites the reader either to go beyond cognition level (to interact with a typographic symbol has roughly the same rule-following indeterminacy of interacting with a visual thread of yarn in *Twelve Blue*) or to receive from the text the implicit suggestion that you have, in fact, been wandering *within* a textual sublevel thus far (i.e. to use the typographic sign as a signal of hierarchical layer, something for which parenthesis are commonly used in our reading conventions). Even more suggestive is the "pages gap" between screenshots 34 and 135 where the 'jump' results in a parenthetical sequence of words "typed" in real-time on the screen before the eyes of the reader. The passage's content refers to a decapitated female body and the numerous typing errors, together with the unexpectedness of the textual event itself, suggest the symbolic occurrence of a (digital, subjective) trauma in an otherwise plain narration. It is no surprise, in fact, that both works seem to ask for *sensitive* interactions. As Hayles remarks in the case of Joyce's work, "like sensual lovemaking, the richness of *Twelve Blue* takes time to develop and cannot be rushed. Let us begin, then, with a leisurely embrace that wants to learn everything it can about this textual body." [26] What Hayles is ascribing to *Twelve Blue* is a fascinating, alluring subjectivity able to stimulate the negotiation of literary information in ways that go well beyond the mechanic clicking-equivalent of page turning.

For all the above reasons *Twelve Blue* and *The Jew's Daughter*, can conceivably be thought of as machinic storytellers asking for behavioral strategies and literary negotiations. In so doing, they remarkably multiply the rules defining our language games of reading and writing and therefore rearrange the shifting patterns of reaction constituting our language-use based form of life.

ISSN 1071-4391 ISBN 978-1-906897-16-1

4. (INTER)RELATED E-LIT SUBJECTS: HYPERFICTION SOFTWARE, EXPRESSIVE AI, AND E-LITERARY CRITICISM

These examples give a sketchy idea about how, by re-framing subjective/relational interactions within philosophy of language's concerns, we might start to think of specific digital texts as computerized simulations of virtual narrating subjects. Conceived of from such perspective, digital works can be seen as participating in the rule-reconfiguration of some of the specific language games that, in Wittgenstein's terms, define our form of life. The above description of some specific features of *Twelve Blue* and *The Jew's Daughter* should not, however, create theoretical misunderstandings here. Advocating a need for forms of interaction different in kind from the ones relatable to an object's mere disposal does not mean to discover specific attributes able to qualify the narrative as eligible to 'special' treatment. It rather means to assume a stance toward storytelling that privileges meaning as *inter-subjective* in its use-based and use-regulated practice involving both linguistic and extra-linguistic elements. In Overgaard's terms the issue is more of an ethical nature than of a hermeneutic one: "to recognize someone as another human being is not merely to discover certain features of an object; it is, rather, something that is already interwoven with characteristic attitudes and normative patterns of reaction" [27] (i.e. in our case the ones typical of human-to-human relationships). As Wittgenstein himself puts it, "Essence is expressed in grammar" [28] and grammar sanctions "what kind of object something is." [29] Considering such entities either as literary digital objects or as narrative post-machinic subjects is therefore contingent on the extent to which we allow them to change so-called grammar propositions (sentences that express a rule) governing our language games of reading and writing rather than on any pre-defined ontology of the digital.

It would be interesting to put the subjective conceptualization I am here discussing in conversation with the creation of the first official hyperfiction software developed by Michael Joyce, Jay D. Bolter and John B. Smith as it emerges from the account of its evolution reported in Matthew Kirschenbaum's *Mechanisms*. As the author points out, in fact, "a closer look at Storyspace opens windows onto computer culture and software history of the 1980s." [30] Such an account shows how the "simulation" element played a big part throughout the software's development. In reconstructing Storyspace's creation history, Kirschenbaum highlights not only the importance of Joyce's correspondence with Nathalie Dehn (a researcher working at Yale's Artificial Intelligence Lab who authored herself a story generator called AUTHOR), but also the fact that the proto-versions of Storyspace were, in fact, respectively called TALETELLER and TALETELLER 2. Such names, in their "personifying" brand identity, well fit the semantic fields of Bolter and Joyce's reported comparisons of the software "to oral narrative and to jazz improvisation." [31] The interesting issue for the present purpose is that in "the move away from any pretension of artificial intelligence" [32] and in the subsequent critical celebration of Story*space* [emphasis added] as the realization of the concurrent postmodern trope of the rhizome (by means of theoretical emphasis on its associative links), a significant opportunity for digital textual entities (the ones that were to be produced with it) to possibly be considered within the frame of subjectivity was destined to vanish. We can assume that future research on guard fields, adaptive hypertext, time-based, algorithmic processes, Expressive AI and expressive processing can, in the long run, culturally reorient creative technological efforts towards the realization of digital literary works able to be nearer to the dynamic and process-like aspects of human existence than electronic non-linear objects have been thus far. But this is unlikely to happen in the absence of a reconfiguration of the theoretical frame within which such creative digital practices might take place.

In his discussion of Expressive AI and of the incorporation of AI practices into cultural productions, Michael

ISSN 1071-4391 ISBN 978-1-906897-16-1

> *Textual behaviors in e-lit artifacts should not merely be regarded as discreet systemic components in distributed human/machinic cognitive processes.*

Mateas describes the AI system as "an artifact built by authors in order to communicate a constellation of ideas and experiences to an audience." [33] In so doing, Mateas implicitly establishes a language-instantiated dynamic that sees the 'intelligent' digital entity not as simply "behaving" but precisely as "behaving *as*" a meaning conveyer. Mateas observes that "in order for an object to be said to afford a certain action, the object must in some sense 'cry out' for the action to be taken." [34] Wittgenstein's late philosophy, however, allows for theorizing about how there is no need for the 'appropriate' behaviour in a language game once we recognize that all language games are played by means of establishing the rule *in* the act of playing. We can, of course, follow the rule (conforming to it in doing so) or, alternatively, play the game differently (even by manifesting our ineffectiveness in 'mastering' the game) and hence introduce a new move. In the latter case, precisely in "disappointing" the artifact we would give the digital entity credit for an actual role in the language game we would be involved in. As Wittgenstein remarks in *Philosophical Investigations*, "it is in language that an expectation and its fulfilment make contact." [35] As a consequence, were we regularly and exclusively to do what the entity seems to ask of us, we would never make its digital-related "post-objectual" qualities manifest. In *The Blue and Brown Books* Wittgenstein explains how a succession of numbers can always be made compatible with a possible mathematical series. Similarly, any kind of behaviour can be "in accordance with any number of rules." [36] If a particular behaviour is not the correct step, this would only result in the mathematical series not being what we would previously have called the "such-and-such series". In other words, the alternative, which does not 'break' the language in a human-to-human interaction situation (but only the 'code', so to speak), would hardly represent a problem in our interaction with subjective-conceived-of AI-based digital text once we envision our interaction as taking place *within* the aesthetic conventions and/or possibilities of a literary context reconceived through Wittgensteinian language games.

Hayles's treatment of the specific transformative processes that electronic literature is able to produce on its readers through the recursive feedback loops "connecting bodies and machines, natural language and code, human and artificial intelligence," [37] offers an image of the corpus of digital literary works as partaking in the creation of *intermediating dynamics* connecting systems "at different levels of complexity, the human being immeasurably more complex than the computer." [38] As H.A. Simon noted in *The Sciences of the Artificial*, however, complexity of behaviour (read here 'language game' mastery) is not inevitably ascribable to an implicit complexity of the subject, but it might be (for example) a result of the complexity of the environment. [39] It is worth referring back to the Rodney Brooks article I mentioned in section 2 to keep in mind that in Brooks' creatures "just as there is no central representation there is not even a central system. [...] It is only the observer of the Creature who imputes a central representation or central control. The Creature itself has none; it is a collection of *competing behaviours* [emphasis added]." [40] Textual behaviors in e-lit artifacts should not merely be regarded as discreet systemic components in distributed human/machinic cognitive processes. Hayles's discursive treatment of Michael Joyce's *Twelve Blue*, for example, as a narrative requiring readerly behaviours carried on "with an intention to savor rather than attack or master it" [41] implicitly calls attention precisely to internal relations' rule-shifting in language games connected to our common use of textual inscriptions.

The main consequences the model of digital artifacts' subjectivity I am here proposing can have for e-lit criticism are connected to an implicit increased complexity beyond structuralist and/or post-structuralist approaches. If the specific features of electronic literature transcend the affordances of printed literature in terms of multi-media, time-based and interactive components and if we agree with Noah Wardrip Fruin when he observes in Expressive Processing, that "rather than defining the sequence of words for a book or images for a film, today's authors are increasingly defining the rules for system behavior," [42] then the textual behaviours we increasingly associate with second-generation digital literary works should be legitimately included *within* our interpretive affordances and critical responses as readers. The hidden (algorithmic) reasoning we assume as taking place in digital literary artifacts generates in fact – for us as interpreters – forms of "imponderable evidence" that are no longer concerned exclusively with textual content but also with textual *behaviours*. At the output level, we should therefore engage in the interpretation of a range of "fine shades of behaviour" [43] that escape the binary logic of code on at least two levels. First of all, the expressiveness of digital literary artifacts' behaviors is intimately connected to our ability to *recognize* expressions as relevant in any way to our communicative exchanges. Judgments about other entities' processes are not only informed by *what* the other entity expresses but also by *how* it does express it. As a result, neither expressiveness nor our ability to recognize it is a pre-condition either of the human being or of the digital artifact but they are both inter-relational accomplishments. Secondly, although theoretically computable, the number of factors that influence the behavior of an e-lit piece is connected to an intricate web of behavioral affordances often independent of the actual textual mechanism(/organism)'s literary design that we encounter (*read*) on the screen. Hardware performance at multi-tasking, Internet speed connection, browser characteristics and other factors are all partaking in the real-time language game interaction. Our speculative reactions should not in such cases be prevented by a theoretical awareness of the mere incidental contingency of our critical comments. In philosophical terms, as Wittgenstein highlights, "any empirical proposition can be transformed into a postulate – and then becomes a norm of description." [44] If we do not use (yet) propositions like 'it types words for you' for time-based electronic narratives or 'it is thinking about the next chunk of the story' when a narrative pause occurs (but also when the work's

ISSN 1071-4391 ISBN 978-1-906897-16-1
ISSN 1071-4391 ISBN 978-1-906897-16-1

screenshots become, for example, unresponsive) it is because, in Wittgenstein's terms, we could regard typing out symbols on a screen as 'thinking' only if we dealt with an entity for which we can envision a larger range of behavioural properties.

Building on Wittgenstein's conception of cognition as "world-involving, embodied and expressed," [45] it is possible to envision digital literary works as entities endowed with intersubjective principles of accessibility and mutual reconfiguration. As a consequence, our cognitive activity as e-lit critics implies an attention to differences in our speculative reactions that account for that characteristic uncertainty that is constitutively inherent in our relationship to other *minds*. The word "behaviour", in fact, always includes issues of external contexts as inextricably connected with the circumstances of interpreted actions. We rarely judge behaviour in a void, and, as Chantal Bax remarks in "Inner and Outer, Self and Other" we tend to have very different speculative reactions to seeing, for example, someone crying during an award ceremony or during a funeral. [46] We should therefore work out ways to relate our experience of machinic literary behaviours to the language games we have been initiated into by our (human *and* technological) interactions within our pre-existing culture or community. Let us consider a common phenomenon such as the above-mentioned digital machine's unresponsiveness as a sample model of implicitly contextualized digital behaviours. From a cultural/language-game-instantiated point of view, digital/machinic unresponsiveness during storytelling should ideally be regarded as very different from unresponsiveness occurring, for example, during mathemathic calculations. When considering subjects, the first case can hypothetically be associated with a set of speculative responses that might include: traumatic difficulties, a characteristically hesitant temper, or even awareness about the rhetorical effects of inserting pauses in narration. The latter might get conversely associated with possible assumptions about either poor computation abilities or unexpected complications arising during logical reasoning but would hardly (or, at least, very rarely) be interpreted in conjunction with moral and/or ethical qualms.

It is precisely such an augmented relevance of co-textual and con-textual dynamics that characterizes electronic literature as further removed than traditional print literature from the kind of critical literary approaches Severin Schroeder discusses in "The Coded-Message Model of Literature", i.e. the ones moving from "the view that the value or interest of a work of literature consists in its conveying to us a certain message." [47] In the last section of the essay Schroeder highlights how such coded-message model of literature is also "likely to result from a failure to note an ambiguity in the use of the word meaning." [48] Besides the ordinary transitive meaning of the word 'meaning' – the one for which we can identify *what* something means – Schroeder observes that "the word 'meaning' (and its cognates) can be intransitively used in three different ways, denoting (1) value, (2) a specific Gestalt, or (3) an (apparent) appropriateness. It may, however, not always be possible to keep those three uses neatly apart." [49] Of these alternative (and often coalesced) uses of the word 'meaning' (*how much* something means; meaning as expressive *of* a specific structure; something as *meaningful* element in a specific configuration), I would here like to draw attention to those instantiations that seem to be most resonant with the subjective model I am proposing for e-lit works. Some of these can be put in relation with the reconfiguration of our reading experience in intersubjectively-conceived-of literary exchanges, i.e. when 'facing' digital narratives as wholes can produce, in Wittgenstein's terms, "the same strange illusion which we are under when we seem to seek the something which a face expresses whereas, in reality, we are giving ourselves up to the features before us

ISSN 1071-4391 ISBN 978-1-906897-16-1

[...]" [50] Others can be related to situations in which meaningfulness is related to the fact that "what in fact we perceive is a specific configuration, something striking, a *Gestalt*" and "it is felt that certain features were *meant* to be as they are" [emphasis added]. [51] As I observed above for *Twelve Blue* and *The Jew's Daughter*, digital works often "visually offer themselves to the reader as organic entities interweaving permanence and mutability". As a result, digital literary works can be precisely conceptualized as so-called *changing expressive Gestalts* since their configurations of words are purposefully meant to undergo readjustments and modulations whose effects are rarely under complete control even of their authors. From this point of view we should consider the fact that digital writers and artists manifest their creative language games by means of partaking in a communal pattern they have themselves been initiated into. Insofar as the language-based manifestations we express through digital media reflect the manifestations of the same entities we live amongst, such affordances are part of web dynamics put in place by our specific "form of life/culture". Subjects and digital artifacts might therefore be said to share *interconnected* affordances of individual expressiveness.

5. CONCLUSION

If the "intermediation" relationship between human and computers suggested by Hayles as a frame for the understanding of electronic literature is part of the co-evolutionary spiral between body and technology, we can expect it to produce thinkers more prone to ascribe part of the subjectivity domain to those technological entities that have a primary role in shaping us as humans, i.e. in shaping the specific language games that, in Wittgensteinian terms, defines us as a distinct "form of life". As Hayles points out, "once coevoultion begins, both partners are bound in cotemporal recursive cycles with one another." [52] What Wittgenstein's *Weltanschauung* allows us to by-pass is the logical node implicit in the fact that if coevolution "begins", we should rationally imply that there was a prior time in which one of the two was a primary factor. Wittgenstein's late philosophy, however, postulates that the foundations of human language are to be found, not in the metaphysical logical space of possible situations (foundational to his previous views as expressed in the *Tractatus Logico-Philosophicus*), but in the shifting patterns of intermutual activities performed by users. The multiplicity of language games "is not something fixed, given once for all; but new types of language, new language games, as we may say, come into existence, and others become obsolete and get forgotten." [53] This is why it is precisely in their allowances for interactions with dynamic systems requiring us to perform language-based behavioural strategies across a wide range of rule-following occurrences (included malfunctioning) that electronic narratives can legitimately be considered as *post-machinic subjects*, viz., *as* legitimate participants in reconfiguring our concrete uses of language-based practices. ■

ISSN 1071-4391 ISBN 978-1-906897-16-1

ARTICLE

REFERENCES AND NOTES

1. Ludwig Wittgenstein, *Culture and Value*, ed. G. H. Von Wright, trans. Peter Winch (Chicago, IL: University of Chicago Press, 1980), 58.
2. Luciano Floridi, *Philosophy and Computing* (New York, NY: Routledge, 1999), 18.
3. Sam Williams, *Arguing A.I.: The Battle for Twenty-first-Century Science* (New York, NY: Atradom, 2002), xiii.
4. Noah Wardrip-Fruin, "[Introduction] Men, Machines, and the World About," in *The New Media Reader*, eds. Noah Wardrip-Fruin and Nick Montfort (Cambridge, MA: The MIT Press, 2003), 65–66.
5. Ibidem.
6. N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago, IL: University of Chicago Press, 1999), 2.
7. See Arthur Kroker and Marilouise Kroker, "Critical Digital Studies: An Introduction," in *Critical Digital Studies: A Reader*, eds. A. and M. Kroker (Toronto, Canada: University of Toronto Press, 2008), 1–21.
8. Adelaide Morris, "New Media Poetics: As We May Think/ How to Write," in *New Media Poetics: Contexts, Technotexts, and Theories*, eds. A. Morris, and T. Swiss (Cambridge, MA: The MIT Press, 2006), 4.
9. Ibid., 5.
10. Bill Brown, "Thing Theory," *Critical Inquiry* 28, No.1 (2001): 5.
11. Joseph Tabbi, et al., "E-Ject: On the Ephemeral Nature, Mechanism, and Implications of Electronic Objects," in *Proceedings of the Digital Arts and Culture Conference, 2009. After Media: Embodiment and Context Context* (Irvine, CA: UC eScolarship, 2009), http://www.escholarship.org/uc/item/2xv6b6no (accessed April 5, 2011).
12. See "E-Ject: On the Ephemeral Nature, Mechanisms, and Implications of Electronic Objects" by Joseph Tabbi, et al. [11]. See also N. Katherine Hayles's "The Time of Digital Poetry: From Object to Event" in *New Media Poetics* [8] and Mark Poster's *What's the Matter with the Internet?* (Minneapolis, MN: University of Minnesota Press, 2001) where, however, rather than to the re-conceptualization of the object, the analysis of the "man/machine, subject/object, body/mind and time/space" couplets mainly goes in the direction of "a new configuration of the subject", 6.
13. See Meredith Williams, *Wittgenstein, Mind and Meaning: Towards a Social Conception of the Mind* (New York, NY: Routledge, 2002).
14. Rodney A. Brooks, "Intelligence without representation," *Artificial Intelligence* 47 (1991): 139–159.
15. N. Katherine Hayles, *Writing Machines* (Cambridge, MA: The MIT Press, 2002), 32.
16. For a treatment of the problem of "form" or "forms" of life in Witgenstein's oeuvre see Kristijan Krkac and Josip Lukin, "Forms of Life as Forms of Culture," in *Proceedings of the 30th International Wittgenstein Symposium on Philosophy of Information Society*, Kirchberg am Wechsel, Austria, August 5–11, 2007 (Kirchberg am Wechsel, Austria: The Austrian Ludwig Wittgenstein Society, 2007), 112–114.
17. Ludwig Wittgenstein, *Philosophical Investigations*, trans. G.E.M. Anscombe (New York, NY: Macmillan, 1953), § 23.
18. Ibid., § 67.
19. Ibid., § 7.
20. Ibid., § 19.
21. Hayles, 2002, 25.
22. For a more extensive treatment of the issues discussed in this section, see: Mauro Carassai. "From Machinic Intelligence to Digital Narrative Subjectivity: Electronic Literature and Intermediation as 'form of life' Modification," in *Proceedings of the Digital Arts and Culture Conference, 2009. After Media: Embodiment and Context* (Irvine, CA: UC eScolarship, 2009), http://escholarship.org/uc/item/14kob6rz (accessed April 5, 2011).
23. N. Katherine Hayles, *Electronic Literature: New Horizons for the Literary* (Notre Dame, IN: University of Notre Dame, 2008), 66.
24. Lori Emerson, "My Digital Dickinson," *The Emily Dickinson Journal* 2 (2008): 71.
25. Ibid., 71.
26. Hayles, 2008, 64.
27. Søren Overgaard, *Wittgenstein and Other Minds: Rethinking Subjectivity and Intersubjectivity with Wittgenstein, Levinas, and Husserl* (New York, NY: Routledge, 2007), 9.
28. Wittgenstein, 1953, § 371.
29. Ibid., § 372.
30. Matthew G. Kirschenbaum, *Mechanisms: New Media and the Forensic Imagination* (Cambridge, MA: The MIT Press, 2008), 168.
31. Ibid., 172.
32. Ibid., 174.
33. Michael Mateas, "Expressive AI: A Hybrid Art and Science Practice," *Leonardo* 34, No. 2 (April 2001): 150.
34. Ibid., 149–150.
35. Wittgenstein, 1953, § 445.
36. Ludwig Wittgenstein, *The Blue and Brown Books* (New York, NY: Harper, 1960), 13.
37. Hayles, 2008, 119.
38. Ibid., 47.
39. See Herbert A. Simon, *The Sciences of the Artificial* (Cambridge, MA: The MIT Press, 1969).
40. Brooks, 1991, 148–149.
41. Hayles, 2008, 64.
42. Noah Wardrip-Fruin, *Expressive Processing: Digital Fictions, Computer Games, and Software Studies* (Cambridge, MA: The MIT Press, 2009), 3.
43. Ludwig Wittgenstein, *Remarks on the Philosophy of Psychology,* eds. G.E.M. Anscombe and G. H. von Wright (Chicago, IL: The University of Chicago Press, 1988), § 616.
44. Ludwig Wittgenstein, *On Certainty*, eds. G. E. M. Anscombe, and G. H. von Wright, trans. D. Paul, and G.E.M. Anscombe (New York, NY: Harper, 1972), § 321.
45. Overgaard, 2007, i.
46. See Chantal Bax, "Inner and Outer, Self and Other: Wittgenstein on Subjectivity," *Analysis and Metaphysics* 6, No.1 (2007): 322–339.
47. Severin Schroeder, "The Coded-Message Model of Literature," in *Wittgenstein, Theory and the Arts*, eds. R. Allen & M. Turvey (London, UK: Routledge, 2001), 210.
48. Ibid., 222.
49. Ibid., 224.
50. Wittgenstein, 1960, 166.
51. Schroeder, 2001, 223.
52. Hayles, 2008, 108.
53. Wittgenstein, 1953, § 23.

ISSN 1071-4391 ISBN 978-1-906897-16-1

ISSN 1071-4391 ISBN 978-1-906897-16-1