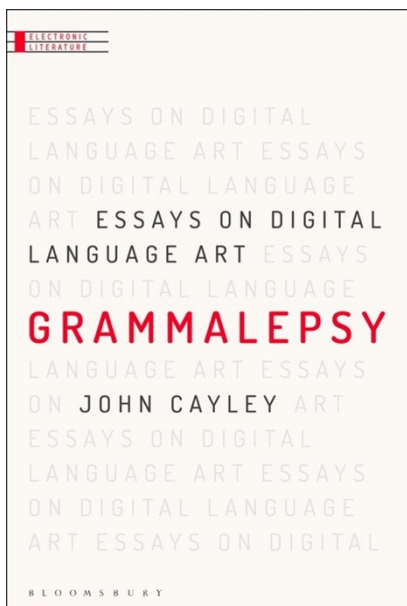


Decoding language

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I. GRAMMALEPSIS

“It was only a few months prior to the gathering of these chapters that I discovered that I had grammalepsy.” (1) The opening words of John Cayley's *Grammalepsy*¹ are a straight shot into the core of his work, a work in which theory and practice mutually feed each other based on experimentation as a mode of inquiry. John Cayley has been consistently aiming at the hard and still vastly unanswered questions posed by the study of language, and the notion of grammalepsy belongs to the realm of the *what*: it is “constitutive for linguistic ontology”, it is “a condition of

¹ Bloomsbury provides an open access edition of *Grammalepsy* for online reading, available at <https://www.bloomsburycollections.com/book/grammalepsy-essays-on-digital-language-art/>

language animals”, “a symptom of our ‘having’ language” (*ibidem*). Grammalepsy is the process by which we acknowledge that a given sound, gesture of written mark is language, with a meaning, an intent, a power to affect. It “helps us to locate and specify the horizons of language” (3), the thin contour that defines our recognition of language as such. Crucial to it is the fact that it “requires interaction” (1), the focus being on interpretation, because language only arises as something that exists after the moment it is recognized. Or in other words: “language comes into being as a function of reading.” (2) Before that moment, it remains unheard, unread, ungrasped: “language as such only comes into being when we succeed in grammalepsis, when our gestures become readable – to ourselves and to others” (2) Grammalepsy has to do with discourse, not with language on abstract terms, but language as it happens between people: “Grammalepsy should be read as a condition of shared human life.” (12)

The suffix *-lepis* (from the root *lep-*) means *to take*, or *seize*. “It suggests seizure, sudden seizure, the ‘grasp’ of something that we experience as we encounter elements of language that we can understand” (3). Grammalepsy is linked to a threshold, to the “catastrophic moment” (193) when, for example, “[g]estures made by someone who does not know a natural sign language remain gestures. But once they are grasped within a practice of language, they become, suddenly, something different. They become language.” (3) The same applies to diegetic worlds, which arise at the moment when signs cease to be ambiguous “sets of arbitrary symbolic processes” (193) and suddenly become linguistic generators of the imaginary. One of John Cayley’s most known artistic works, *Translation* (2004/2019), allows us to acknowledge grammalepsy in the sense that it focuses on the becoming of language: sentences emerge and submerge from the surface of a screen, becoming readable and unreadable as they transform through different idioms and states. Even if grammaleptic reading wasn’t at the core of this work’s theoretical motivations, *Translation*, as well as other works, expresses a particular kind of attention to that threshold between illegibility and language.

One important aspect of the concept of grammalepsy is how it helps us to think through the ontological status of language, particularly when comparing it to artificially generated language. “Within the computational order, traces of actual language and tokens of synthetic or virtual language are materially indistinguishable, but this does not mean that they are the same thing.” (5) In itself, synthetic language is computational code, composed to be decoded by other sets of code, hence, “such algorithmic artifacts *do not exist as constituents of language*.” (186) And whenever verbal language, be it

human or artificial, is processed by algorithmic agents it isn't of course language either, but strings of characters statistically organized with no correspondence to referents. So, if computer generated language fails to be grammatically read, it fails to qualify as language. And if we accept that automatically generated language is language only in so far as it is read as such, then we also have to accept an ethics for creative digital writing: "perform human readability, or risk having failed as a maker." (186) If it isn't read by language animals, it remains a purely formal, abstract system which computes but doesn't get to be materialized into the world, remaining a set of mental structures. Grammalepsy. What's the point of naming it? There are at least three relevant reasons: one is the pure acknowledgment of this almost transparent process, providing a closer look to semiosis. Another is that it provides an approximation to language's ontology. Finally, naming grammalepsy implies thinking through the ways in which it applies to literary theory, practice and experience. This book is about those implications.

II. LITERATURE

If the names we give to things influence how we see them, it is only fair to ask what they mean. One of the questions John Cayley raises in his book in what regards naming things is the pertinence of the designation "electronic literature", because "we never had 'steam literature', or 'electric literature', or 'telephonic' or 'televisual literature'" (148). One problem with the use of terms such as electronic and digital literature is that they "imply that there is a 'variety', (...) or, perhaps, even a 'genre' of 'literature' (problematic itself [...]) that is distinguished by the characteristics of the material from which it is made or the media in which it is realized, rather than the procedures of its generation." (151) But there isn't necessarily a common framework within the variety of literary practices with digitally inscribed language. Previous discussions² have drawn attention to the ways in which the term 'electronic literature' highlights the medium, as if language was mere aesthetic content. John Cayley argues that the effort to understand how the tools reconfigure the literary implies taking a much closer look to the literary *forms* in 'electronic literature', in order to identify the "persistent forms, literary forms, forms of writing, which will then allow us to appreciate 'the literary' in 'electronic literature'" (154). John Cayley never refers to his work as electronic or digital or generative poetry, but speaks instead of digital language art. His focus is not on 'the digital' in general terms, but on an expressive take on the computation of language.

² See Baldwin, 2015.

One thing that characterizes John Cayley's artistic work is an integral "content-as-form" (31) formula: ideas are coded into programs and these reveal or translate themselves as procedural linguistic forms while running on a computational device. These coded ideas function as questions, as ways of experimental inquiry, a creative practice in which "the adjective 'experimental' takes on a sense closer to that which it carries in the laboratory" (71). Cayley's first artistic experiments with language and computation began in the 1970s as a result from the meeting of his expertise in Chinese poetry with programming. One of these works, *wine-flying: non-linear explorations of a classical Chinese quatrain*, explores the rhythmical notation of a written poem through the affordances of the computer. This led to "a testing and re-testing of the hypothesis that such texts seem to retain the tenor of their meaning creation even after having been subjected to such transformations" (18). Around the same time, Portuguese author Ana Hatherly (an artist and theorist who has very substantially contributed to the study of non-computational procedural poetics) made a very similar proposition, arguing that "at the level of meaning, a poetic text has such functional integrity and is constituted by such autonomous elements that it supports without loss the most systematic fragmentations" (Hatherly, 1970: 236). Other early works by John Cayley focus on hyper and cybertextual structures, drawing on the productivity of metaphors such as the *Indra's Net*, described as "a network of jewels that not only reflect the images in every other jewel, but also the multiple images in the others" (20), or the hologram, understood as the result of the superposition of different light waves or, in this case, strings of linguistic material. These early experiments already express John Cayley's formalist approach to poetics as they investigate what happens to a text, in terms of its phrase and word structures, when it is subjected to interference through the creative use of code, and also in terms of how it is visually read. In both cases, the emphasis is on structures and processes, on language's plasticity and behavior in different environments, and on the aesthetic implications of writing under constraint.

III. CODING LITERATURE

Code and coding take a central place in discussions of digital art. John Cayley recalls the words of poet and programmer Jim Rosenberg, who stated that "[o]ne constructs with and against and among the code. But most of all one constructs! Agents should be used to enrich the construction, not to do away with the need for it." (37) Acknowledging these agents is constitutive of the act of experiencing computational art, because the code is part of the artistic artifact, but this statement also applies to writing, because code is not

simply a tool but a tool with a certain degree of autonomy, which implies that the writer-programmer must weight degrees of agency and decide who is in charge of the text: him/herself or the proxy³ “writer”. This is central to a (post)humanist perspective on constructing as *poiesis*, code being a means for augmenting⁴ our creativity and agency, instead of a replacement for them. But, as a sign of our times, software engineers today are trying to automate the act of programming⁵, which is illuminating of contemporary computational culture’s understanding of what should be automated, as well as of itself.

The role of the programmer “is much more than that of facilitator/technician” (71) because, once the programmer enters the scene of writing, s/he shifts the writer-text-reader circle: “If, through hypertext or any other delivery technology, literary objects are construed as ‘open’, then this permeability of writer/programmer is extended to reader/programmer, as readers configure or radically change the literary objects of their attention.” (72) What is at stake is not interactivity, but the reader’s ability to manipulate textual structures, inflecting the readable text (to *inflect*: one of those words I don’t usually read and which are very present in John Cayley’s careful use of language). Regarding interactivity, Cayley points to what seems to be a confusion in the digital arts (literature included): contrarily to interactivity, interaction “implies reciprocity and mutual influence (...). It is too rich a term to be ascribed for the programmed stimulus and response, or configurational controls which are currently offered over the limited channels of today’s electronic publishing systems” (73). Hence the proposal of the term *transactional* instead of “interactive”, “as in the phrase “a simple transaction” or the sense of transaction as a “piece of business”” (*ibidem*).

Drawing on what Marjorie Perloff has called “the Reveal Code key” aesthetics, to refer to the ways in which poetry aims to reveal all that is hidden on and by systems, and how that search reveals the potentialities of composition, John Cayley discusses the status of code within ‘code-work’: characterized by the intermingling of code and language, this “ambiguous textual

3 Philip Nickel proposed the term “proxy speech” to designate artificial speech acts. See Nickel, 2013.

4 In 1996, Portuguese author and artist Pedro Barbosa discussed this same problem and considered computation to be a “telescope of complexity” rather than a substitute for the writer. Barbosa wrote his first programs in 1976 and in 1977 he published the results in *Autopoemas*. Barbosa’s work was shown at the ELO’2015 Conference in Bergen and at the ELO’2017 Conference in Porto.

5 “Machine learning research has advanced in multiple aspects, including model structures and learning methods. The effort to automate such research, known as AutoML, has also made significant progress. However, this progress has largely focused on the architecture of neural networks [...]. Our goal is to show that AutoML can go further: it is possible today to automatically discover complete machine learning algorithms just using basic mathematical operations as building blocks.” in: “AutoML-Zero: Evolving Machine Learning Algorithms From Scratch”. Real, Esteban *et al.*, 6 Mar 2020. Accepted for publication at the 37th International Conference on Machine Learning (ICML 2020). Accessed 14.07.2020: <https://arxiv.org/abs/2003.03384>

address has become a valorized aesthetic and even a political principle" (56), seen as "a revelation of underlying, perhaps even concealed, structures of control" (57). But, Cayley asks, "what code does it reveal? (...) Is it, indeed, still code at all?" (59), because it "has ceased to be operative (...). The code-as-text is more in the way of decoration or rhetorical flourish" (60). In order to perform as a generator, or as a tool for computational textual manipulation and creation, code "must, typically, be a distinct part of the global textual system; it must be possible to recompile the codes as operative procedures, as aspects of live-art textual practice. The code is not the text." (66)

Crucial in regards to the procedural dynamics of computation and its impacts on textuality is Katherine Hayles's concept of the "flickering signifier". As John Cayley notes, Hayles's description of digitally mediated language is conceptually close to Friedrich Kittler, in the sense that both their analyses go down to the level of electricity's binary differentials, considered as a fundamental change on what materially constitutes writing. These perspectives are characterized by a reductionism that is fundamental for understanding material phenomena, but they fall short in addressing symbolic artifacts and processes: "I know that the screens of text that I read are being ceaselessly refreshed with, perhaps, some subliminal perceptual flickering of their signifiers, but I do not necessarily read this process as part of what is being said to me." (98) For John Cayley, addressing digital language and textuality implies addressing the code's performativity and effective power, as well as its complexity and opacity: "The screen (...) must be viewed as a monitor for complex processes, processes which, if they are linguistic, will be textual and symbolic, with a specific materiality as such. We must be able to see and read what the screen presents rather than recasting before our eyes as the emulation of a 'transparent' medium." (81)

This closely relates to another important concept proposed by John Cayley to address digital textuality: the notion of "writing on complex surfaces" (79). *overboard* is a series of time-based works that exemplify such processes. In *overboard*, the generated texts exist in three different states, described as "floating, sinking, or surfacing" (87), which determine the text's legibility. It presents the text as a "complex, temporal object" (87), time being a constitutive dimension of computational reading and scripting processes which inflect the writing and reading surfaces of what would otherwise be a two dimensional typographical, flat text. Spatial depth was also explored in experiments developed with students at Brown University's Cave (Cave automatic virtual environment): "whatever the modeled spatial arrangement of the graphic elements may be, when they become readable as language, their spatial relations collapse for the purposes of taking up existence on the singular surface of language. Or, in other words, through grammalepsis, as we

read what they say, these forms *become* language and allow us to enter the linguistic dimension of experience.” (10)

IV. WRITING AND THE NET

Along his long and rich career as a thinker and digital language artist, other questions regarding language and mediation were subject of John Cayley’s attention. Of central importance within these is the subjection of language and technology to contemporary cultural economy. Along with his collaborator Daniel C. Howe, and as part of the Natural Language Liberation Front⁶, John Cayley developed an experiment of writing with Google, born out of sheer curiosity: “How many words would I have to add, composing my syntagmatic sequences, before they were not found in the corpus of language to which the Google search engine gives me access, before they were, perhaps, original sequences?” (133) Just to make it clear: “I’m not casting a faux-puerile, post-everything, absurdist net over the net using the net (...). I’m not composing searches in order to find the language for what I am making. I’ve got my language already, one way or another. I just want to know whether it’s found or it isn’t.” (134) This procedure is called “writing to be found” and the idea came from the notion of ‘edge of chaos’, a transitional threshold between order and disorder. The “writing to be found” procedure was applied to the words of one of the most fiercely copy-righted literary authors: Samuel Beckett. From the search process resulted a curious form of citation: Beckett’s *How It Is* was entirely reproduced in such a way that the “found text” (the longest possible word sequences of Beckett’s text, retrieved from different web pages) became something other than Beckett’s text, it became something made from the commons of language, scattered around the net through the “writing to be found” citation procedure. The result is *How It Is in Common Tongues*, presented in a series of public performances and published in book form in 2012. *HIICT* is one of the manifestations of *The Readers Project*, “a collection of distributed, performative, quasi-autonomous poetic ‘readers’ – active, procedural entities with distinct reading behaviors and strategies. We release these readers onto inscribed surfaces that are explicitly or implicitly, visibly or invisibly, constituted by their texts.”⁷ These *Readers* materialize speculative imaginations of algorithmic readings. We read the ways in which they read and, in their alienness, they exemplify how a post-human writing may happen. For that reason, they can be understood both “as poetry or as poetics” (144) since, more than

⁶ See <http://nllf.net/>

⁷ <http://thereadersproject.org/index.html#Overview>

being texts in themselves, they are proposals for what a theory of digital writing and reading may be.

In the “writing with Google” procedures, John Cayley and Daniel C. Howe’s algorithms search through language on the internet, which is, ultimately, what Google indexing does. And since Google is the great gateway into the internet, Cayley and Howe’s algorithms end up in a “struggle” (145) with it. Google’s algorithms seem to interpret those searches (both human and artificial) as some form of menace and its subsequent limiting of those searches interferes with the whole process, as in a weird form of algorithmic censorship, or as if the language incorporated by Google’s search algorithms already belonged to Google. Or does it? Google became “our default portal to the default corpus. It’s not yet all writing, but we feel that we are close” (136). Like a container of language, Google provides access to all that corpus while absorbing our writing as well. By instantiating itself through the indexing and encircling of language (information’s primary medium), Google radically reconfigures symbolic production and circulation.

John Cayley notes that “the software giants of a previous era acquired (...) what was already considered investable property. By contrast, the pioneers of the new world, of the network, merely gathered and enclosed the data that we human writers offered up to them from the commons of language” (168). These pioneers acted like cowboys used to do with wild horses and, just like horses facing a fence when it’s already too late to get out, we stay put, quietly producing value as we search, click, write on and for Google. Or, much better said: “The “land” being enclosed is human attention, and the chief symbolic vector of this attention is language use.” (173) John Cayley calls on the work of McKenzie Wark, who suggested the metaphor of “the vector”⁸ to address algorithmic control over whole chains of value⁹. This has serious implications for all writing and reading practices, since “[o]ur reading and writing comes to be, literally, mediated on terms” (170), and whenever a peer terminal agrees to “terms of service”, it ceases to be a peer on the network. So, “vectorialist predominance depends on bringing terms and terminals within an enclosure where as many as possible human readers and writers exchange their terms on terms that allow the once human terms to be harvested for the accumulation of big data.” (169) This is a constitutive aspect of networked digital mediation, including all

8 “a quantity that has magnitude and direction and that is commonly represented by a directed line”. in: <https://www.merriam-webster.com/dictionary/vector>

9 “A capitalist class owns the means of production, the means of organizing labor. A vectorialist class owns the means of organizing the means of production. The vector has a double form: the form of vector along which information is to be routed (the extensive vector), and the form of the vector along which information can be stored and computed (the intensive vector). A vectorialist class also owns and controls the production process through patents, copyrights, brands, trademarks, proprietary logistical processes, and the like.” (Wark, 2019: 114–115). See also Wark 2004.

digital literature. Scholars like to talk about literature's materiality: well, this is as material as it can get. And in what concerns digital literature creators, "[i]f the medium of literary art has significantly migrated to the network, where it is gathered, channeled and filtered (...) new practices of reading and writing with and against such services must surely arise and go beyond any uses that are constrained by the terms of service or use" (175). Given the ongoing transformations of the cultural field, similar in scope to or even greater than the invention of the typographic machine, we are in a place where there is a lot to negotiate, a lot to liberate and limits to expand so that the condition of possibility for digital writing and reading may be closer to the unconditioned forms of writing and reading on flat surfaces.

V. MEDIUM AGNOSTICISM

The internet has become "*the world of reading and writing*" (166), it is a surface *for* writing and, quite remarkably in what concerns writers, it is also constituted *by* writing. John Cayley (229) recalls Jacques Derrida's words on the relationship between writing and the digital sphere: "Whether it has essential limits or not, the entire field covered by the cybernetic *program* will be the field of writing. If the theory of cybernetics is by itself to oust all metaphysical concepts (...) which until recently served to separate the machine from man, it must conserve the notion of writing, trace, gramme [written mark], or grapheme, until its own historical-metaphysical character is also exposed." (Derrida 1997: 9) This acknowledgment of the written dimension of the digital world is not an understanding of writing as text *per se*, but rather as inscription and symbolic practice. More specifically, it points to the "generality of programming" (49), "programming" being used in the sense of "prior/provisional writing" which, for John Cayley, "should be seen as a preferred model of Writing in any media, across the board" (49), because Writing, for Cayley, means "linguistic inscription on *any* surface" (49).

Hence, there's more to inscription than writing (without the capital W). Derrida's concept of arche-writing refers to an understanding of inscription as a language function that transcends and precedes the differences between speaking or writing. For John Cayley, this relates to one of his most important arguments: that "language is media agnostic" (ix). Being a discrete system, language unfolds into inscription, as if inscription was language's first step towards the outside of our heads. Language scripts itself on the world independently of being spoken or written. One can also think of Chomsky's understanding of language as a two-fold system, constituted by an internal interface that linguistically computes thoughts and an exter-

nal interface that materializes and communicates those linguistically constituted thoughts. So, speaking, writing, gesturing: language doesn't care what substantial form it assumes, as long as we keep on scripting ourselves onto the world.

Language's medium agnosticism is at the heart of yet another important concept proposed by John Cayley: aurature. Computational aural literature. Not a literature of orality, which scripts or inscribes itself through speaking voices, but a literature of aurality, which scripts or inscribes itself through sounds¹⁰. In aurality, reading happens by means of listening to sounds that become perceptible as language. Apple's Siri, Amazon's Alexa, Google's Cortana. These systems don't utter voices, but sounds. Voices speak language, these sounds speak code, code that generates synthetic speech acts which, when grammaleptically read, become language. We already have the tools for making aural literature, "we can compose in aurality. We can begin to make an aurature that is formally, philosophically, ontologically identical with the literature we have inherited" (220). And we already have, at least, one piece of aurature: Cayley's *The Listeners* (2015). This performative literary work is based on the programming of a skill for Alexa, Amazon's voice assistant, whose speech intertextually relates to the homonymous poem by Walter de la Mare. *The Listeners* explores the possibilities of a literary listening, creating a new kind of attention to programmed language. It subverts the instrumentality of human-computer interfaces by giving Alexa a poetic voice that is not intended to provide information, but to explore different dimensions of language: as a medium for expression, demonstrating how aural digital artifacts may be read as literary, and as meta-data, highlighting how the political economy of digital media is the material ground from which contemporary modes of control are shaped.

VI. PHARMACOLOGICAL RECONFIGURATION

For a long time, we have read by means of listening. Moreover, "we are genetically predisposed to *have language* as a function of traits that operate in aurality. If we have adopted visuality as the support medium for particular linguistic practices of what we call writing, this is merely learned, a function of civilization" (215). Indeed, writing is at the core of human civilization, it has digitized and encoded cultural production since c. 1700-1500 BCE, enabling us to copy, edit, store, share information. But humans' grammaleptic

¹⁰ "An oral tradition is one that is conveyed primarily by speech (as opposed to writing, for example), whereas an aural tradition is one that is conveyed primarily by sounds (as opposed to images, for instance)." *The American Heritage Guide to Contemporary Usage and Style*. Houghton Mifflin, 2005.

Accessed 14.07.2020: https://archive.org/details/americanheritage0000unse_e4c4

abilities radically precede both writing and civilization: “our civilizations are nothing when compared with the eventualities of biological evolution that gave us – that allowed us to “have” – language” (2-3). When writing arrived to Greece, Plato considered it “a pharmakon, poisonous to the practices of language –particularly language as human embodied praxis and cultural memory. And yet it (...) was rendered therapeutic by civilization” (215). As a prosthetic memory that enabled the inscription of more or less perennial marks on a flat surface, writing created the archive, history, the law. It became “*the privileged literal index of logocentric presence and authority*” (216).

For Bernard Stiegler, digital technology is to be rendered therapeutic by its appropriation, transforming a top-down into a bottom-up structure. For John Cayley, this approach translates as a “reconfigurationist poetics”, a poetics engaged in making aesthetic artifacts that are “able to reconfigure cultural practice itself, redirecting it away from vectors of carelessness, greed and stupidity, toward human carefulness and careful art.” (210) Cayley explicitly calls on digital artists to acknowledge the economic and political ecosystem of digital technologies and of the symbolic practices they mediate, and to turn their attention towards their possibilities as creators within a digital medium, not only in sense of the things they are allowed or not to do, but also in the sense of how they may actively intervene in the recuperation of digital technology, “to participate in, to guide, and to enhance cultural and social developments that will otherwise proceed without their contributions” (220), which implies raising the stakes for digital literature.

VII. GRAMMALEPSY, AGAIN AND BECAUSE

The ongoing digital reconfiguration of language raises questions regarding its ontological status, and its situation within digital mediation and textuality. John Cayley’s book solidly addresses these issues through a central operative concept – grammalepsy –, which unfolds towards the notion of language’s medium-agnosticism, which in turn opens the door for further inquiry on modes of inscription and readability, including new forms of literature as is the case of aurature.

John Cayley’s writing is difficult. I must make an effort to test different points of view on the words I read, which are few and clean-cut, carefully chosen and precise. Cayley’s writing is difficult because it addresses particularly difficult questions in a detailed, intricate and synthetical fashion. His writing doesn’t facilitate or make concessions, nor does it make use of complicated jargon. It is simply precise, which is a lot more difficult to achieve, and that precision results from a careful weighting of the terms that we have

and of those that we can invent to describe the relationships between computation and literature. Inventing, or discovering a new word, especially in critical writing, is not something one does out of language games. Rather, it is a way to designate and think through a new thing or idea. And that is not that common, after all. For all those interested in language and digital mediation, *Grammalepsy* is an indispensable book, it is a serious, heavy-weight contribution to a field that is still learning its ways on our digital world. Lost among expanding fields of human and artificial language, readers and writers will find, in *Grammalepsy*, crucial clues and guidelines for a critical understanding of language as a human facility and as aesthetic practice.

John Cayley is one of the most important thinkers of the digitization of language, drawing from his own experience in programmable poetry. Offering a selected, revised and structured version of essays that span over a period of twenty years, his book revisits crucial authors and concepts within literary theory, discussing them in the light of digital mediation, and establishes dialogues with important scholars in the field of digital aesthetics. This book also offers readings of procedural aesthetic works, including digital literature, by a wide range of artists. *Grammalepsy* is a fundamental book for any collection dedicated to digital language and literature. It is a treaty on digital poetics: a rigorous reflection on the whats, the hows and whys of digital literary practice, relentlessly digging through the relationships between language, code, inscription, writing, reading, mediation, and aesthetics. Separating, comparing, redoing, unveiling. In sum: making theory.

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