POST DIGITAL PUBLISHING

- a broad notion of digital publishing
- the death of paper (which never happened)
- the mutation of paper: material paper in imaterial times
- the end of paper: can anything actually replace the printed page?
- web to print: *the library of the printed web*

ARCHIVE INDEX GALLERY (ABOUT) THE PROJECT

THINKING THE POSTDIGITAL HYBRID

Publishing Archive

HYBRID PUBLICATION

- post-digital publishing, hybrid and processual objects in print
- projects

ARCHIVE INDEX GALLERY (ABOUT) THE PROJECT

THINKING THE

THINKING THE POSTDIGITAL HYBRID

Publishing Archive

ARCHIVE (PUBLISHING ARCHIVE)

the archive

the archive under the technical conditions of computational media

network culture articulates as printed artifact

THINKING THE POSTDIGITAL HYBRID: *PUBLISHING ARCHIVE*

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ABSTRACT /

PostDigital describes the messy state of media, arts and design after digital information technology, merging the application of network cultural experimentation into analog technologies, allowing alternative media cultural perspectives to emerge. As a form of practical exploration and research, artists and designers choose media through analog material properties or digital processing.

“Terms like «post-internet» and «postdigital» are associated with an artistic engagement with technology that is not necessarily preoccupied with the digital as such, but with life after and in the digital, working across old and new, digital and analog.” [1] “The post-digital becomes a field for material but also imaginary, alternative practices that affect the sense of the contemporary.” [1], conflating the notions of past and future, now and then, material and immaterial.

This project explores postdigital aesthetics as reflected in contemporary publishing practices that take on a hybrid character. It addresses how “contemporary experiments are moving things a bit further, exploiting the combination of hardware and software to produce printed content that also embeds results from networked processes and thus getting closer to a true ‘form’. This ‘form’ should define at the technical and aesthetic levels the hybrid as a new type of publication, seamlessly integrating the two worlds (print and digital) up to the point that despite its appearance and interface, they would be inextricably tied together through the content.” [2]

This print publication approaches today’s post-digital publishing archives and practices — that move across and beyond the analog and the digital, the print and the web. It starts by contextualizing the term PostDigital and how it blurs

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[1] Bishop, Ryan; Gansing, Kristoffer; and Parikka, Jussi (2016) . “Across and Beyond: Post-digital Practices, Concepts, and Institutions” . In a review of Ryan Bishop, Kristoffer Gansing, Jussi Parikka, and Elvia Wilk (Eds.) . *Across & Beyond – A Transmediale Teader on Post-digital Practices, Concepts, and Institutions* . (pp.11-25) . Sternberg

[2] Ludovico, Alessandro (2014) . “Post-Digital Publishing, Hybrid and Processual Objects in Print” . In Christian Ulrik Andersen and Geoff Cox . *A Peer-Reviewed Journal About: Post- Digital Research* . Volume 3, Issue 1 . (pp. 78-85) . Digital Aesthetics Research Centre, Aarhus University

the boundaries between what is digital and what is analog. It addresses an understanding of the internet as a distribution platform and, more specifically, explores PostDigital Publishing as a web-to-print (Paul Soulellis). Finally, it focuses on Hybrid Publications as «printed products that incorporate content obtained through specific software strategies, products which seamlessly integrate the medium specific characteristics with digital processes (Alessandro Ludovico)». The project also addresses how Archives can have an important role in the preservation and visibility of hybrid publishing.

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Berry, David M. (2015) . **"The Postdigital Constellation"** . In Berry, David M. and Michael Dieter (Eds.) . *Postdigital Aesthetics: Art, Computation and Design* . (pp. 44-57) . Hampshire; New York: Palgrave Macmillan.

1. POST DIGITAL /

What Is 'Post-digital'?
Florian Cramer

post-digital: a term that sucks but is useful

DISENCHANTMENT WITH 'DIGITAL'

I was first introduced to the term 'post-digital' in 2007 by my then-student Marc Chia — now Tara Transitory. My first reflex was to dismiss the whole concept as irrelevant in an age of cultural, social and economic upheavals driven to a large extent by computational digital technology. Today, in the age of ubiquitous mobile devices, drone wars and the gargantuan data operations of the NSA, Google and other global players, the term may seem even more questionable than it did in 2007: as either a sign of ignorance of our contemporary reality, or else of some deliberate Thoreauvian-Luddite withdrawal from this reality. More pragmatically,

the term 'post- digital' can be used to describe either a contemporary disenchantment with digital information systems and media gadgets, or a period in which our fascination with these systems and gadgets has become historical

— just like the dot-com age ultimately became historical in the 2013 novels of Thomas Pynchon and Dave Eggers. After Edward Snowden's disclosures of the NSA's all-pervasive digital surveillance systems, this disenchantment has quickly grown from a niche 'hipster' phenomenon to a mainstream position — one which is likely to have a serious impact on all cultural and business practices based on networked electronic devices and Internet services.

REVIVAL OF 'OLD' MEDIA

While a Thoreauvian-Luddite digital withdrawal may seem a tempting option for many, it is fundamentally a naïve position, particularly in an age when even the availability of natural resources depends on global computational logistics, and intelligence agencies such as the NSA intercept paper mail as well as digital communications. In the context of the arts, such a withdrawal seems little more than a rerun of the 19th-century Arts and Crafts movement, with its programme of handmade production as a means of resistance to encroaching industrialisation. Such (romanticist) attitudes undeniably play an important role in today's renaissance of artists' printmaking, handmade film labs, limited vinyl editions, the rebirth of the audio cassette, mechanical typewriters, analog cameras and analog synthesisers. An empirical study conducted by our research centre Creating 010 in Rotterdam among Bachelor students from

most of the art schools in the Netherlands indicated that contemporary young artists and designers clearly prefer working with non-electronic media: given the choice, some 70% of them "would rather design a poster than a website" (Van Meer, 14). In the Netherlands at least, education programmes for digital communication design have almost completely shifted from art academies to engineering schools, while digital media are often dismissed as commercial and mainstream by art students (Van Meer, 5). Should we in turn dismiss their position as romanticist and neo-Luddite?

post-what?

POST-DIGITAL = POSTCOLONIAL;
POST- DIGITAL ≠ POST-HISTOIRE

On closer inspection however, the dichotomy between digital big data and neo-analog do-it-yourself (DIY) is really not so clear-cut. Accordingly, 'post-digital' is arguably more than just a sloppy descriptor for a contemporary (and possibly nostalgic) cultural trend. It is an objective fact that the age in which we now live is not a post-digital age, neither in terms of technological developments — with no end in sight to the trend towards further digitisation and computerisation — nor from a historico-philosophical perspective. Regarding the latter, Cox offers a valid critique of the "periodising logic" embedded in the term 'post-digital', which places it in the dubious company of other historico-philosophical 'post' —isms, from post-modernism to post-histoire.

However, 'post-digital' can be defined more pragmatically and meaningfully within popular cultural and colloquial frames of reference. This applies to the prefix 'post' as well as the notion of 'digital'. The prefix 'post' should not be understood here in the same sense as postmodernism and post-histoire, but rather in the sense of post-punk (a continuation of punk culture in ways which are somehow still punk, yet also beyond punk); post-communism (as the ongoing social-political reality in former Eastern Bloc countries); post-feminism (as a critically revised continuation of feminism, with blurry boundaries with 'traditional', unprefixed feminism); postcolonialism (see next paragraph); and, to a lesser extent, post-apocalyptic (a world in which the apocalypse is not over, but has progressed from a discrete breaking point to an ongoing condition.

None of these terms — post-punk, post-communism, post-feminism, post-colonialism, post-apocalyptic — can be understood in a purely Hegelian sense of an inevitable linear progression of cultural and intellectual history. Rather, they describe more subtle cultural shifts and ongoing mutations. Postcolonialism does not in any way mean an end of colonialism (akin to Hegel's and Fukuyama's "end of history"), but rather its mutation into new power structures, less obvious but no less pervasive, which have a profound and lasting impact on languages and cultures, and most significantly continue to govern geopolitics and global production chains. In this sense, the post-digital condition is a post-apocalyptic one: the state of affairs after the initial upheaval caused by the computerisation and global digital networking of communication, technical infrastructures, markets and geopolitics.

digression: what is digital, what is analog?

DIGITAL ≠ BINARY; DIGITAL ≠ ELECTRONIC

From a strictly technological or scientific point of view, Cascone's use of the word 'digital' was inaccurate. This also applies to most of what is commonly known as 'digital art', 'digital media' and 'digital humanities'. Something can very well be 'digital' without being electronic, and without involving binary zeroes and ones. It does not even have to be related in any way to electronic computers or any other kind of computational device.

Conversely, 'analog' does not necessarily mean non-computational or pre-computational. There are also analog computers. Using water and two measuring cups to compute additions and subtractions — of quantities that can't be counted exactly — is a simple example of analog computing.

'Digital' simply means that something is divided into discrete, countable units — countable using whatever system one chooses, whether zeroes and ones, decimal numbers, tally marks on a scrap of paper, or the fingers (digits) of one's hand — which is where the word 'digital' comes from in the first place; in French, for example, the word is 'numérique'. Consequently, the Roman alphabet is a digital system; the movable types of Gutenberg's printing press constitute a digital system; the keys of a piano are a digital system; Western musical notation is mostly digital, with the exception of instructions with non-discrete values such as adagio, piano, forte, legato, portamento,

tremolo and glissando. Floor mosaics made of monochrome tiles are digitally composed images. As all these examples demonstrate, 'digital' information never exists in a perfect form, but is instead an idealised abstraction of physical matter which, by its material nature and the laws of physics, has chaotic properties and often ambiguous states. [1]

The hipster's mechanical typewriter, with its discrete set of letters, numbers and punctuation marks, is therefore a 'digital' system as defined by information science and analytic philosophy (Goodman, 161). However, it is also 'analog' in the colloquial sense of the word. This is also the underlying connotation in the meme image, with its mocking of 'hipster' retro culture. An art curator, on the other hand, might consider the typewriter a 'post-digital' medium.

ANALOG = UNDIVIDED;
ANALOG ≠ NON-COMPUTATIONAL

Conversely, 'analog' means that the information has not been chopped up into discrete, countable units, but instead consists of one or more signals which vary on a continuous scale, such as a sound wave, a light wave, a magnetic field (for example on an audio tape, but also on a computer hard disk), the flow of electricity in any circuit including a computer chip, or a gradual transition between colours, for example in blended paint. (Goodman, 160) therefore defines analog as "undifferentiated in the extreme" and "the very antithesis of a notational system".

The fingerboard of a violin is analog: it is fretless, and thus undivided and continuous. The fingerboard of a guitar, on the other hand, is digital: it is divided by frets into discrete notes. What is commonly called 'analog' cinema film is actually a digital-analog hybrid: the film emulsion is analog, since its particles are undifferentiated blobs ordered organically and chaotically, and thus not reliably countable in the way that pixels are. The combined frames of the film strip, however, are digital since they are discrete, chopped up and unambiguously countable.

The structure of an analog signal is determined entirely by its correspondence (analogy) with the original physical phenomenon which it mimics. In the

[1] Even the piano (if considered a medium) is digital only to the degree that its keys implement abstractions of its analog continuous strings.

case of the photographic emulsion, the distribution of the otherwise chaotic particles corresponds to the distribution of light rays which make up an image visible to the human eye. On the audio tape, the fluctuations in magnetisation of the otherwise chaotic iron or chrome particles correspond to fluctuations in the sound wave which it reproduces.

However, the concept of 'post-digital' as defined by Cascone ignored such technical-scientific definitions of 'analog' and 'digital' in favour of a purely colloquial understanding of these terms.

POST-DIGITAL =
AGAINST THE UNIVERSAL MACHINE

Proponents of 'post-digital' attitudes may reject digital technology as either sterile high tech or low-fidelity trash. In both cases, they dismiss the idea of digital processing as the sole universal all-purpose form of information processing. Consequently, they also dismiss the notion of the computer as the universal machine, and the notion of digital computational devices as all-purpose media.

Prior to its broad application in audiovisual signal processing and as the core engine of mass-media consumer technology, computation had been used primarily as a means of audiovisual composition. For example, Philips ran a studio for contemporary electronic music in the 1950s, before co-developing the audio CD in the early 1980s. By this time, audiovisual computing had shifted from being primarily a means of production, to a means of reproduction. Conversely, Cascone's 'post-digital' resistance to digital high-tech reproduction echoed older forms of resistance to formalist, mathematically-driven narratives of progress in music production and composition — particularly the opposition to serialist composition in 20th century contemporary music, which began with John Cage, continued with the early minimal music of La Monte Young and Terry Riley, and was further developed by improvisation/composition collectives such as AMM, Musica Elettronica Viva and Cornelius Cardew's Scratch Orchestra. After all, the serialism of Stockhausen, Boulez and their contemporaries was 'digital' in the most literal sense of the word: it broke down all parameters of musical composition into computable values which could then be processed by means of numerical transformations.

Yet most serialist music was not electronic, but composed with pen and paper and performed by orchestras. This demonstrates once again a crucial issue: unlike the colloquial meaning of the term 'digital' as commonly used in the arts and humanities, the technical-scientific notion of 'digital' can,

paradoxically enough, be used to describe devices which would be considered 'analog' or 'post-digital' in the arts and humanities.

what, then, is 'post-digital'?

POST-DIGITAL = POST-DIGITISATION

Returning to Cascone and Andrews, but also to post-punk, postcolonialism and Mad Max,

the term 'post-digital' in its simplest sense describes the messy state of media, arts and design after their digitisation (or at least the digitisation of crucial aspects of the channels through which they are communicated). Sentiments of disenchantment and scepticism may also be part of the equation, though this need not necessarily be the case — sometimes, 'post-digital' can in fact mean the exact opposite.

Contemporary visual art, for example, is only slowly starting to accept practitioners of net art as regular contemporary artists — and then again, preferably those like Cory Arcangel whose work is white cube — compatible. Yet its discourse and networking practices have been profoundly transformed by digital media such as the e-flux mailing list, art blogs and the electronic e-flux journal. In terms of circulation, power and influence, these media have largely superseded printed art periodicals, at least as far as the art system's in-crowd of artists and curators is concerned. Likewise, when printed news-papers shift their emphasis from daily news (which can be found quicker and cheaper on the Internet) to investigative journalism and commentary — like *The Guardian*'s cover-age of the NSA's PRISM programme — they effectively transform themselves into post-digital or post-digitisation media.

POST-DIGITAL = ANTI-'NEW MEDIA'

'Post-digital' thus refers to a state in which the disruption brought upon by digital information technology has already occurred. This can mean, as it did for Cascone, that this technology is no longer perceived as disruptive. Consequently,

'post-digital' stands in direct opposition to the very notion of 'new media'.

At the same time, as its negative mirror image, it exposes — arguably even deconstructs — the latter's hidden teleology: when the term 'post-digital' draws critical reactions focusing on the dubious historico-philosophical connotations of the prefix 'post', one cannot help but wonder about a previous lack of such critical thinking regarding the older (yet no less Hegelian) term 'new media'.

POST-DIGITAL =
HYBRIDS OF 'OLD' AND 'NEW' MEDIA

'Post-digital' describes a perspective on digital information technology which no longer focuses on technical innovation or improvement, but instead rejects the kind of techno-positivist innovation narratives exemplified by media

such as *Wired* magazine, Ray Kurzweil's Google-sponsored 'singularity' movement, and of course Silicon Valley. Consequently,

'post-digital' eradicates the distinction between 'old' and 'new' media, in theory as well as in practice.

Kenneth Goldsmith notes that his students "mix oil paint while Photoshopping and scour flea markets for vintage vinyl while listening to their iPods" (Goldsmith, 226). Working at an art school, I observe the same. Young artists and designers choose media for their own particular material aesthetic qualities (including artefacts), regardless of whether these are a result of analog material properties or of digital processing. Lo-fi imperfections are embraced — the digital glitch and jitter of Cascone's music along with the grain, dust, scratches and hiss in analog reproduction — as a form of practical exploration and research that examines materials through their imperfections and malfunctions. It is a post-digital hacker attitude of taking systems apart and using them in ways which subvert the original intention of the design.

POST-DIGITAL = RETRO?

No doubt, there is a great deal of overlap between on one hand post-digital mimeograph printmaking, audio cassette production, mechanical typewriter experimentation and vinyl DJing, and on the other hand various hipster-retro media trends — including digital simulations of analog lo-fi in popular smart-phone apps such as Instagram, Hipstamatic and iSupr8. But there is a qualitative difference between simply using superficial and stereotypical

ready-made effects, and the thorough discipline and study required to make true 'vintage' media work, driven by a desire for non-formulaic aesthetics.

Still, such practices can only be meaningfully called 'post-digital' when they do not merely revive older media technologies, but functionally repurpose them in relation to digital media technologies: zines that become non-blogs, vinyl as anti-CD, cassette tapes as anti-MP3, analog film as antivideo.

post-digital = 'old' media used like 'new media'

At the same time, new ethical and cultural conventions which became mainstream with Internet communities and Open Source culture are being retroactively applied to the making of non-digital and post-digital media products. A good example of this are collaborative zine conventions, a thriving subculture documented on the blog fanzines.tumblr. com and elsewhere. These events, where people come together to collectively create and exchange zines (i.e. small-circulation, self-published magazines, usually focusing on the maker's cultural and/or political areas of interest), are in fact the exact opposite of the 'golden age' zine cultures of the post-punk 1980s and 1990s, when most zines were the hyper-individualistic product and personality platforms of one single maker. If we were to describe a contemporary zine fair or mimeography community art space using Lev Manovich's *new media* taxonomy of 'Numerical Representation', 'Modularity', 'Automation', 'Variability' and 'Transcoding' (Manovich, The Language of New Media, 27-48), then 'Modularity', 'Variability' and — in a more loosely metaphorical sense — 'Transcoding' would still apply to the contemporary cultures working with these 'old' media. In these cases, the term 'post-digital' usefully describes 'new media' — cultural approaches to working with so-called 'old media'.

technically, there is no such thing as 'digital media' or 'digital aesthetics'

Media, in the technical sense of storage, transmission, computation and display devices, are always analog. The electricity in a computer chip is analog,

as its voltage can have arbitrary, undifferentiated values within a specific range, just like a fretless violin string. Only through filtering can one make a certain sub-range of high voltages correspond to a 'zero' and another sub-range of low voltages to a 'one'. Hardware defects can cause bits to flip, turning zeroes into ones and vice-versa. Also, the sound waves produced by a sound card and a speaker are analog, etc. This is what (Kittler, 81-90) refers to, somewhat opaquely, when he argues that in computing "there is no software". An LCD screen is a hybrid digital-analog system: its display is made of discrete, countable, single pixels, but the light emitted by these pixels can be measured on an analog continuum. Consequently, there is no such thing as digital media, only digital or digitised information: chopped-up numbers, letters, symbols and any other abstracted units, as opposed to continuous, wave-like signals such as physical sounds and visible light. Most 'digital media' devices are in fact analog-to-digital-to-analog converters: an MP3 player with a touchscreen interface for example, takes analog, non-discrete gesture input and translates it into binary control instructions which in turn trigger the computational information processing of a digital file, ultimately decoding it into an analog electrical signal which another analog device, the electromagnetic mechanism of a speaker or headphone, turns into analog sound waves. The same principle applies to almost any so-called digital media device, from a photo or video camera to an unmanned military drone. Our senses can only perceive information in the form of non-discrete signals such as sound or light waves. Therefore, anything aesthetic (in the literal sense of aisthesis, perception) is, by strict technical definition, analog.

DIGITAL = ANALOG = POST-DIGITAL. . .?

A 'digital artwork' based on the strictly technical definition of 'digital' would most likely be considered 'post-digital' or even 'retro analog' by art curators and humanities scholars: for example, stone mosaic floors made from Internet imageboard memes, mechanical typewriter installations, [2] countdown loops running in Super 8 or 16mm film projection, but also computer installations exposing the indexicality of electrical currents running through circuits. The everyday colloquial definition of 'digital' embraces the fiction (or rather: the abstraction) of the disembodied nature of digital information processing. The colloquial use of 'digital' also tends to be metonymical, so that anything

[2] For example (and six years prior to the typewriter hipster meme), Linda Hilfling's contribution to the exhibition MAKEDO at V2_, Rotterdam, June 29-30, 2007.

connected literally or figuratively to computational electronic devices — even a camera tripod — can nowadays be called 'digital'. This notion, mainly cultivated by product marketing and advertising, has been unquestioningly adopted by the 'digital humanities' (as illustrated by the very term 'digital humanities'). On the other hand, 'post-digital' art, design and media — whether or not they should technically be considered post-digital — challenge such uncritical notions of digitality, thus making up for what often amounts to a lack of scrutiny among 'digital media' critics and scholars.

* * *

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1. POST DIGITAL /

The Postdigital Constellation
David M. Berry

postdigital constellation

The postdigital, as an aesthetic, gestures towards a relation produced by digital surfaces in a bewildering number of different places and contexts. This interface-centricity is not necessarily screenic, however, and represents the current emerging asterism that is formed around notions of art, computation and design.

In this conception, the postdigital is not purely a digital formation or artefact — it can also be the concepts, networks and frameworks of digitality that are represented (e.g. voxels, glitch, off-internet media, neo-analogue, 'non-digital' media, post-internet art).

Nonetheless, the interesting aspect is the implicit notion of surfaces as theatres of action and performance — such as through data visualization, interactivity or material design — above and beyond a depth model, which highlights the machinery of computation (see Berry 2014, 58).

The postdigital is, then, both an aesthetic and a logic that informs the representation of space and time within an epoch that is *after-digital*, but which remains profoundly computational and organized through a constellation of techniques and technologies to order things to *stand by* (Heidegger 1977).

Further, the postdigital itself can be understood as an aesthetic that revels in the possibility of revealing the 'grain of computation', or, perhaps better, showing the limitations of digital artefacts through a kind of digital glitch, or the 'aesthetics of failure' (Cascone 2000, 13). In common with the *new aesthetic*, the postdigital has been linked to the extent to which digital media have permeated our everyday lives (Berry 2012a). We could, perhaps, say that the postdigital emerges from a form of 'breakdown' practice linked to the *conspicuousness* of digital technologies (see Berry 2014, 99): not just through the use of digital tools, of course, but also a language of new media (see Manovich 2001), the frameworks, structures, concepts and processes represented by computation, and the interplay of design and aesthetics inscribed on the faces of technical devices; that is, both in the presentation of computation and in its representational modes.

THE DIGITAL

Latour first outlined a rejection of the specificity of the digital as a separate domain, highlighting both the materiality of the digital and its complex relationship with the analogue. He described the analogue structures that underpin the digital processing that makes the digital possible (the materials, the specific electrical voltage structures and signalling mechanisms, the sheer matter of it all), but also the digital's relationship to a socio-technical environment. In other words, he swiftly moved away from what we might call the abstract materiality of the digital, its complex layering over an analogue carrier, and instead reiterated the conditions under which the existing methodological approach of actor-network theory was justified: digital forms part of a network, is 'physical' and material, requires a socio-technical environment to function, is a 'complex function' and so on. [1]

It would be too strong, perhaps, to state that Latour denied the specificity of the digital as such; rather, through a sophisticated form of 'bait and switch', he used a convincingly deployed visualization of what the digital 'really' is, courtesy of an image drawn from Cantwell-Smith (2003) to disprove notions of the digital as 'not-physical'. Indeed, this approach to the digital echoes his earlier statements from 1997 about the digital, arguing that he

> _____does not believe that computers are abstract . . . there is (either) 0 and (or) 1 has absolutely no connection with the abstractness. It is actually very concrete, never 0 and 1 (at the same time) . . . There is only transformation. Information as something which will be carried through space and time, without deformation, is a complete myth. People who deal with the technology will actually use the practical notion of transformation. From the same bytes, in terms of 'abstract encoding', the output you get is entirely different, depending on the medium you use. (Lovink and Schultz 1997) [2]

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[1] Latour has an unexpected similarity to the German Media School, in relation to the materiality of the digital as an explanatory and sufficient level of analysis.

[2] See also Latour stating:

> the digital only adds a little speed to [connectivity]. But that is small compared to talks, prints or writing. The difficulty with computer development is to respect the little innovation there is, without making too much out of it. We add a little spirit to this thing when we use words like universal, unmediated or global. (Lovink and Schultz 1997)

This is, therefore, not a new position for Latour; indeed, in earlier work he has stated 'actually there is nothing entirely digital in digital computers either!' (Latour 2010a, original emphasis). While this may well be Latour's polemical style, it does raise the question of what the 'digital' is for Latour and how his definition enables him to make such strong claims. One is tempted to suppose that it is the materiality of the zeroes and ones that Cantwell-Smith's diagram points towards that enables Latour to dismiss out of hand the complex abstract digitality of the computer as an environment. Hence, ironically, Latour is perhaps too accepting of the materiality of a representation of the materiality of computation. Indeed, this causes him to miss the aspect by which, although not immaterial, the digital is constituted through a complex series of abstraction layers which actually do enable programmers to work and code in an abstract machine disconnected in a logical sense from the materiality of the underlying silicon. Indeed, without this abstraction within the space of digital computers there could be none of the complex computational systems and applications that are built today on abstraction layers. Thus, in computation, space is deployed both in a material sense, as the shared memory abstracted across both memory chips and the hard disk (which itself may be memory chips), and as a metaphor for the way in which the space of computation is produced through complex system structures that enable programmers to work within a notionally two-dimensional physical address space that is abstracted onto a multidimensional structure.

THE POSTDIGITAL CONSTELLATION

In response to Latour's formulation, I would like to offer a contextualization of the digital by way of exploring the notion of the 'postdigital constellation'. This is to use the postdigital in an approach that looks to interrogate the original theoretical legacy of early critical theory, and also explores its concepts and ideas in the light of computation and the postdigital condition (see Berry 2014). This is to connect back the implications of computational imaginaries, particularly hegemonic representations of the digital — 'postdigital aesthetics', 'new aesthetic', 'pixels', 'sound waves', 'interfaces', 'surface' and so forth — in relation to the digital itself. As computation has become spatial in its implementation, embedded within the environment, in the body and in society, it becomes part of the texture of life itself which can be walked around, touched, manipulated and interacted with in a number of ways. So 'being online' or 'being offline' is now anachronistic, with our always on smart devices, tablets and hyper-connectivity, as, indeed, is the notion that we have 'digital' and 'analogue' worlds that are disconnected or discrete. Today the postdigital is hegemonic, and as such is entangled with everyday life and experience in a highly complex, messy and difficult to untangle way that is

different from previous instantiations of the digital — indeed, the varieties of the digital should be treated as historical in this important sense. The postdigital constellation similarly resembles aerial photography of landscapes and cities, in that it does not emerge out of the interior of the given conditions, but, rather, appears above them — granting a distant reading of culture, society and everyday life. In the midst of a world which has become blurred and ungraspable,

the postdigital constellation becomes a primary element, an object for a cultural analytics that provides connection and a sense of cohesion in a fragmentary digital experience.

The relation to the postdigital constellation is an aesthetic mode, an ornament that becomes an end in itself — via data visualizations, interfaces, surfaces, habitual media and veneers of glass (see also Chun; Cubitt 2015, this volume).

So the postdigital constellation could be said to figuratively consist of lines and circles, as in Euclidean geometry, but also waves and spirals. These formations are still in some sense opaque, composed as they are according to the dictates of a rationality that sacrifices meaning for the sake of an abstract unity of reified elements. Here, I am thinking about the computational rationalities of the database: the collection, the stream and the file.

Thus, the postdigital constellation suspends the opposition of the merely decorative applied ornament and the functional structure — the interface is thin machinery mediating and remediating computation.

Thus, the interface produces both an ornamentation of function and a functionalization of ornament, and, by critically examining the very superficiality of the postdigital constellation as a surface, one can further explore the computational practices that underwrite and mediate this affinity with the surface.

The postdigital serves to train people in those forms of perceptions and reactions which are necessary for any interaction with computational devices. Indeed, the representational practices of the postdigital display an elective affinity with the surface, not the knowledge of an original but the spatial configuration of an instant. In some sense, the postdigital stages nature and everyday life as the negativity of history through the mediation of design.

This leads to a theoretical and sociological challenge in terms of how critical theory can be deployed to think through this historical constellation.

Questions of aesthetics, politics, economics, society and the everyday need to be reflected on in relation to the computational precisely because of the penetration of computation into all aspects of human life. This is a call to more rigorous scholarship in relation to the postdigital, but also towards a praxis linked to critical practice and a critical approach to the aesthetic of computation and its mediating role both in and through computation.

The postdigital can be thought of as an abductive aesthetic (or *pattern aesthetic*) and linked by a notion of computational patterns and pattern recognition as a means of cultural expression. By this I mean that, as computational ontologies and categories become increasingly dominant as instrumental and aesthetic values, they also become influential as economic, political, communicative and aesthetic concepts.

The postdigital is a concept that stands in for, or conceptualizes, the notion of the computational as a network of digital surfaces in a number of different places and contexts. The postdigital can be said to constitute the *pattern*, the asterism, that is distinctive of our age, but it impresses itself on the new as well as the traditional. Thus, history is recast within the terms of the postdigital. In other words, we tend to look backwards with computational 'eyes' and reconstruct the past as if computationally 'found patterns' had been influential on making, drawing, writing or creating culture more generally.

Ironically, this is happening at a time when most people's command of digital technology is weak and their understanding of the politics of technology minimal. The postdigital might, then, in its popular manifestations, and as evidenced by Bridle (2012) and Sterling (2012), actually gesture towards a weak form of understanding of the computational and its representation — perhaps even an attempt at a *domestication* (Silverstone, 2003). This seems especially important when we look critically at the suggested methods proposed by Latour and others, and their disavowal in relation to the computational. Indeed, at the level of the interface, which often represents not the presently existing computational but a simplified version in, for example, flat design, 8-bit graphics or blocky visuals, we see that the surface actually detracts from understanding what Lash (2007) called 'algorithmic power'.

The postdigital is, therefore, specific to the more general problematic raised in relation to the question of reason and emancipation in a computational society, and one in which the intentionality of the black boxes of technology is increasingly divined from their surfaces.

2. POST INTERNET /

networked spaces as “internet art” scene

internet as a distribution platform

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2. POST INTERNET /

Situating Post Internet
Domenico Quaranta

networked spaces as "internet art" scene

I

Writing about post internet art from an art history perspective looks pretty much like an impossible task at present. Either we are still trapped in the storm of comments, opinions and debates that blew up when this proposed art label turned into a successful art meme, or we are hot on its heels. On October 30, 2014, art critic Brian Droitcour published a text [1] in *Art in America* that could be described, tongue in cheek, as the post internet version of an earlier, widely debated blog post [2]: more elegant, less personal, and written for a respected art magazine for the sake of quotes, just as post internet art is made for the white cube for the sake of pics.

According to Droitcour, "a sheaf of essays grappling with the meaning of "Post-Internet" by tracing a genealogy from Olson onward would not suffice to describe what Post-Internet has become: a term to market art." For him, post internet is an embarrassing yet useful new entry in artspeak, describing an "art made for its own installation shots"; an art that "does to art what porn does to sex — renders it lurid", "a self-styled avant-garde that's all about putting art back in the rarefied space of the gallery", [3] incapable of criticism and that only uses the internet as a promotional tool. From this perspective, post internet art is nothing but an opportunistic, reactionary trend in the context of a formerly radical art practice — net art — now embraced by the contemporary art world as a way to make any artwork that claims to be aware of the current means of creation and distribution irresistibly fashionable and cool.

In other words: for Droitcour, post internet art might be a good subject for art criticism, but it is not a useful label in art history, lacking historical depth and any relationship with former uses of the term; and since it refers

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[1] Brian Droitcour, "The Perils of Post-Internet Art", in Art in America, October 30, 2014. Online at www.artinamericamagazine.com/news-features/magazine/the-perils-of-post-internet-art/.

[2] Brian Droitcour, "Why I Hate Post-Internet Art", in Culturetwo, March 31, 2014. Online at https://culturetwo.wordpress.com/2014/03/31/why-i-hate-post-internet-art/.

[3] Brian Droitcour, "The Perils of Post-Internet Art", cit.

to bad art, it will be short-lived anyway. I agree with Droitcour on one thing: that post-internet-art-as-an-art-market-trend won't last long, and that as an art trend, it has its drawbacks. The two are strictly related. The peril of post internet art is that it can be easily disguised as a style: a layer of visual references to the desktop and online environment that can be applied to almost anything; a way of approaching image-making that considers its online dispersion; and a limited set of topics and solutions, from corporate imaging to voice-over videos. It's a kind of "internet layer" that's very easy to adopt now it's in fashion, and will be equally easy to dismiss when it becomes uncool, and that almost everyone can catch onto. In this form, the post internet spread like a virus in 2013, after Frieze art fair director Matthew Slotover, when asked in an interview if he saw some kind of trend coming out of the applications for the fair, mentioned post internet as a "very interesting direction." [4] Yet it did not grow in subsequent art fairs, and although a few artists who can be loosely associated with post internet art are now a stable presence in the art market, their individual success stories do not represent a stable trend.

Similarly, during the Paddles On! Auction at Phillips London in July 2013, the post internet craze enabled Australian artist Michael Staniak to sell a work for £25,000, from an initial estimate of £3,500. Paddles On! is a digital art auction format conceived with the ambition of creating a market for digital art, which is now supported by a number of galleries but rarely entered the world of auctions. Staniak is an artist with little or no background in media art, who makes beautiful abstract paintings using acrylic and casting resin in a way that recalls digital painterly effects. His sudden success obscured the longer, respectable careers of some of the artists included in the auction, whose works went for much less, or remained unsold.

Taking part in a panel at Art Dubai's Global Art Forum in March 2012, artist Constant Dullaart famously said: "Don't use the internet as a fucking condiment." [5] This is post internet's main peril: using digital culture as a layer of make-up for artworks so long as it looks fashionable and cool. And yet post internet is not just that. Going against Droitcour, in this text I argue that post internet art cannot really be understood without tracing its roots back to

[4] Andrew M. Goldstein "Frieze London Co-Director Matthew Slotover on the Rise of the Art Fair", in Artspace, October 15, 2013. Online at www.artspace.com/magazine/interviews_features/frieze_art_fair_matthew_slotover_interview.

[5] Cf. Alana Chloe Esposito, "Don't use the internet as a fucking condiment": Net Art at Art Dubai, in Art Fag City, March 30, 2012. Online at http://artfcity.com/2012/03/30/don%E2%80%99t-use-the-internet- as-a-fucking-condiment-net-art-at-art-dubai/.

the group surfing practices that emerged in the first decade of the twenty first century, and without considering the ways it has been shaped and discussed since then. Moreover, I situate the post internet within the longer history of art in networked spaces, showing that its relationship with this history cannot be presented in the over-simplified way that is implicit in Droitcour's essay — namely a transition from a radically immaterial practice that rejected the art world to one that prostitutes itself to get a corner in the white cube; the process is much more collaborative and layered. Finally, I will show how this contextualization invites us to re-consider post internet art as one of the strategies and modes of expression of a wider and more vibrant contemporary "internet art" scene, rather than a movement comprising a defined set of artists, or the way net art rebranded itself to be accepted by the art world: a manifestation that maybe, at this point, doesn't even need a name.

In other words: we can be critical of the post internet label, and some of the outcomes of so-called post internet art; but we can't dismiss entirely, because it is an integral part of what internet art has become in the last ten years.

internet as a distribution platform

II

As is now well known, the term "postinternet" was first used by artist and (at the time) Rhizome editor Marisa Olson in 2006, in reference to her own practice and that of her peers. While she was mainly speaking for herself, as she recently clarified, her post at Rhizome and her role as a co-founder of Nasty Nets, the first surfing club, put her in a position to speak, more broadly, about a new generation of artists who, while spending a lot of time online, were developing most of their work offline: work that was nonetheless "infused with the digital visual language, network aesthetics, and the social politics of online transmission and reception." [6]

The term survived, together with a few alternatives such as internet-engaged art and internet-aware art (the latter first used by artist Guthrie Lonergan) until it was popularized by art critic Gene McHugh, who — thanks to a grant from the Creative Capital | Andy Warhol Foundation Arts Writers Grant Program — ran a blog of the same name from December 2009 to September

2010. [7] While Olson, in her use of the term, stressed the "practical" shift from making art online to making art that took advantage of the act of navigation, McHugh focused instead on the historical and conceptual reasons for this shift. He attributed them to the general transformation of the relationship between reality and the internet, which provided different terrain for the relationship between art and the internet. According to McHugh:

_____"No matter what your deal was/is as an artist, you had/have to deal with the Internet — not necessarily as a medium in the sense of formal aesthetics (glitch art, .gifs, etc), but as a distribution platform, a machine for altering and re-channeling work [...] Even if the artist doesn't put the work on the Internet, the work will be cast into the Internet world; and at this point, contemporary art, as a category, was/is forced, against its will, to deal with this new distribution context or at least acknowledge it." [8]

McHugh's definition is also important because it links up with the most recent definition of the term, which can be summed up in the words of Karen Archey and Robin Peckham:

_____This understanding of the post-internet refers not to a time "after" the internet, but rather to an internet state of mind — to think in the fashion of the network. In the context of artistic practice, the category of the post-internet describes an art object created with a consciousness of the networks within which it exists, from conception and production to dissemination and reception. [9]

But before moving on, it is worth spending some time on the three competing labels that emerged around 2006–2008 in the debate around net art. Though very different from one another, post internet, internet-aware and

[6] Cf. Marisa Olson in Karen Archey, Robin Peckham (Eds.), Art Post-Internet: INFORMATION DATA, exhibition catalogue, Ullens Center for Contemporary Art Beijing 2014, p. 95. Available online at http://post-inter.net.

[7] The blog, located at 122909a.com, is now offine. A selection of the posts have been published in Gene McHugh, Post Internet, Link Editions, Brescia 2011.

[8] From the 2011 introduction to the book archive of the website: Gene McHugh, Post Internet, cit. p. 6.

[9] Karen Archey, Robin Peckham (Eds.), Art Post-Internet: INFORMATION DATA, cit., p. 8.

internet-engaged all resulted from an aversion to medium-based labels such as net art or internet art; they all pointed to the internet as a cultural reference, and an environment, rather than a medium. This is related, on the one hand, to a general change in the perception of the relationship between reality and the internet, as McHugh pointed out; and, on the other hand, to a dissatisfaction with medium specificity and the niche status of new media art.

After the dotcom bubble and with the arrival of the Web 2.0, the internet started to be perceived less as a medium and more as a key part of our daily lives; less as a utopia to construct together, and more as a dystopia we are all part of, but that still provides interesting opportunities for networking and community making, and an unprecedented tool for "surfing" reality and getting a better understanding of it.

This goes beyond the scope of this essay, but it is worth noting that the idea that the information society has entered a new phase has now been universally accepted, and different people have attempted to describe this shift in different terms, but in very similar ways. More specifically, the debate around post internet art has arisen more or less in parallel to the debates around postmedia, [10] a term first used by Felix Guattari in 1996, post-digital and the New Aesthetic. First used by Kim Cascone in an essay on digital music published in 2000, [11] the notion of post-digital attracted much debate between 2008 and 2014. In 2014, Aarhus University and transmediale, Berlin set up "Post-digital Research", an initiative that produced a peer-reviewed journal and came up with the following working definition:

_____Post-digital, once understood as a critical reflection of "digital" aesthetic immaterialism, now describes the messy and paradoxical condition of art and media after digital technology revolutions. "Post-digital" neither recognizes the distinction between "old" and "new" media, nor ideological affirmation of the one or the other. It merges "old" and "new", often applying network cultural experimentation to analog technologies which it re-investigates and re-uses. It tends to focus on the experiential rather than the conceptual.

[10] Cf. the chapter "The Postmedia Perspective" in Domenico Quaranta, Beyond New Media Art, Link Editions, Brescia 2013, pp. 177 - 224.

[11] Kim Cascone, "The Aesthetics of Failure: "Post-digital" Tendencies in Contemporary Computer Music", Computer Music Journal, Volume 24 Issue 4, Cambridge: MIT Press, December 2000, pp. 12-18.

It looks for DIY agency outside totalitarian innovation ideology, and for networking off big data capitalism. [12]

The New Aesthetic started as a visual study run on a Tumblr blog by British artist and designer James Bridle in 2011, and gathered momentum around 2012, when author Bruce Sterling made it the subject of an enthusiastic essay in *Wired*. [13] The New Aesthetic blog collects images from art, design, online interfaces and daily life, with a focus on how the digital manifests itself in the physical domain. As Bridle explains in an essay tellingly re-published at the beginning of the book You Are Here: Art After the Internet:

_____It is impossible for me [...] not to look at these images and immediately start to think about not what they look like, but how they came to be and what they become: the processes of capture, storage, and distribution; the actions of filters, codecs, algorithms, processes, databases, and transfer protocols; the weight of datacenters, servers, satellites, cables, routers, switches, modems, infrastructures physical and virtual; and the biases and articulations of disposition and intent encoded in all of these things, and our comprehension of them. [14]

Post internet emerged along, and with a deep awareness of, these lines of thought. But the urge to reframe the art formerly known as net art was also related to another process, within the field of new media art: the need to go "beyond new media art", both as a medium-based practice and as a cultural niche, in order to develop a better dialogue with the contemporary art world after the nonstarters at the turn of the millennium, when new media art missed the chance (offered by a number of museum exhibitions) to be viewed as one of the most interesting artistic developments of the last few years. Around 2005, many "new media artists" - led by representatives of the first net art generation — had already started working with commercial galleries and contemporary

[12] Christian Ulrik Andersen, Geoff Cox, Georgios Papadopoulos, "Post-digital Research – Introduction", in Post-Digital Research, February 2014, online at http://www.aprja.net/?page_id=1327.

[13] Bruce Sterling, "An Essay on the New Aesthetic", in Wired, April 2012, online at http://www.wired.com/2012/04/an-essay-on-the-new-aesthetic/.

[14] ames Bridle, "The New Aesthetic and its Politics", in Booktwo, June 12, 2013, online at http://booktwo.org/notebook/new-aesthetic-politics/.

art institutions, and investigating ways to present their works in the white cube. Most of them, Jodi included, had all but stopped making net-based projects, and were working mostly on software and hardware manipulation. Two seminal exhibitions, "The Art Formerly Known as New Media" and "Postmedia Condition", took place that year, the latter introducing the concept of postmedia in the media art debate; [15] a media art festival catalog hosted an equally seminal essay, titled " 'It's contemporary art, stupid'. Curating computer-based art out of the ghetto", by curators Inke Arns and Jakob Lillemose. [16] Later in 2007, media theorist Geert Lovink lectured and wrote about "the cool obscure" of new media art, [17] and the panel discussion "Media Art Undone" took place at Transmediale in Berlin. [18] On that occasion, artist Olia Lialina said:

_____For a long time it did not make sense to show net art in real space: museums or galleries. For good reasons you had to experience works of net artists on your own connected computer. Yesterday for me as an artist it made sense only to talk to people in front of their computers, today I can easily imagine to apply to visitors in the gallery because in their majority they will just have gotten up from their computers. They have the necessary experience and understanding of the medium to get the ideas, jokes, enjoy the works and buy them. [19]

Surfing clubs emerged in this transitional period, and mostly attracting young artists with an art education who, albeit critical of the art market and the process of commodification of digital artifacts, felt closer to the broader contemporary art discourse than to media art culture. Explaining his approach to surfing and blogging in his essay "Spirit Surfing", artist Kevin Bewersdorf naturally uses the work of Joseph Cornell as a reference point to show what happens when found online content is rearranged in a blog post. [20] In October 2007, Bewersdorf

[15] For more on this subject, cf. Domenico Quaranta, Beyond New Media Art, cit.

[16] Inke Arns, Jakob Lillemose, "'It's contemporary art, stupid'. Curating computer based art out of the ghetto", in Anke Buxmann, Frie Depraetere (Eds), Argos Festival, argoseditions, Brussels 2005. Online at http://language.cont3xt.net/wp-content/uploads/2011/04/arnslillemose-contemporarystupid.pdf.

[17] Geert Lovink, "New Media Arts at the Crossroads", in Diagonal Thoughts, May 2007, online at www.diagonalthoughts.com/?p=204.

[18] Transcripts of the panel are available at www.mikro.in-berlin.de/wiki/tiki-index.php?page=MAU.

[19] Olia Lialina, "Flat against the wall", 2007. Online at http://art.teleportacia.org/observation/fat_against_the_wall/.

had a show at And/Or Gallery in Dallas together with Guthrie Lonergan, another influential pro-surfer. The exhibition featured videos, small prints, and a series of works that Bewersdorf produced by printing found online images onto ordinary objects like cushions, mouse pads and mugs using wallgreens.com, a web store with a print-on-demand service. Headed by artist and musician Paul Slocum, And/Or was a small artist-run space that, for a few years (from 2006 to 2009), gave the surfing club generation fertile terrain to present their work, test modes of presentation in the white cube without the constraints of a commercial gallery and the performance anxiety induced by a more central location, and build relationships with collectors. [21] It anticipated many of the topics and tropes of post internet art, including the form of the "dual site": a small, outlying, brick-and-mortar meeting point for an online community that emitted a signal amplified by the documentation on its web site, as Bewersdorf and Lonergan did in their work, before they stopped producing visual art completely.

For both, "retirement" started around 2009–2010, at the peak of their careers, and for very similar concerns about the objectification and commodification of their art. As Lonergan said to Ed Halter in a recent interview:

_____Net art's relationship to contemporary art as a whole and to the art market gets more confusing every day. It's pretty fascinating to watch, though. I tried for years to figure out how to 'print it out,' to make something super-salable, but I could never quite figure it out, and I don't think I ever will. [22]

This short tour of the origins of post internet art should make it clear that it cannot be reduced to an art fair trend, to the small Bushwick scene described by Droitcour, or to the one liner "put a work on show, take a picture of it, and circulate the photo online". On the contrary, the phenomenon seems to be the result of the confluence of a plurality of issues, approaches and processes, and the development of a new art community, less insular and more integrated than the one that developed around the first net art, and involved in an expanded conversation. At the risk of indulging in list-making, we must at least mention artists like Hito Steyerl, Mark Leckey, Seth Price, and Metahaven, art magazines

[20] Kevin Bewersdorf, "Spirit Surfng", 2008. In Kevin Bewersdorf, Spirit Surfng, Link Editions, Brescia 2012, pp. 21 – 28.

[21] Documentation about the shows at And/Or Gallery is still available at www.andorgallery.com/.

[22] Ed Halter, "In Search Of. The Art of Guthrie Lonergan", in Artforum, November 2014.

like *Artforum*, *Mousse* and *Frieze*, art critics and theorists like Boris Groys, David Joselit and Jennifer Allen, as part of or inspiration for this expanded conversation; of course alongside the good old crew, which was never dismissed or forgotten:

_____When I started trying to be an artist in the early aughts, I most identified with the net art movement. I had discovered the work of jodi.org, Olia Lialina, Vuk Cosic, and Alexei Shulgin in college (outside of my studies) and I kinda had a "Ramones" moment, . . . "I can do this!" It was terribly exciting and will seem obvious now, but the idea that one could just make something and people could see it without any intermediary was mind blowing. Also, for whatever reason — though one wonders if it was due to the lack of bandwidth (?) — the work of the above artists was surgically precise and conceptually clear headed. These traits undoubtedly added further fuel to my interest, and are things I still try to this day to emulate. At the time, if one was interested in browser art, by default they were linked to media art and its histories as the media scene was kinda the only game in town open for a dialog about the browser. This has all changed now as computers are mainstream therefore so is art which deals with them. [23]

III

As we have seen, post internet art emerged at a time when net art was rehashing its relationship with the art world. Net art, which was always aware that its radical autonomy could only be temporary, and that always played the tongue in cheek role of "the last avant-garde", was nonetheless initially 'mind blown' (in the words of Arcangel) by the opportunity to play different roles (including those of the institution and gallery) and reach an audience "without any intermediary". Yet, it soon understood that in order to make the game more interesting, the art world was not to be rejected, but used and abused. This is what Natalie Bookchin and Alexei Shulgin, in their seminal piece *Introduction to net.art* (1994-1999), call "the cultural loop":

_____Interface with Institutions: The Cultural Loop
a. Work outside the institution
b. Claim that the institution is evil
c. Challenge the institution

[23] Cf. Cory Arcangel in Karen Archey, Robin Peckham (Eds.), Art Post-Internet: INFORMATION DATA, cit., p. 116.

d. Subvert the institution
e. Make yourself into an institution
f. Attract the attention of the institution g. Rethink the institution
h. Work inside the institution [24]

What should be understood about this process is that it's a loop, not a straight line. Thus, "work inside the institution" is not the end of a process that goes from autonomy to integration, but part of a continuous loop in which net celebrity serves to get into the gallery, and art world recognition serves to generate more interest online. The gallery and the museum are not the end point. And integration is not the end point, but a means to get more autonomy.

This does not mean, of course, that net art has to have a co-dependent relationship with the system. There is a long list of artists who developed substantial bodies of work and were extremely influential among their peers, but who refused to join the cultural loop: Bewersdorf and Lonergan are good examples. But anyone interested in a career in art can't avoid joining this level of the game. A good example of this comes from the artists involved in the Free Art & Technology Lab (F.A.T. Lab), a group co-founded by Evan Roth and James Powderly in 2007 during an Eyebeam residency, and now numbering 20+ artists, designers and hackers from three continents. F.A.T. Lab not only includes "professional artists", but also professionals from various different disciplines, interested in having an arena for experimentation where they can work on projects that elude easy categorization, and can interest different audiences. Artists associated with F.A.T. Lab include Evan Roth, Aram Bartholl, Addie Wagenknecht, Golan Levin, among others. They all have a respected institutional presence, and they all have gallery representation. Some of their works could easily fit into one of the definitions of post internet art; but they keep working with technology, making online projects, participating in group projects, cultivating relationships with communities outside of the realm of art: hackers, graffiti artists, the open software and open hardware movements. The art world is just one mode of transmission, and maybe not even the most important one. Their artworks contribute to developing an identity that is much richer than those of the art world artists we are used to (perhaps closer to what an artist should be, and the best artists have been).

[24] Natalie Bookchin, Alexei Shulgin, "Introduction to net.art (1994-1999)", 1999. Online at www.easylife.org/netart/.

In the context of this cultural loop, the posited opposition between the radical independence of net art and post internet art's "obsession with art-world power systems" (Droitcour) shows its flaws. Let's take post internet's most criticized feature: its use of the gallery as a stage for taking documentary pictures to be distributed online. Droitcour writes:

_____The Post-Internet art object looks good in a browser just as laundry detergent looks good in a commercial. Detergent isn't as stunning at a laundromat, and neither does Post-Internet art shine in the gallery. It's boring to be around. It's not really sculpture. It doesn't activate space. It's often frontal, designed to preen for the camera's lens. It's an assemblage of some sort, and there's little excitement in the way objects are placed together, and nothing is well made except for the mass-market products in it. It's the art of a cargo cult, made in awe at the way brands thrive in networks. [25]

Let's suppose this is true. After all, artists associated with post internet often claim to view mediated experience on the same level as primary experience (Laric), and to do visual art for the sake of Facebook likes (Ito); and Artie Vierkant based all his *Image Objects* project on the circular relation (another loop) between physical object and digital documentation. They all seem to agree with David Joselit when he states that value and aura, today, are not generated by uniqueness and geographical specificity, but by replicability and ubiquity. [26] In our framework, this only means that the physical artifact is not the artwork, but part of a (mostly immaterial) process in which the physical object is just one step; and that the white cube is not the main space in which the artwork manifests itself, but one of the contexts in which the art is created. You can't blame something for not being what it doesn't want to be, and for not doing what it doesn't want to do. Of course, the fact of creating a traditional, physical artifact and displaying it in the white cube seems to sanction the traditional systems of attribution of aura: turn your art into a commodity and place it in an art space. But how much criticism is there in this process of (subversive) affirmation?

[25] Brian Droitcour, "The Perils of Post-Internet Art", cit.

[26] David Joselit, After Art, Princeton University Press 2012.

In 1964, Yoko Ono published an artist book called *Grapefruit*, containing a series of "event scores", instructions that replace the physical work of art. One of them is titled "PAINTING TO EXIST ONLY WHEN IT'S COPIED OR PHOTOGRAPHED", and reads: "Let people copy or photograph your paintings. Destroy the originals." At the core of this piece there is the definitive traditional art object, a painting. The "score" does not need to, but legitimately can, be performed: if so, the final result (the copy, the photograph) will have the same status as the idea. It's conceptual art at its best, claiming the supremacy of ideas over artworks-as-commodities, and combating the notion of originality. Here, the painting, the copy and the photograph are part of a process; nobody cares if they are good or bad; what's important is the process they are part of, and its meaning.

In 2013, artist Joshua Citarella curated what looks like a good post internet reenactment of Ono's event score. *Compression Artifacts* was a set emulating all the features of the white cube (white walls, gray floor, neon lighting), built in an undisclosed location in a forest, and performed in front of a live feed, broadcast during daylight hours. Once it was completed, works by Wyatt Niehaus, Kate Steciw, Brad Troemel, Artie Vierkant and Joshua Citarella were set up in the space. Following the exhibition the structure was demolished. All artworks and building materials were incinerated and regathered as ash. And all the process was, of course, documented in pictures. [27]

Compression Artifacts is probably the most direct manifestation of the post internet as a subversive affirmation. The sacrality of the physical artifact and the white cube are first sanctioned, only to be demystified: the artworks are burnt, the white cube is built in a forest (and then burnt). The process was only visible on the internet, first as streaming video, then as documentation. The documentation itself is not the artwork, not the end point: it's just a way to keep the ball rolling.

[27] Documentation of the project and a statement are available online at http://joshuacitarella.com/artifacts.html.

Post internet art — at least, that post internet art that puts emphasis on the importance of mediation and distribution — exists in the white cube as the artworks displayed in *Compression Artifacts*, as the temporary materialization of an idea (that may eventually be destroyed, or sold to a collector). What's important is not the piece in there, but the idea out there. This idea does not manifest itself as a single object, but is most effectively exemplified by the digital image. It is free, it travels, it gathers metadata along the way, it can be appropriated, used, abused, perused, and further developed. It can show up in different contexts. It's ephemeral, but it can survive.

3. POST DIGITAL PUBLISHING /

- **a broad notion of digital publishing**
- **the death of paper (which never happened)**
- **the mutation of paper: material paper in imaterial times**
- **the end of paper: can anything actually replace the printed page?**
- **web to print**: the library of the printed web

Lorusso, Silvio. "**Post-Digital Publishing Archive, Projects and Artworks at the Intersection of Publishing and Digital Technology**" . In *Abstract* http://p-dpa.net.

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Soulellis, Paul (2013) . "**Search, Compile, Publish — Towards a New artist's Web-To-Print Practice**".

3. POST DIGITAL PUBLISHING /

Post-Digital Publishing Archive, Projects and Artworks at the Intersection of Publishing and Digital Technology
Silvio Lorusso

a broad notion of digital publishing

Much of the discussion around publishing is informed by a model of interpretation in which digital technology acts as the natural successor of printed matter. This model fosters a narrative of linear progress among media, according to which screen will eventually take over paper. As a consequence, the relationship between the two is read as a form of rivalry and thus produces endless, often unconstructive, lists of pros and cons, improvements or worsenings.

This perspective doesn't take into account the dynamics of mutual arrangement and negotiation among media, including the various "backward" influences, so to say from screen back to paper. At the same time, it often tends not to dwell upon the specifities of the various typologies of artifacts that define the publishing field. Lastly, it is driven by an obsessive quest for future models, therefore the space where innovation is seeked frequently corresponds to the narrow ecosystem of the newest device or platform, often transitional, that does not reflect the slower, less flashy but deeper mutations. In doing so, the universe of commonly used digital tools is ofted omitted from the discussion along with the analog, traditional, even retro technologies and the role they currently play.

In order to accurately define the current condition of digital publishing and to deeply comprehend its broader scope, wondering what is the best device for e-reading or what is the fate of paperbacks could be reductive. The discourse on digital publishing should broaden its own horizons, asking whether the book itself can be considered a medium, investigating the existing relationships between the "closed" form of the printed book and the everchanging landscape of the Internet. It should find out what print has to say to digital media besides skeuomorphism, without considering digital tools as means to merely consume content. It should question how knowledge and access are affected by mass digitization initiatives.

Actually, such questions aren't new, but they are rarely addressed by designers, developers and publishers through critical designs or theoretical reflection. On the contrary, new technologies are often blindly embraced, as the capabilities of the devices are explored with the aim of developing commercially successful products. For instance, while countless design programs are devoted to the development of iPad apps, only a few involve design and artistic strategies to

analyze and communicate the implications of iTunes and its distribution model.

Whether indipendently or within institutional contexts, some artists and designers (a good number, but still a few in comparison to the creative industry of publishing) have grown a practice-based, speculative and often critical attitude toward publishing, whether digital or not. It's neither a self-aware current nor an avant-garde, since those people work in distinct disciplinary areas and with different aims. Sometimes their practice only accidentally deals with publishing. But their work deserve attention because it could be able to anticipate, comment and interpret the various issues that emerge at the intersection of publishing and digital technology. P-DPA aims to bring together those experiences.

POST-DIGITAL PUBLISHING

The term "post-digital" was coined by composer Kim Cascone in his essay "The Aesthetics of Failure: 'Post-digital' Tendencies in Contemporary Computer Music". According to Cascone, «the revolutionary period of the digital information age has surely passed. The tendrils of digital technology have in some way touched everyone» (Cascone 2000). At least in the first world, digital technology is an integral part of our everyday life and it is consequently taken for granted. In this sense the very attribute "digital" becomes meaningless, as almost every artifact we deal with is produced, distributed, mediated or at least affected by digital means.

The notion of post-digital was borrowed by Alessandro Ludovico (Ludovico 2012) and Florian Cramer (Cramer 2012) to be specifically applied to publishing. While this field hasn't yet profoundly undergone the radical mutations implied by digital technology, neo-analog means of production, such as the risograph or letterpress printing (and the style that characterizes them) are re-stored both by independents artists or designers and big publishers because «they compensate for deficiencies of digital files — deficiencies that are both aesthetic and social, since tangible media are means of face-to-face interpersonal exchange» (Cramer 2013). Frequently the resultant artifacts are deeply informed by digitality anyway, either as a source of content or as a reference model. When digital is the default, analog becomes a firm choice that, while is not necessarily a form of opposition, often derives from the awareness of the specificities of both possibilities.

The "post-digital mindset" allows a more inclusive research framework of the publishing field, in which e-books and book-apps aren't the only object of

study and where "old" and "new" media are not in a natural opposition. In the field of post-digital publishing, printed matter doesn't belong to the past and digital tools are not inherently innovative. Artists and designers seamlessly shift between blogs and stapled zines. The digital enviroment is at the same time a source of inspiration, a repository of raw data to filter and organize, a channel for collaboration or dissemination, a space for exposure, a mix of communication modes to exploit, a set of tools to tweak or to autonomously build. It is not an easy task to identify and analyze the various aspects of such a broad context. Likewise, it takes a big effort to trace back the many ways in which digital technology addresses the specificities of traditional media and processes of publishing. Through a thematic approach to collection and archiviation, P-DPA investigates experimental publishing in order to high-light aspects that specifically deal with digital technology and analog means, especially when they re not blatantly apparent.

3. POST DIGITAL PUBLISHING /

Post-Digital Print — The Mutation of Publishing since 1894
Alessandro Ludovico

In this post-digital age, digital technology is no longer a revolutionary phenomenon but a normal part of everyday life. The mutation of music and film into bits and bytes, downloads and streams is now taken for granted. For the world of book and magazine publishing however, this transformation has only just begun.

Still, the vision of this transformation is far from new. For more than a century now, avant-garde artists, activists and technologists have been anticipating the development of networked and electronic publishing. Although in hindsight the reports of the death of paper were greatly exaggerated, electronic publishing has now certainly become a reality. How will the analog and the digital coexist in the post-digital age of publishing? How will they transition, mix and cross over?

INTRODUCTION

We've all heard the news: print is dead. At the same time, (independent) bookshops are withering and falling like so many autumn leaves. Digital publishing, on the other hand, is now a booming business, with traditional publishers embracing every new standard or technology in an often desperate effort to impress their sceptical shareholders.

And yet, there are still plenty of newsstands and bookshops around, well-stocked with a wide variety of printed products. And if you are reading these words on paper (which you probably are) then you have, for some reason, chosen to go with the 'old' medium. Why? Probably because it still comes with the very best 'interface' ever designed.

So is print really dead? Is it going to die anytime soon? In this book, we shall be examining a particular (and often puzzling) period in the history of print — starting with the moment its death was first announced (already quite a long time ago, as we shall see) up to the present day, as new digital technologies are rapidly transforming both the status and the role of printed materials.

There are many different and often contradictory signals to be considered here, but it is crucial to see them within a historical perspective. We shall attempt here to collect and systematise as many of these signals as space allows — examining various technologies, experiments, and visionary works of art.

The traditional role of print is unmistakeably being threatened by the new digital world; but it is also, paradoxically, being revitalised. Both media share a certain number of characteristics, and yet they are fundamentally different — and they also fulfil different needs (for example, digital is built for speed, while print ensures stability).

the death of paper (which never happened)

EARLY THREATS TO THE PRINTED MEDIUM

In our present digital era, the 'death of paper' has become a plausible concept, widely expected to materialise sooner or later. The 'digitisation of everything' explicitly threatens to supplant every single 'old' medium (anything carrying content in one way or another), while claiming to add new qualities, supposedly essential for the contemporary world: being mobile, searchable, editable, perhaps shareable. And indeed, all of the 'old' media have been radically transformed from their previous forms and modalities — as we have seen happen with records, radio and video. On the other hand, none of these media ever really disappeared; they 'merely' evolved and transformed, according to new technical and industrial requirements.

The printed page, the oldest medium of them all, seems to be the last scheduled to undergo this evolutionary process. This transformation has been endlessly postponed, for various reasons, by the industry as well as by the public at large. And so the question may very well be: is printed paper truly doomed? Are we actually going to witness an endless proliferation of display screens taking over our mediascape, causing a gradual but irreversible extinction of the printed page?

It's never easy to predict the future, but it's completely useless to even attempt to envision it without first properly analysing the past. Looking back in history, we can see that the death of paper has been duly announced at various specific moments in time — in fact, whenever some 'new' medium was busy establishing its popularity, while deeply questioning the previous 'old' media in order to justify its own existence. In such moments in history, it was believed that paper would soon become obsolete.

Time and again, the established mass-media role of paper has been called into question by a number of media theorists and marketing experts, who attempted in various ways to persuade society at large to get rid of paper, and choose instead some newer and supposedly better medium. This ongoing process seems to have originated in the early 20th century, when the death of paper was predicted — probably for the first time — after centuries of daily use. The development of public electricity networks, which enabled the mass distribution of new and revolutionary media, inspired visions of a radical change in the (still two-dimensional) media landscape, following a fashionable logic of inevitable progress which lives on to this day.

COMPUTERS VIRTUALISING PAPER: THE 'PAPERLESS' PROPAGANDA

Starting in the early 1980s (the beginning of the age of personal information) this 'paperless' research-and-development mantra would increasingly become a propaganda buzzword aimed at creating a large target market for selling information technology (IT). Marketing departments actively promoted a vision of massive magnetic archiv- ing systems, destined to replace the huge amounts of messy paper, effectively de-cluttering the desktop once and for all. This meant a definitive shift towards systems of digital documents, existing only in windows on computer screens.

But every IT user sooner or later experiences some substantial data failure — and this unavoidable 'IT error' paradigm effectively undermines any possible faith in an entirely digital model. It was also a historical miscalculation to consider this 'virtualisation' process solely from a perspective of digital production, instead of attempting to understand how to enhance well established paper-based dynamics. What all the propaganda aimed to evoke — the eradication of the jungle of paper from the clean and orderly industrial interface — was thus undermined by the instability of the new technology, as well as people's familiarity with paper-based communication methodologies.

But the types of interaction made possible by paper are not yet available through new technologies (nor vice-versa, for that matter). There is still no electronic device which reproduces all the characteristics of paper: being lightweight, foldable, manipulable according to various reading activities, easily shareable with a small group of people interacting with each other simultaneously using a single medium, and being able to easily contain very different types of content, all instantly generated by hand, or juxtaposed with prepared (reproduced) content. In fact, it seems much easier to digitally simulate the limitations of paper than its strengths — and this is unlikely to change any time soon.

3. POST DIGITAL PUBLISHING /

Post-Digital Print
— The Mutation of
Publishing since 1894
Alessandro Ludovico

For example, the 'readability' of paper seems very important to us: most people still choose to print a long document and read it on paper, rather than read it on a screen. So not only did the paperless office fail to happen, but the production and use of paper, both personal and work-related, and generally speaking the printed medium, have actually increased in volume. Paradoxically, paper has even significantly contributed to spreading the culture and consciousness of the new media. Paper is persistent, as is the ink printed upon it. Printed paper stays around for a very long time, and its content doesn't change at the click of a button. Furthermore, we have the experience of a few thousand years of practice in reading externally illuminated paper. Since the 1990s, paper documents, rather than simply being supplanted by their electronic alter egos, are instead finding new ways to interact with them. So again: what's wrong with paper?

HYPERTEXT, SOMETHING PAPER CAN'T BE

The way we deal with reading and writing practices has in fact been literally revolutionised, not so much by a new medium, but rather by a new concept implemented within a new medium. It's not the computer itself which has forever changed the linearity of text — it's the possibility, through software, of creating in the abstract digital space a functional, entirely new text structure: the hypertext.

Starting in the mid-1980s, the arrival of offline hypertexts signalled a radical change, which was to have a profound effect on the concept of the literary work. In fact, the hypertext enabled the realisation of an essential new characteristic: non-linearity of text. The consequence of this was an existential threat to the integrity of the sequential work, as it had been presented for centuries in books. And even though literature is still the main field for experimentation and innovation in print, the arrival of the hypertext enabled, perhaps for the very first time, a characteristic which could not effectively be reproduced in print.

Robert Coover clearly and authoritatively described this phenomenon in his seminal essay *The End of Books*: "Print documents may be read in hyperspace, but hypertext does not translate into print", [1] and so the endlessly deep narrative space made possible by the hypertext seemed destined to supplant the finite, sequential and closed format of books, eventually making them altogether obsolete. According to Coover, the 'superior' form of the hypertext brings "true freedom from the tyranny of the line" — particularly so in the case of narrative-based text. When the boundless cultural space of the

'hypertextual' global Web is finally opened up, will the printed page by comparison start to look like so much yellowed paper?

And yet, despite its widespread use and incontestably tremendous potential (an early hypertext system for the authoring of technical manuals was appropriately called *PaperKiller* [2]), the hypertext has not yet succeeded in supplanting the 'traditional' text. The development of various 'wiki' platforms has dramatically expanded the hypertext's possibilities for collective authorship and the compilation of resources. It's clear that the hyperlink is now definitely embedded in our culture — on the other hand, the concept and implementation of hyperlinks are extremely computer-specific and unrelated to any established procedure used in traditional writing and publishing. We're nowhere close to hypertexts replacing the printed page in the way Robert Coover envisioned: "Indeed, the very proliferation of books and other print-based media, so prevalent in this forest-harvesting, paper-wasting age, is held to be a sign of its feverish moribundity, the last futile gasp of a once vital form before it finally passes away forever, dead as God." [3]

And yet, less than two decades later, books and magazines (whether traditional or in some mutated form) still abound; the most dramatic effect of the hypertext seems to be the way it enables the development of extraordinary new resources, with profound repercussions on a number of specific types of publishing. In this sense Katherine Hayles seems to have forecast much more accurately the future development of trends which were already emerging as she was working on her book Writing Machines: "A print encyclopedia qualifies as a hypertext because it has multiple reading paths, a system of extensive cross-references that serve as a linking mechanism, and chunked text in entries separated typographically from one another." [4]

THE DEATH OF PAPER. . . HAS YET TO HAPPEN

So the death of paper — in retrospect, one of the most unfortunate and embarrassing prophecies of the information age — has obviously not happened. Various kinds of printed pages are still being produced in huge quantities, and globally distributed, on a mass scale as well as on a very personal level. Nevertheless, the role of the printed page has radically mutated,

[1] Coover, R. (1992) 'The End of Books' in The New York Times Book Review, June 21 1992, pp. 23-25
[2] http://www.paperkiller.com
[3] Coover, op. cit.
[4] Hayles, N.K. (2002) Writing Machines, The MIT Press

from being a prevalent medium in its own right, to being a complementary medium, sometimes used as a static repository of electronic content.

The printed page has become more valuable, less expendable. This is because the duplication processes associated with paper are still limited and costly, and take up both space and time. Making a physical copy of a book involves either reproducing it page by page — or printing it from a digital file, again page by page. The result is a stack of paper occupying a significant physical space, and space seems to have become one of the most valuable resources in our consumption-oriented age.

Electricity, radio, TV, computers and the World Wide Web have all affected, transformed and revolutionised the printed medium in various ways; still, our attachment to the particular characteristics of paper remains more or less intact. Nevertheless, networks are radically changing the way paper is produced and consumed. Editors, for example, must now select their printed content much more carefully, because of the huge amount of free content available online.

Actually, paper and pixel seem to have become complementary to each other; print is increasingly the medium of choice for preserving the 'quintessence' of the Web. The editor of printed material is the curator, the human filter, the one who decides what should be saved on a stable medium, and what should be left as a message in a bottle tossed into the sea of the Internet. So the printed page, with its sense of unhurried conclusiveness, allows to the reader to pause, to reflect, to take notes, without having to rely on electricity. And paper is also being used to preserve a substantial part of the digital culture, independently of hardware or software, describing the new media from the technical perspective of an old medium.

the mutation of paper: material paper in imaterial times

SPACE, PHYSICALITY, AND REPEATABILITY OF PRINT

So does print still make sense, in a society which is by now almost entirely networked as well as screen-based?

Print does have a number of unique characteristics which are yet to be superseded by anything else. The first of these characteristics is the way print uses space. The space taken up by printed materials, whether in the shape of document folders, stacks of printed pages on a table, or a library of shelves filled with books, is real and physical. This is entirely different from something existing only on a screen, since it relates directly to our physical space, and to a sensorial perception developed over (at least) thousands of years.

When everything is reduced to the display screen, some kind of 'simulation' of space becomes necessary, since everything now must fit within these few inches. Also, in order to make the simulation understandable and/or realistic, any system for finding one's way ('navigating') within this virtual space should include a consistent interface, allowing for multiple perspectives and levels of viewing. Unfortunately, there has never been a clear standard for implementing this. The different strategies, symbols (icons, pictograms) and navigational structures of various competing systems have not yet succeeded in presenting readers of virtual printed content with a set of standards that they can easily become accustomed to. The result is that a so-called 'clean' virtual reading space remains more unfamiliar than the 'messy' physical one.

Another important characteristic of paper is the 'repeatability' of traditional print. Reading a magazine or a book means being part of a community of customers all reading exactly the same content, so they can all share a single reference. As Marshall McLuhan noted in *Understanding Media*: "Repeatability is the core of the mechanical principle that has dominated our world, especially since the Gutenberg technology. The message of the print and of typography is primarily that of repeatability." [5]

Theoretically, a digital file represents the very essence of repeatability, since it can be endlessly copied from one machine to another. In practice however,

[5] McLuhan, Understanding Media, p. 173

the slightest change in the file's content, or even in the technical protocol or features of the machine on which it is being rendered (for example, automatic adjustments or replacements of fonts, margins or colours) are enough to undermine the document's consistency and suddenly turn it into a quite different object.

And finally, a newspaper or magazine can be folded for convenient transport, can be dropped down the stairs without disastrous consequences, can be cut up for clippings, can be re-used for many different purposes. Do all these features suddenly become obsolete, simply because the ethereal nature of the online environment does not include them? Perhaps. But hundreds of years of reading and handling habits can't be discarded just like that.

PRINT ON DEMAND, THE BALANCE OF POWER BETWEEN PAPER AND PIXEL

Print has specific qualities which remain as of yet undisputed. Holding a printed object in one's own hands, or seeing it on a bookshelf, remains an essential experience in (at least some parts of) our cultural environment.
And the 'balance of power' between print and digital (if we still assume the end result to be some kind of printed product) seems now to lie with one technology which, more than any other, is allowing the printed page to survive the 'digitisation of everything': print on demand.

Print on demand (POD) is an extremely simple concept: the customer produces a PDF file of a magazine or book, and the POD service charges the customer a fee (there are cheaper and more expensive services, depending on the quantity and quality of services provided) to prepare and adjust the files for the production chain of a high-resolution, large-format, continuous digital copier. The customer can order any number of copies (even a single one) and the product is typically delivered within a week or so.

the end of paper:
can anything actually replace the printed page?

CONCEPTUAL DIFFERENCES AND SIMILARITIES
BETWEEN PRINT AND BLOGS

* Production
Print has high production costs, must usually be paid for in order to be read (an exception is free newspapers or other publications whose business model depends entirely on advertisement). It usually requires professional editors and often contributors. The content once printed cannot be changed.
Blogs have low production costs and can be read for free. They usually have one editor (who is the writer, or one of the writers, of the blog) or a very small number of editors. Distribution is cheap (through Internet hosting) — distribution costs are directly proportional to the blog's popularity. Published content can always be altered or corrected later on.

* Access
Print is always available, but not searchable.
The availability of blogs depends on access to the Internet and to electricity. Blogs are searchable.

* Aesthetics
Print is externally illuminated. It usually aims for a more thoughtful and less spontaneous tone. Its content is fixed forever in its original graphic design. Print involves sight, touch, smell, and hearing, and printed texts are usually longer than those posted online.
Blogs, like most other screen-based content, are mostly read on a backlit medium. They usually aim for a tone of inspired spontaneity. The graphic appearance of previously published content can be entirely changed anytime after publication. Blogs involve only the sense of sight, and perhaps also to some degree hearing (starting with the mouse clicks), and usually consist of short texts and possibly reader comments.

* Functionality
Print is never a 'real-time' production — the very nature of the printing process requires at least a minimal production period. Print usually refers to events that took place within a certain range of time before publication. It is usually published according to a schedule (which may also be flexible). If needed, a printed publication could conceivably be converted into a blog format.
Blogs are published according to a 'real-time' production model, more or less instantaneously, as soon as they have been written. They happen to be updated actively and frequently tends to increase the blog's reputation.

3. POST DIGITAL PUBLISHING /

Search, Compile, Publish — Towards a New artist's Web-To-Print Practice
Paul Soulellis

web to print: the library of the printed web

TOWARDS A NEW ARTIST'S
WEB-TO-PRINT PRACTICE

I collect artists' books, zines and other work around a simple curatorial idea: web culture articulated as printed artifact.

I began the collection, now called *LIBRARY OF THE PRINTED WEB*, because I see evidence of a strong web-to-print practice among many artists working with the internet today, myself included. All of the artists — more than 30 so far, and growing — work with data found on the web, but the end result is the tactile, analog experience of printed matter.

Looking through the works, you see artists sifting through enormous accumulations of images and texts. They do it in various ways — hunting, grabbing, compiling, publishing. They enact a kind of performance with the data, between the web and the printed page, negotiating vast piles of existing material. Almost all of the artists here use the search engine, in one form or another, for navigation and discovery.

These are artists who ask questions of the web. They interpret the web by driving through it as a found landscape, as a shared culture, so we could say that these are artists who work as archivists, or artists who work with new kinds of archives. Or perhaps these are artists who simply work with an archivist's sensibility — an approach that uses the dynamic, temporal database as a platform for gleaning narrative.

In fact, I would suggest that *LIBRARY OF THE PRINTED WEB* is an archive devoted to archives. It's an accumulation of accumulations, a collection that's tightly curated by me, to frame a particular view of culture as it exists right now on the web, through print publishing. That documents it, articulates it.

And I say right now because this is all new. None of the work in the inventory is more than five years old. We know that net art has a much longer history than this, and there are relationships between net-based art of the 90s and early 2000s and some of the work found here. And certainly there are lines that could be drawn even further into history — the use of appropriation in art going back to the early 20th century and beyond.

But what we have here in *LIBRARY OF THE PRINTED WEB* is something that's entirely 21st century and of this moment: a real enthusiasm for self-publishing, even as its mechanisms are still evolving. More than enthusiasm — it could be characterized as a mania — that's come about because of the rise of automated print-on-demand technology in only the last few years. Self-publishing has been around for awhile. Ed Ruscha, Marcel Duchamp, Benjamin Franklin (*The Way to Wealth)*, Virginia Woolf (*Hogarth Press*) and Walt Whitman (*Leaves of Grass*) all published their own work. But it was difficult and expensive and of course that's all changed today.

I could sell *LIBRARY OF THE PRINTED WEB* and then order it again and have it delivered to me in a matter of days. Just about. Only half of it is print-on-demand, but in theory, the entire collection should be available as a spontaneous acquisition; perhaps it soon will be. With a few exceptions, all of it is self-published or published by micropresses and that means that I communicate directly with the artists to acquire the works.

Besides print-on-demand, some of it is also publish-on-demand, and both of these ideas put into question many of our assumptions about the value we assign to net art, artists' books and the photobook. The world of photobook publishing, for example, is narrow and exclusive and rarified — it's an industry that designs and produces precious commodities that are beautiful and coveted, for good reason, with a premium placed on the collectable — the limited edition, the special edition, and even the idea of the sold-out edition. Controlled scarcity is inherent to high-end photobook publishing's success.

But many of the works in *LIBRARY OF THE PRINTED WEB* will never go out of print, as long as the artists makes them easily available. There is something inherently not precious about this collection. Something very matter-of-fact, straight-forward or even "dumb" in the material presentation of web culture as printed artifact. It's the reason I show the collection in a wooden box. It's utilitarian and functional and a storage container — nothing more than that.

So we have print-on-demand as a common production technique. But what about the actual work? What concepts on view here might suggest what it means to be an artist who cultivates a web-to-print practice? And how is print changing because of the web? Are there clues here?

The content of these books varies wildly, but I do see three or maybe four larger things at work, themes if you will. And these themes or techniques have everything to do with the state of technology right now — screen-based techniques and algorithmic approaches that for the most part barely existed in

the 20th century and may not exist for much longer. If something like Google Glass becomes the new paradigm, I could see this entire collection becoming a dated account of a very specific moment in the history of art and technology, perhaps spanning only a decade. And that's how I intend to work with this collection — as an archive that's alive and actively absorbing something of the moment, as it's happening, and evolving as new narratives develop.

So here are three or four very basic ideas at the heart of *LIBRARY OF THE PRINTED WEB*:
* Grabbing (and scraping)
* Hunting
* Performing

They are by no means comprehensive, and in each case the techniques that are described cross over into one another. So this isn't a clean categorization, but more of a rough guide. My goal is not to define a movement, or an aesthetic. At best, these are ways of working that might help us to unpack and understand the shifting relationships between the artist (as archivist), the web (as culture) and publishing (as both an old and a new schema for expressing the archive).

LIBRARY OF THE PRINTED WEB is a collection of works by artists who use screen capture, image grab, site scrape and search query to create printed matter from content found on the web. Library of the Printed Web includes self-published artists' books, photo books, texts, zines and other print works gathered around the casual concept of "search, compile and publish."

Artists featured in *LIBRARY OF THE PRINTED WEB* drive through vast landscapes of data to collect and transform digital information into analog experience; every work in the collection is a printed expression of search engine pattern discovery. Many of the works in *LOTPW* share common production and publishing techniques (e.g., print-on-demand), even as the content itself varies widely.

Founded in 2013 by artist Paul Soulellis, *LOTPW* presents evidence of a strong, emerging web-to-print-based artistic practice focused on the search engine and other algorithmic operations. As this view matures, the inventory of *LOTPW* will grow to reflect new concepts and methodologies.

Search, Compile,
Publish — Towards
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Web-To-Print Practice
Paul Soulellis

Rather than draw boundaries or define a new aesthetic, this collection of printed artifacts is presented as a reference tool for studying shifting relationships between the web (as culture), the artist (as archivist) and print publishing (as a new/old self-serve schema for expressing the archive).

PROJECTS

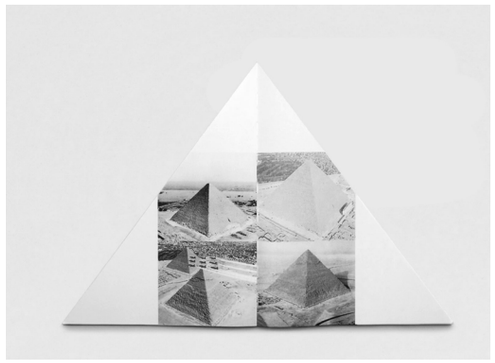
>

2012

22×30cm
Hardcover
72 pages colour photographs

Olivier Cablat

ENTER THE PYRAMID



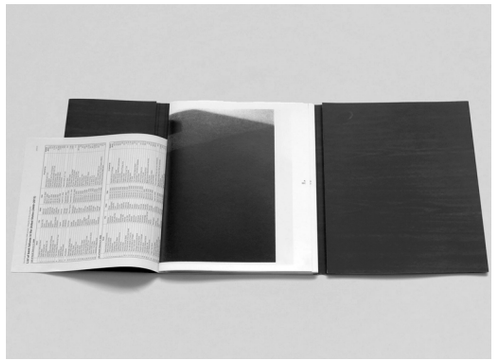
Enter the pyramid - first book of the project Egypt 3000 — is composed with a set of images found on the Internet using the keyword "pyramid". «Beyind a seeming simplicity, the structure of the book is as complex as the legendary internal complexity of the pyramids of Egypt. Going beyond the cliché tourist destination or postcard, the term is presented here in all its diversity, from reality to symbolic representation: its architectural posterity, its timeless character, its symbolic power, its popular dimension, its teeming imaginary — all are linked subtly and with humor.» Quentin Bajac, in The Aperture photobook review.

2014

23×28cm
Soft cover
138 pages

Penelope Umbrico

OUT OF ORDER



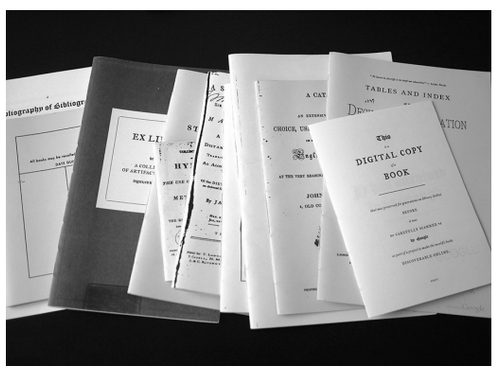
With *Out of Order*, Penelope Umberico creates a unique reflection on the 2008 financial crisis in artists book form. She organises and recontextualizes a collection of images found between 2008 and 2013 on websites buying the entire stock of furniture from offices going out of business. Among the offerings of used office desks for sale are the office plants whose job it was to make office employees feel more human — to give them something to care for in these synthetic modular spaces. The objects pictured in these images are the aftermath and by-products of a Modernism infused with a disparity between free market optimism and its dystopian result.

2009-2013

Dimensions variable
Twelve books

Benjamin Shaykin

SPECIAL COLLECTION



Special Collection consists of a dozen hand-sewn volumes, each partial recreations of books found on Google Books. Each is reproduced at its original size, revealing multiple disruptions and errors, introduced during Google's own scanning process: the scanner's hand, holding down and obliterating the page; type and illustrations which have degraded and blurred to the point of illegibility; pages scanned while in the process of being turned; fold-out maps and charts that were scanned while closed. Some of these artifacts are beautiful and evocative. They are the found poetry of this new machine.

2011

22.86×15.24cm
Offset printed on newsprint
66 pages

Penelope Umbrico

SIGNALS STILL / INK

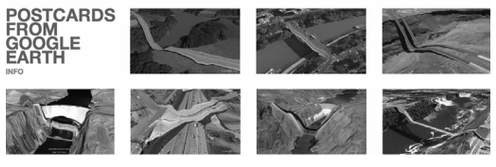
Signal to Ink is a narrative told through the photographed and the photographer. It navigates between physical space and screen space, between concrete reality and ephemerality; between heaviness and lightness; between emission and reception. It tells a story about presence and absence, being neither dead nor alive, but somewhere in between.

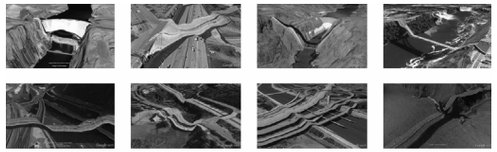
2010

Website

Clement Valla

POSTCARDS FROM GOOGLE EARTH





I collect Google Earth images. I discovered strange moments where the illusion of a seamless representation of the Earth's surface seems to break down. At first, I thought they were glitches, or errors in the algorithm, but looking closer I realized the situation was actually more interesting — these images are not glitches. They are the absolute logical result of the system. They are an edge condition — an anomaly within the system, a nonstandard, an outlier, even, but not an error. These jarring moments expose how Google Earth works, focusing our attention on the software. They reveal a new model of representation: not through indexical photographs but through automated data collection from a myriad of different sources constantly updated and endlessly combined to create a seamless illusion; Google Earth is a database disguised as a photographic representation. These uncanny images focus our attention on that process itself, and the network of algorithms, computers, storage systems, automated cameras, maps, pilots, engineers, photographers, surveyors and map-makers that generate them.

2011

15.2×22.9cm
Hardcover volume
740 pages

Silvio Lorusso and Giulia Ciliberto

BLANK ON DEMAND

Print on Demand technology allows to make a book without the intermediation of a publisher, setting autonomously size, amount of pages and price. *Blank on Demand* is an experiment that aims to probe the limits imposed by this production process. The two volumes are completely blank, except for the presence of the ISBN code. The experiment investigates the influence of the current technological context on the materiality of the book object.

4. HYBRID PUBLICATION /

post-digital publishing, hybrid and processual objects in print

Ludovico, Alessandro (2014) . "Post-Digital Publishing, Hybrid and Processual Objects in Print" . In Christian Ulrik Andersen and Geoff Cox . *A Peer-Reviewed Journal About: Post-Digital Research* . Volume 3, Issue 1 . (pp. 78-85) . Digital Aesthetics Research Centre, Aarhus University

Post-Digital Publishing, Hybrid and Processual Objects in Print

Alessandro Ludovico

post-digital publishing, hybrid and processual objects in print

This paper analyses the evolution of printed publishing under the crucial influence of digital technologies. After discussing how a medium becomes digital, it examines the 'processual' print, in other words, the print which embeds digital technologies in the printed page. The paper then investigates contemporary artist's books and publications made with software collecting content from the web and conceptually rendering it in print. Finally, it explores the early steps taken towards true 'hybrids', or printed products that incorporate content obtained through specific software strategies, products which seamlessly integrate the medium specific characteristics with digital processes.

HOW A MEDIUM BECOMES DIGITAL (AND HOW PUBLISHING DID)

For every major medium (vinyl and CDs in music, and VHS and DVD in video, for example) we can recognise at least three stages in the transition from analogue to digital, in both the production and consumption of content.

The first stage concerns the digitalisation of production. It is characterised by software beginning to replace analogue and chemical or mechanical processes. These processes are first abstracted, then simulated, and then restructured to work using purely digital coordinates and means of production. They become sublimated into the new digital landscape. This started to happen with print at the end of seventies with the first experiments with computers and networks, and continued into the eighties with so-called 'Desktop Publishing', which used hardware and software to digitalise the print production (the 'prepress'), a system perfected in the early nineties.

The second stage involves the establishment of standards for the digital version of a medium and the creation of purely digital products. Code becomes standardised, encapsulating content in autonomous structures, which are universally interpreted across operating systems, devices and platforms. This is a definitive evolution of the standards meant for production purposes into standalone standards (here the PDF is an appropriate example, enabling digital

'print-like' products), that can be defined as a sub-medium, intended to deliver content within specific digital constraints.

The third stage is the creation of an economy around the newly created standards, including digital devices and digital stores. One of the very first attempts to do this came from Sony in 1991, who tried to market the Sony Data Discman as an 'Electronic Book Player' — unfortunately using closed coding which failed to become broadly accepted. Nowadays the mass production of devices like the Amazon Kindle, the Nook, the Kobo, and the iPad — and the flourishing of their respective online stores — has clearly accomplished the task (of 'Data Discman'). These online stores are selling thousands of e-book titles, confirming that we have already entered this stage.

Post-digital print starts here, with the alchemic intertwining of the traditional print with the digital (finally taken for granted) that generates new type of publications and genres.

THE PROCESSUAL PRINT AS THE INDUSTRY PERCEIVES IT (ENTERTAINMENT)

Not only have digitalisation processes failed to kill off traditional print, they have also initiated a redefinition of its role in the mediascape. If print increasingly becomes a valuable or collectable commodity and digital publishing also continues to grow as expected, the two may more frequently find themselves crossing paths, with the potential for the generation of new hybrid forms. Currently, one of the main constraints on the mass-scale development of hybrids is the publishing industry's focus on entertainment.

Let's take a look at what is happening specifically in the newspaper industry: on the one hand we see up-to-date printable PDF files to be carried and read while commuting back home in the evening, and on the other we have online news aggregators which gather various sources within one application with a slick unified interface and layout. These are not really hybrids of print and digital, but merely the products of 'industrial' customisation — the consumer 'choice' of combining existing features and extras, where the actual customising is almost irrelevant. The way the aggregators are assembling the selected sources is limited by available screen space, or technological compatibility, missing the whole point of the real multiplicity of sources on the Internet, especially if graphically experienced in their own context.

Even worse, the industry's best effort at coming to terms with post-digital print (print embedding some active digital qualities) is currently the QR code — those black-and-white pixelated square images which, when read with the proper mobile phone app, allow the reader access to content (usually a video or web page). This kind of technology could be used much more creatively, as a means of enriching the process of content generation. For example, since they use networks to retrieve the displayed content, printed books and magazines could include QR codes as a means of providing new updates each time they are scanned — and these updates could in turn be made printable or otherwise preservable. Digital publications might then send customised updates to personal printers, using information from different sources closely related to the publication's content. This could potentially open up new cultural pathways and create unexpected juxtapositions (Ludovico 155).

On a different side, the Electronic Literature field of studies is also slowly starting to reflect about these new relationships between language and its representation on the screen. In *Between Page and Screen* by Amaranth Borsuk and Brad Bouse (Borsuk), poetry can be read in its own animated form, after a QR code printed on their book is exposed to the laptop camera and interpreted by a specific software.

What we can read is in a three-dimension perception of the screen, in a classic augmented reality, which becomes our 'reading space', eventually even animated, and expanding print directly into the screen. But beyond the spectacular visuality of the poetry, and the great potential of those technologies to be used for designing a different space, this work is a relatively static process, all planned by the author and only reproducible in an exact way. The enormous potentialities of software and networks to be integrated creating new significant paths at every step is here stopped to stick with the product.

PRINTING OUT THE WEB

Many possibilities emerge from the combination of digital and print, especially when networks become involved (and therefore infinite supplies of content that can be reprogrammed or recontextualized at will). A number of different strategies have been employed to assemble information harvested online in an acceptable form for use in a plausible print publication.

One of the most popular of these renders large quantities of Twitter posts (usually spanning a few years) into fictitious diaries. *My Life in Tweets* by James Bridle is an early example realised in 2009 (Bridle). The book compiled all of the author's posts over a two-year period, forming a sort of intimate travelogue. The immediacy of tweeting is recorded in a very classic graphical layout, as if the events were annotated in a diary. Furthermore, various online services have started to sell services appealing to the vanity of Twitter micro-bloggers, for example Bookapp's Tweetbook (book-printing your tweets) or Tweetghetto (a poster version).

Another very popular 'web sampling' strategy focuses on collecting amateur photographs with or without curatorial criteria. Here we have an arbitrary narrative, employing a specific aesthetic in order to create a visual unity that is universally recognisable due to the ubiquitousness of online life in general, and especially the continuous and unstoppable uploading of personal pictures to Facebook.

A specific sub-genre makes use of pictures from Google Street View, reinforcing the feeling that the picture is real and has been reproduced with no retouches, while also reflecting on the accidental nature of the picture itself. Michael Wolf's book *a series of unfortunate events*, points to our very evident and irresistible fascination with 'objets trouvé', a desire that can be instantly and repeatedly gratified online (Wolf).

Finally, there's also the illusion of instant-curation of a subject, which climaxes in the realisation of a printed object. Looking at seemingly endless pictures in quick succession online can completely mislead us about their real value. Once a picture is fixed in the space and time of a printed page, our judgments can often be very different.

Such forms of 'accidental art' obtained from a 'big data' paradigm, can lead to instant artist publications such as Sean Raspet's *2GFR24SMEZZ2XMCVI5 . . .* A Novel, which is a long sequence of insignificant captcha texts, crowd-sourced and presented as an inexplicable novel in an alien language (Raspet).

There are traces of all the above examples in Kenneth Goldsmith's performance *Printing Out The Internet* (Goldsmith). Goldsmith invited people to print out whatever part of the web they desired and bring it to the gallery LABOR art space in Mexico City, where it was exhibited for a month (which incidentally also generated a number of naive responses from environmentally concerned people). The work was inspired by Aaron Swartz and his brave and dangerous liberation of copyrighted scientific content from the JSTOR online archive

(Kirschbaum). It is what artist Paul Soulellis calls "publishing performing the Internet" (Soulellis).

Having said all this, the examples mentioned above are yet to challenge the paradigm of publishing — maybe the opposite. What they are enabling is a 'transduction' between two media. They take a sequential, or reductive part of the web and mould it into traditional publishing guidelines. They tend to compensate for the feeling of being powerless over the elusive and monstrous amount of information available online (at our fingertips), which we cannot comprehensively visualise in our mind.

Print can be considered as the quintessence of the web: it is distributing a smaller quantity of information available on the web, usually in a longer and much better edited form. So the above mentioned practices sometimes indulge in something like a 'miscalculation' of the web itself — the negotiation of this transduction is reducing the web to a finite printable dimension, denaturalising it. According to Publishers Launch Conferences' cofounder Mike Shatzkin, in the next stage "publishing will become a function. . . not a capability reserved to an industry" (Shatzkin).

HYBRIDS, THE CALCULATED CONTENT IS SHAPED AND PRINTED OUT

This 'functional' aspect of publishing, at its highest level, implies the production of content that is not merely transferred from one source to another, but is instead produced through a calculated process in which content is manipulated before being delivered. A few good examples can be found in pre-web avant garde movements and experimental literature in which content was unpredictably 'generated' by software-like processes.

Dada poems, for example, as described by Tristan Tzara, are based on the generation of text, arbitrarily created out of cut-up text from other works (Cramer). One of the members of the avant-garde literature movement Oulipo created a similar 'generative' concept later: Raymond Queneau's *Cent Mille Milliards de Poèmes* is a book in which each page is cut into horizontal strips that can be turned independently, allowing the reader to assemble an almost infinite quantity of poems, with an estimated 200 million years needed to

read all the possible combinations (*Hundred Thousand Billion Poems*). Here a natural gesture becomes a process in the hands and eyes of the reader who can endlessly create not just a combinatory type of content, but truly unexpected poetry. That an Oulipo member created this was no accident — the movement often played with the imaginary of a machinic generation of literature in powerful and unpredictable ways.

Contemporary experiments are moving things a bit further, exploiting the combination of hardware and software to produce printed content that also embeds results from networked processes and thus getting closer to a true 'form'. This 'form' should define at the technical and aesthetic levels the hybrid as a new type of publication, seamlessly integrating the two worlds (print and digital) up to the point that despite its appearance and interface, they would be inextricably tied together through the content. So it's not just about 'automatically generating a text' and printing it, or randomly assembling bits and pieces of (eventually printed) content in digital form. A hybrid product should have a strategy composed by its software part, which would provide some content through a process, and an analogue part which would frame and contextualise it. The level that this hybridisation can reach is only limited by the conceptualisation and the sophistication of the act and the process.

If we take the traditional book as a starting point there are few cases of early hybrids. Martin Fuchs and Peter Bichsel's book *Written Images* is an example of the first 'baby steps' of such a hybrid post-digital print publishing strategy (Fuchs). Though it is still a traditional book, each copy is individually computer-generated, thus disrupting the fixed 'serial' nature of print. Furthermore, the project was financed through a networked model (using Kickstarter, the very successful 'crowdfunding' platform), speculating on the enthusiasm of its future customers (and in this case, collectors). The book is a comprehensive example of post-digital print, through the combination of several elements: print as a limited-edition object; networked crowdfunding; computer-processed information; hybridisation of print and digital forms — all residing in a single object — a traditional book. This hybrid is still limited in several respects, however: its process is complete as soon as it is acquired by the reader; there is no further community process or networked activity involved; once purchased, it will forever remain a traditional book on a shelf.

A related experiment has been undertaken by Gregory Chatonsky with the artwork *Capture* (Chatonsky). Capture is a prolific rock band, generating new songs based on lyrics retrieved from the net and performing live concerts of its own generated music lasting an average of eight hours each. Furthermore the band is very active on social media, often posting new content and comments. But we are talking here about a completely invented band. Several books have been written about them, including a biography, compiled by retrieving pictures and texts from the Internet and carefully (automatically) assembling them and printing them out. These printed biographies are simultaneously ordinary and artistic books, becoming a component of a more complex artwork. They plausibly describe a band and all its activities, while playing with the plausibility of skilful automatic assembly of content. In *Capture* the software process is able to create a narrative that can be almost universally read, potentially 'updated' for every print (or anytime), and eventually infiltrating some of the alternative music histories, resulting as a future fake reference, accepted and historicised.

Another example of an early hybrid is *American Psycho* by Mimi Cabell and Jason Huff (Cabell). It was created by sending the entirety of Bret Easton Ellis' violent, masochistic and gratuitous novel *American Psycho* through Gmail, one page at a time. They collected the ads that appeared next to each email and used them to annotate the original text, page by page. In printing it as a perfect bound book, they erased the body of Ellis' text and left only chapter titles and constellations of their added footnotes. What remains is *American Psycho*, told through its chapter titles and annotated relational Google ads only. Luc Gross, the publisher, goes even further in predicting a more pervasive future: "Until now, books were the last advertisement-free refuge. We will see how it turns out, but one could think about inline ads, like product placements in movies etc. Those mechanisms could change literary content itself and not only their containers. So that's just one turnover."

In *American Psycho* the potential of the 'accidental' information, generated by the massive online advertisement mechanism is turned into a whole work. It tells a story through the generated advertisement parasites exploiting a unstoppable commercial mechanism, transducing a literature work into the language of advertisement through the 'quoting email' which then become active agents in the process.

Finally, why can't a hybrid art book be a proper catalogue of artworks? Les Lien Invisibles, an Italian collective of net artists have assembled their own, called *Unhappening, not here not now* (Les Liens Invisibles). It contains pictures and essential descriptions of 100 artworks completely invented but consistently

assembled through images, generated titles and short descriptions, including years and techniques for every 'artwork'. Here a whole genre (the art catalogue or artist monograph) is brought into question, showing how a working machine, properly instructed, can potentially confuse what we consider to be 'reality'. The catalogue, indeed, looks and feels plausible enough, and only those who read it very carefully can have doubts about its authenticity.

PROJECTS

>

2009

Performance

Gregory Chatonsky

CAPTURE

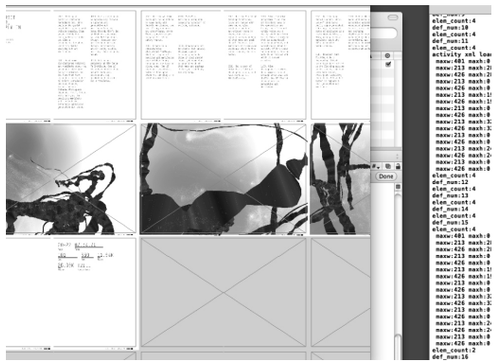
Capture is an ironic solution to the crisis of industrial cultures. For years, the music industry continues to stage its disappearance, because the Internet users illegally download mp3 files. *Capture* is such a productive fictitious rock band, that nobody can consume everything. It produces new music, words, images, videos and derived products every hour. Every new file is automatically translated into other forms. If an mp3 file is downloaded once, it is erased from the server and therefore, it is the 'consumer' who becomes the only possible broadcaster. In submerging the consumption by generative technologies, *Capture* reverses the consumerism ideology and the relation between desire and objects. By being very productive, *Capture* even exceeds the possibility of being listened.

2011

Web

Martin Fuchs and
Peter Bichsel

WRITTEN IMAGES



A generative book that presents programmed images by various artists. Each print in process will be calculated individually — which makes every single book unique. Artists, designers and developers are encouraged to program image creating applications, which will be published as four-page spreads in the book. These programs visualize internet data-streams or display self-generated content. They are able to save continuously changing images on demand. Every application will run through an auto-generative printing program which generates and compiles all images and metatexts into a printable book.

2013

Web
Print

Kenneth Goldsmith

PRINTING OUT THE INTERNET

In May 2013, Goldsmith asked for people to print out pages from the Internet and send it to an art gallery, LABOR in Mexico City, over "Printing out the Internet" Tumblr for an exhibition from 26 July to 30 August 2013. Goldsmith dedicated a 500 square meter space with a six meter tall ceiling to the exhibit, which was filled with ten tons of paper during the exhibit. Aaron Swartz, a programmer and Internet activist, inspired the project in his movement to liberate information, making academic files available in the public domain for free. The exhibit was controversial due to the environmental impact entailed with printing out the Internet and the copyrighted materials included in the exhibit.

2012-2014

Web
Photography

Michael Wolf

A SERIES OF UNFORTUNATE EVENTS

In "a series of unfortunate events" he transforms accidental details into images, with their "screen-y" texture left untouched to emphasize the ephemerality of their origins. It's not a semi-automatic gathering of material, but an attentive selection of something which shouldn't be in Google's aseptic representation of reality, turning out to be already a classic in Goggle Street View related art. The frozen instant of the industrial street mapping is then exploited in its unsuspected qualities, parasitized through aesthetic, human, metaphorical or technical errors. In the growing galaxy of the "printed web" Wolf assembles then a unique photographic book, with all the classic elements of this format (the paper, the layout, the captions), but perfectly interpreting at the same time how photographs should be taken within a popular digital environment.

CONCLUSIONS

Categorising these publications under a single conceptual umbrella is quite difficult and even if they are not yet as dynamic as the processes they incorporate, it's not trivial to define any of them as either a 'print publication' or a 'digital publication' (or a print publication with some digital enhancements). They are the result of guided processes and are printed as a very original (if not unique) static repository, more akin to an archive of calculated elements (produced in limited or even single copies) than to a classic book, and so confirming their particular status. The dynamic nature of publishing can be less and less extensively defined in terms of the classically produced static printed page. And this computational characteristic may well lead to new types of publications, embedded at the proper level. It can help hybrid publications function as both: able to maintain their own role as publications as well as eventually being able to be the most updated static picture of a phenomenon in a single or a few copies, like a tangible limited edition. And since there is still plenty of room for exploration in developing these kind of processes, it's quite likely that computational elements will extensively produce new typologies of printed artefact, and in turn, new attitudes and publishing structures. Under those terms it will be possible for the final definitive digitalisation of print to produce very original and still partially unpredictable results.

* * *

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5. ARCHIVE (PUBLISHING ARCHIVE) /

- **the archive**
- **the archive under the technical conditions of computational media**
- **network culture articulates as printed artifact**

Lorusso, Silvio. "**Post-Digital Publishing Archive, Projects and Artworks at the Intersection of Publishing and Digital Technology**" . In *Abstract* http://p-dpa.net.

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5. ARCHIVE (PUBLISHING ARCHIVE) /

Post-Digital Publishing Archive, Projects and Artworks at the Intersection of Publishing and Digital Technology
Silvio Lorusso

the archive

The aim of P-DPA is to systematically collect, organize and keep trace of experiences in the fields of art and design that explore the relationships between publishing and digital techonology. The archive acts as a space in which the collected projects are confronted and juxtaposed in order to highlight relevant paths, mutual themes, common perspectives, interrelations, but also oppositions and idiosyncrasies.

Among the main questions posed by P-DPA, there are:
_____How do artists and designers articulate the relationships between publishing and digital technology?
_____In which ways the role of printed matter is redefined by digital technology and what kind of negotiation takes place between the two?
_____In the post-digital era, where does publishing cease to be publishing?
_____What boundaries need to be drawn in terms of media, ecosystems and practices?
_____Are artists and designers able to identify issues that are not covered in the debate on the future of publishing, generally led by a straightforward, normative and often commercially-driven notion of innovation?
_____Which strategies are they introducing to address those issues?
_____What kind of impact do experimental modes of production, intervention and dissemination of content have on publishing?
_____What sort of meaning do traditional forms of printed publishing (such as the book or the magazine) assume when immersed in a context characterized by the pervasivity of digital technology?

P-DPA is a curated archive but it's open to submissions. It allows users with backgrounds in various disciplines to develop their own paths and interact in a specific way with its contents. For instance, the archive could be useful to interface designers, literature historians, publishers, media theorists and art critics. Furthermore, P-DPA houses critical reflection and commentary on the projects and their context. In this perspective, general overviews, crytical analyzes, articles and interviews are hosted.

The development of P-DPA, which is currently not publicly accessible, is documented on p-dpa.tumblr.com. The archive also acts as a thematic aggregator of materials found in various other archives and sources (such as the Library of the Printed Web or the Rhizome's ArtBase).

Within the instability and forgetfulness that are typical of the information age, P-DPA acts as a mean of preservation, not only storing the digital versions of the single work, but also investigating and philologically addressing the context, the ecosystems and the cultural conditions in which those experiments exist.

PRESERVATION, CONNECTIONS AND NETWORKS

As net art, and contemporary art in general, has shown, preservation becomes a particularly urgent and tricky issue when it's aimed at natively digital works (e.g. softwares, websites, devices): the obsolescence of devices and platforms often tangles a genuine reproduction of the experience provided by the piece. Sometimes even the specific aspects addressed by the artwork (e.g. interface designs, a function of a software, production and conversion systems) quickly disappear from the records, complicating the interpretation of its scope.

Printed matter in turn results often volatile: for instance, as several collected items are books available only in print on demand, some of them even play with the impossibility of being purchased and thus becoming physical objects (e.g. selling the book for an extremely heavy price). And even when a certain amount of physical copies does exist, it could be difficult to interpret the book's context because of the absence, so to say, of author name, publication date, etc.

Finally, while the inclusion criteria are primarily thematic, the artist's or designer's reputation is not relevant. Therefore the archive comprehends several works by students, amateurs and outsiders of the arts and design world. In doing so, P-DPA deals with the widespread empowerment provided by "universal" access to digital tools.

The thematic focus of P-DPA aims at revealing unnoticed relationships and connections between experiences belonging to different fields. Those relationships and connections represent the starting point for a conscious critique and a history of post-digital publishing employing artworks as landmarks and critical statements. The archive is also an opportunity to create a space for dialogue and exchange between artists and designers.

INCLUSION CRITERIA

The (art)works should inherently address or anticipate one or more aspects of publishing and one or more aspects of digital technology according to the following categories.
* Tools, modes of production, design (e.g. DTP, crowdsourcing, print on demand);

* Digital features (e.g. DRM, Internet, database);
* Devices (e.g. computer, e-reader);
* Distribution, dissemination, appropriation, intervention (e.g. remix, plagiarism, download);
* Categorization, archiviation, organization, structure (e.g. ISBN, tags, metadata, index);
* Bookness, bookform, book as object (e.g. skeuomorphism, binding);
* Spaces and rituals related to books and publishing (e.g. online store, bookshop, library);
* Book typologies (encyclopedia, catalog, magazine).

* Inherence
Not every printed book designed through digital tools or distributed via online platforms should be included in P-DPA. Here's where the "inherence" of the single project becomes crucial: in order to be included in the archive, a work, through its own nature, should actively question, highlight or reframe constitutive aspects of publishing in the post-digital age. Of course, this perspective on the works holds a level of ambiguity that is the result of the unique identity of the archive, which point of view is ultimately subjective. Inherence is a fluid criterion in a dialectic relationship with the digital environment. For instance, nowadays we consider copy-paste an inherently digital function, but it has not always been so.

* Anticipation
An experimental project that predates the universal spread of digital technology shouldn't be excluded from the archive *a priori*. P-DPA applies a "post-digital gaze" to experiences that, more or less consciously, anticipate modalities of the digital age. As an example, several "net-work-enabling" counterculture magazines could be considered as tangible expressions of what would later become known as the blogosphere.

MAIN FIELDS OF INQUIRY

In order to guide the research of the projects to include in the archive, three main fields of inquiry are defined:
* Critical design: the space in which graphic and interaction design intersect and act as critical tools;
* The field of artists' books and bookworks;
* The area of new media art.

In those areas, several perspectives on publishing and experimental forms of dialogue between digital and analog are embedded into more extensive inquiries regarding the impact of technology on behavior, on the dissemination

of knowledge and on the very definition of culture. The confrontation with these issues often requires the development of operative strategies that allow to test the limits and potential outcomes of technologies. In doing so, artists and designers outline parallel universes in which the extreme consequences of progress are highlighted and therefore opposed to the status quo.

* Critical Design
According to Anthony Dunne, the work of the designer can lead to «conceptual design proposals offering a critique of the present through the material embodiment of functions derived from alternative value systems» (Dunne 2005). The "critical designer" develops artifacts, prototypes or even concepts, the purpose of which is to raise questions on the implications of design itself on society. Those experimental designs are often able to provide direct and effective arguments against or in favor of a certain issue and exploit the possibilities of dissemination of new technologies.

* Artists' Books and Bookworks
Johanna Drucker, book artist and historian of artists' books, states that «artists' books are almost always self-conscious about the structure and meaning of the book as a form» (Drucker 2004). In this sense artists' books are useful analytical tools of the current condition of the book as a designed artifact, as a cultural object and as a commodity. Furthermore they provide alternative reading models, often antifunctionalist, as they are «books in which the book form, a coherent sequence of pages, determines conditions of reading that are intrinsic to the work» (Carrión 1980). The proposed models, more or less viable, often represent a radicalization of the technical aspects that affect the act of reading.

* New Media Art
"New media art" could be a misleading term because it seems to refer only to new media, and so to artworks that include digital technology to be developed or displayed. Frequently new media art takes into account digital tools as a cultural reference, therefore it's not unusual to encounter projects employing traditional techniques and media such as painting or printed books. The notion of "new media" itself is problematic and, in the context of this research, it will be interpreted both as digital technology and as emergent media opposed to settled ones.

PICKS FROM P-DPA

The following selection is meant to give an insight into the broad variety of projects included in P-DPA, in terms of media, adopted strategies, focus and historical periods.

PROJECTS

>

2009-Present

Website

Pierre Hourquet

BOOKSONLINE.FR

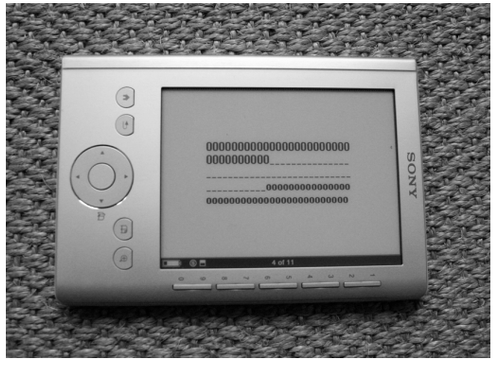
BooksOnLine.fr is a platform that hosts photobooks shown through a minimal book-like interface. This paradoxical and ironic use of the book as a semibidimensional, iconic visual entity reinforces the digitality of the experience.

2010

E-book

Megan Hoogenboom

BOEM PAUKESLAG



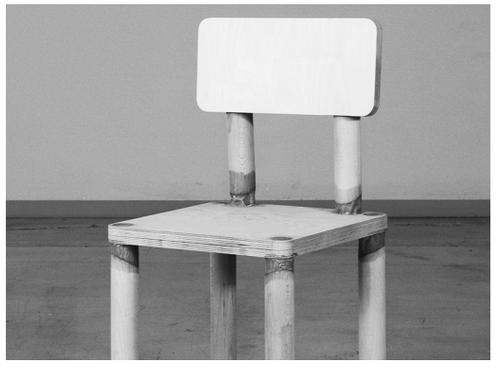
The project consists of an ePub version of *Boem Paukeslag*, an artist's book made in the 1920's. The digital version shows the limitations and the contradictions that derive from the main principle behind the ePub standard which is general compatibility. In fact the complex layout obtained is only correctly visible on the specific device in which the book was developed.

2013

Interactive piece
of furniture

Les Sugus

DRM CHAIR



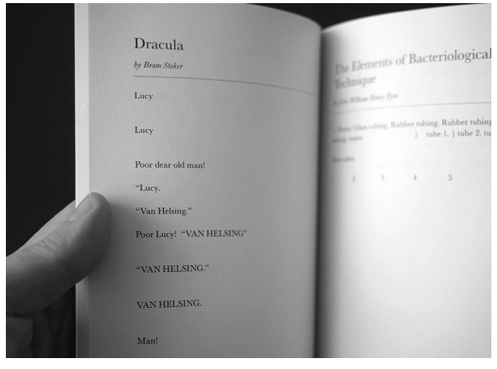
The DRM Chair is a chair that has a limited number of use before it self-destructs. Through the translation of DRM based on number of use to the physical world, the absurdity of the system becomes apparent.

2010

Book
E-book

Jason Huff

AUTOSUMMARIZE



AutoSummarize includes the 100 most downloaded copyright free books summarized using Microsoft Word 2008's AutoSummarize 10-sentence function and organized alphabetically. The results, often surprisingly sarcastic, aren't dissimilar from spam and reflect the contemporary tendency to compress as much as possible to capture only the necessary information.

* * *

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5. ARCHIVE (PUBLISHING ARCHIVE) /

The Post-Archival Constellation: The Archive Under the Technical Conditions of Computational Media

David Berry

the archive under the technical conditions of computational media

In the present age, the archive is no longer hidden away in national libraries, museums, and darkened rooms, restricted in access and guarded by the modern-day equivalents of Jacques Derrida's *archons* — the guardians of the archive. Indeed, researchers and archivists' hermeneutic right and competence — and the power to interpret the archives — have been transformed with digitalization and the new technics of computational surfaces. Through computation, access to archives is made possible and often welcomed — through rectangular screens that mediate the archives contents or through interfaces and visualizations that reanimate a previously inert collection. We might consider this not only a de-archiving of what we previously understood an archive to be but also as a creation of new archival forms through practices of re-archiving. [1] Indeed, Wolfgang Ernst argues that the original role of an archive was 'to preserve [...] for an indefinite time, or even to bar present access, conserving [...] for later, unexpected, and hence truly informational use'. For Derrida, the 'gathering' of an archive was the 'dwelling in a location' and a place for objects and knowledge to be sheltered. It was a place of classification and putting into order a process of archivization. Indeed, as he argued, 'archivable meaning is also and in advance codetermined by the structure that archives'.

This is another way of saying that the archive, as printing, writing, prosthesis, or hypomnesic technique in general is not only the place for stocking and for conserving an archivable content of the past which would exist in any case, such as, without the archive, one still believes it was or will have been. No, the technical structure of the archiving archive also determines the structure of the archivable content even in its very coming into existence and in its relationship to the future. The archivization produces as much as it records the event.

[1] By de-archiving, I am gesturing towards the transformation of the archive from a static space into one that is informed and interpenetrated by computation that restructures space through formatting, structuring, and classification. Computation reaches into the depths of all archives, and in doing so reorganizes knowledge, artifacts, objects, and systems on the principle of computational knowledge.

The means by which an archive is produced as an archive through archival practices and materialities is a crucial aspect of the argument I want to make in this essay. However, the archival materialities and practices that are generated and reinforced through computation raise important questions about how an archive is mediated when abstracted, delegated, or remapped through software. Archives still tend to preserve the physical record of their production but increasingly the notion of the archive has expanded to include metadata, catalogues, scholarly editions, databases, interfaces, and digital tools. The archive, which is 'traditionally that which arrests time, which stops all motion, [instead] is set in motion in the age of digitization'. In this chapter, I explore how the archive is increasingly linked to the notion of a diagram, such as a database, and how it is mediated through the computational interfaces and surfaces that set archives in motion. By examining the projective nature of computational processes, both in terms of the visibility of the remembered and the dark memory of the forgotten, this chapter explores how the post-archival constellation creates a generalized condition of forgetting. To make something computable requires that it be abstracted twice over: it must be encoded in a symbolic system of digital abstractions and captured in a grammar of actions that can be prescribed back onto physical activity.

Abstraction thus raises the possibility of a technical derangement of knowledge, practices, and artifacts, and it is from this perspective that I view the emergence of a new 'post-archival' constellation. I will tentatively trace the implications of abstraction for the concept of social memory and a new social organization of knowledge. The archive is changed in the sense that it 'transmits the social bit by bit, transforming it technologically and becoming its key stimulus for evolution and industrial revolution'. Through its digital remediation it is put in a condition of performativity and, thereby, accelerated. Thus, culture itself, understood as a kind of tertiary formation, is remade when materialized in a digital form. By the post-archival, I am gesturing towards the notion of a 'post-digital' re-materialization of digital technology and its integration into physical environments but also the idea of a historical phase of development that comes after the digital and changes the concept of the archive as a means of memory storage. [2]

A new dimension has been added to the archive, now that its velocities support not just storage but also innovation: the archive must 'erase information not

[2] See Taffel for a useful discussion of the notion of the postdigital.

only through economic reality but in order to be able to remember — even if delegation of "reading" to machines working at the speed of light allows for the sheer mass of memorisable material to be significantly increased'. We are here confronted with a process in which the links between the contents of archives and their internal structure are increasingly lost or hidden, while a computerized ledger abstracts the archive from its representation. This changes the frameworks of social and individual memory — a fact that becomes manifest in epistemic communities that form around archives but which cannot always decode what is written or may even be overwhelmed by the sudden increase in archival materials previously subject to the constraints of access and storage. It also becomes manifest in the techniques and practices used in social reproduction such as teaching, learning, and specific literacies as well as in the problems of access that arise once memory is stored and transmitted in non-human readable forms. Could it be that the computational transformations in the structure and use of archives may act as a canary in the coalmine for wider changes in knowledge in society more generally?

DE-ARCHIVING THE ARCHIVE

The traditional pre-digital structure of archives and practices of archivization were captured and stabilized through memory institutions such as museums, national libraries, universities, and national archives, often funded by the state. These institutions provided an organizational form and institutional structure that made possible a political economy for archives as such and hence an economic stability to the archive in question. Institutions provided a decision-making centre around the collection of archives, in essence an institutionalized archivization process that delivered judgment in combination with curatorial functions. Indeed, the archive became 'defined as a given, preselected quantity of [artifacts] evaluated according to their worth for being handed down'. The structure of traditional institutional arrangements around the archive was legitimated through a complex chain of practices and institutionalizations that authorized decisions to be taken about which parts of the present (and past) should be kept and what should be discarded.

In contrast, in an age when digital technologies are delegated greater responsibility for a collection, computational rationalities are also increasingly granted the task of archiving and re-presenting materials: through computational analytics and user data, the archive creates a second-order archive. [3] This reflexive database (metadata) of the archive's use and motion can be used to fine-tune, curate, and prune the archive algorithmically, and in some cases also literally, in the sense of discarding artifacts that are not needed or which do not appear to have the cultural value initially expected. The ability

of softwarized archives to make visible previously 'hidden' archives also serves as a justification for how an archive might be judged, such that 'increasingly, materials that are electronically inaccessible are simply not used'. A paradox of digitality is the way in which its convenient surfaces serve to conceal that which is not digital.

We are indeed faced with new archival machines that demand not just a different social ontology but also different ways of exploring and interacting with archives. These new gateways to social memory are manifested in algorithms that instantiate a new archival imaginary — a post-archival constellation that is constantly modulated and 'augmediated'. [4] In Ernst's view, in 'the age of technology-driven media, both material archaeological strata and the symbolical order of the archive are progressively being conceived as essentially processual by nature'. This processuality changes the way in which the archive functions, not least when it comes to selection: the quantification that comes with digitalization and the concomitant production of metadata feeds back into the qualitative judgments about what should be stored. This is often seen as a useful outcome of digitization, since the ability to track usage statistics, etc. may lead to the development of precise qualitative and quantitative measures for the evaluation of special collections.

With the increasing interpenetration of computational systems and processes, we are thus witnessing a dramatic change in the material structure of memory institutions — in part due to technical changes but also due to the social ontologies that computational logic seems to produce. The digital creates a different kind of collection: digital archives are malleable and reconfigurable in multiple ways and do not necessarily need to conform to the organization structures and systems of traditional archives. The new archival management systems have been claimed to 'play a role in making archives more efficient and collections more visible', [5] yet the possibility of 'infinite archives' creates a new set of problems, particularly in born-digital and digitized collections where huge quantities of articles, texts, and data are suddenly made available.

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[3] Archives would previously have had a second-order documenting system associated with it, but it would have been paper-based and not subject to the same degree of calculability of a digital records system or archival management system.

[4] For a discussion of the concept of augmediation, see Mann.

[5] Archival management systems are a kind of software that typically provide integrated support for the archival workflow, including appraisal, accessioning, description, arrangement, publication of finding aids, collection management, and preservation. See Spiro, p. 1.

Now we are offered the possibility of generating comprehensive and exhaustive archives rather than curated ones. Crucially, such archives are 'deeply computational in structure and content because the computational logic is entangled with the digital representations of physical objects, texts and "born digital" artifacts'.

Indeed, the logic of digitization implies that rather 'than being a purely read-only memory, new archives are successively generated according to current needs' — thanks to the use of computational searches, aggregations, collections, and application programming interfaces (APIs) that facilitate the interoperability and networking of archives. In other words, digitization 'tends to move the archive toward an [informational] economy of circulation: permanent transformations and [constant] updating' which can also paradoxically result in a static archive of physical artifacts. [6]

The fundamental programmability of computational media thus raises new questions for storing knowledge and culture: the archive 'is no longer simply a passive storage space but becomes generative itself in algorithmically ruled processuality'. Basic principles of computation — modularity, iteration, abstraction, optimization, etc. — are applied across the multiple levels of the computational system's operation. The question of the archive is therefore increasingly linked to new digital spaces and microtemporalities and the way in which they structure, organize, and mediate archival systems, institutions, and political economies.

In changing the structure of archives, and the memory institutions that curate and store them, computation renders them anew through a grammatization process that discretizes and re-orders. This process can be as simple as the infinitely re-orderable process of creating a database. It is also amenable to spatial planning and algorithmic analysis that presents the opportunity for a logic of objectification: through computational mediation, new

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[6] Ibid., p. 99. But see also the documentary film Cold Storage, co-written by Jeffrey Schnapp and Matthew Battles, which explores Harvard Depository, Harvard's off-site library storage facility. Cold Storage (1991) Directed by Cristoforo Magliozzi [Film], USA: metaLab at Harvard, available from http:// librarybeyondthebook.org/ cold_storage.

approaches and methods are made objective and thereby instrumental. For example, the Internet is an archive that represents an open-ended 'aggregate of unpredictable texts, sounds, images, data, and programs' but that is nonetheless navigable and open to traditional archival practices. However, when the Internet is transformed into an archive, it is also subject to technologies such as search engines that make its commodification possible.

It is this process of objectification that I am interested in. Here, I am using objectification in Adorno's sense of the term: taking the concept as the source of reconfiguration for the object or allowing the concept to require a reordering of the 'real' so that the real will conform to the concept. Such objectification is what Adorno calls *identity thinking* — highly prevalent in a computational logic that tend towards strategic-instrumental forms of rationality.

In other words, computation recasts the material world into the shapes dictated by computational analysis or computational processes in a process of objectification. With archives, the first move has been upon us for a while, observable in large-scale digitalization projects (sometimes understood as digital humanities type projects) and in the use of encoded archival description (EAD) software and standards. [7] Following this initial process, with its emphasis on the digital overlay or mediation of the artifact, new techniques of control and management become possible such as re-ordering, searching, discovery, optimization. New tools of analytics, data visualization, dashboards, and information management systems are then often deployed to examine the previously latent forces of the archive. Indeed,

'the archive as the condition for our knowledge of history becomes dependent on the media of its transmission', which is increasingly mediated by computation forms.

[7] Berry, 2012. Encoded archival description (EAD) is an XML-based standard for representing archival finding aids, which describe archival collections. EAD allows the standardization of collection information in finding aids within and across repositories.

THE POST-ARCHIVAL CONSTELLATION

One way of thinking about computational archives and new forms of abstraction they produce is the specific ways in which they manage the 'derangement' of knowledge through distance. [8] I can only gesture towards this derangement by way of the theological concept of the coincidence of the opposites that 'comprehends all else in undifferentiated and unlimited unity' — the notion that, from the standpoint of infinity, all difference is reconciled (in contrast to the dialectical notion of *aufhebung*). This is similar to the notion of the aesthetics of singularity that Fredric Jameson describes as particular to postmodernity. Flat design could, for instance, be said to place the user-subject in a similar position of infinity/singularity: it enables the reconciliation of multiple fragments not by having one element replacing all the others but rather by using a metaphor, such as glass, in order to allow palimpsest-like inscriptions to be stacked in an infinitely thin laminate of computational surface. This particular technique of ordering extends to many aspects of computational design that facilitates the collection of diverse objects as well as their ordering, calculation, and reconfiguration. As Derrida argued,

archival technology 'conditions not only the form or the structure which prints, but the printed content of the printing: the pressure of the printing, the impression, before the division between the printed and the printer. [It] has commanded that which even in the past instituted and constituted whatever there was as anticipation of the future.'

Indeed, through the new modes of computational ordering, a new de-archived archive emerges, one that is tightly coupled to information systems and instrumental principles of making things 'stand by'.

[8] By distance, I am thinking in terms of near and far.

* * *

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Urgent Archives

Paul Soellis

network culture articulates as printed artifact

URGENT ARCHIVES

How do we choose what to preserve? Any text, image, threaded conversation, or tweet may be considered a valuable artifact in today's post-truth condition.

While the pressure to save and accumulate is immense, so is our need to curate and amplify particular messages. After the most recent U.S. presidential election, I saw people printing tweets and carrying them high above their heads at protests. Bernie Sanders brought a large, printed tweet to the Senate floor during one debate on healthcare. This act of drawing from digital archives and displaying printed material publicly serves as a material reminder, or proof: *at this particular moment, something was said*. As each utterance is broadcast, indexed, and archived into our hyperreal state, printing still seems to be one way to control — or at least resist — the narrative.

Printing has always been political. The act of transferring material to paper carries with it a charge, a potential transfer of state — from private to public, from speech to text, from one copy to many. These affordances of the printed page come very close to the definition of publishing itself. Contained within "making public" are paper's properties of exposing, giving visibility, circulating, and saving. Printing digital material is especially fraught with this charge, because embedded within it is a particular instinct to pause and preserve what might otherwise be lost — to downshift from fast to slow, to resist the speed and ephemerality of digital flow.

This call to examine digital archives has always been at the heart of the *Library of the Printed Web*. When I founded the project in 2013, it was to collect artists' books and zines around a very simple idea: network culture articulated as printed artifact. My interest was centered around artists asking questions about speed and materiality in this context, as well as themes such as authorship, aura, and accessibility.

I would identify that period, roughly from 2008 to 2015, as post-iPhone and pre-Trump. It was the time when the network began to get personal, to build our trust, to travel with us, to reveal itself in more surprising places. It was the time of the new aesthetic, a term coined by artist James Bridle around 2012, referring to "a way of seeing that seemed to reveal a blurring between 'the real'

and 'the digital,' the physical and the virtual, the human and the machine." It was also the beginning of total network saturation, as artists and designers learned to construct identity, negotiate presence, and present work in truly networked space.

We began to carry the browser around with us all day, and to sleep beside it at night. What did it now mean to see it on paper? How did screen-based work change when printed in this uncanny way? And what opportunities did web-to-print afford for distribution, platforms, and audience?

For a while, it seemed crucial that we acknowledge spaces like the Instagram account and the reddit thread and text messaging as legitimate venues for writing, publishing, and artistic practice. The hierarchy between web page and printed page had become less fixed, and *Printed Web* was a fitting venue to perform and celebrate this slippery condition.

I once tried to identify each of the artists in *Library of the Printed Web* — there are now several hundred — by the types of actions they enacted in their web-to-print work: grabbing, hunting, or transforming the material in a performative way. These acts are nothing new; they seem like basic collage tactics now, not unlike how the cubists worked a hundred years ago. As a rubric for understand contemporary artistic practice in and around digital archives, formal moves like these no longer suffice; we now need to look deeper at the power structures that flow into and out of works of appropriation. Who owns the platform? Who profits as the work circulates?

Taking material in a way that disturbs authorship remains an intriguing strategy for artistic practice, but not without these urgent questions:

Who controls the narrative? To what end will the found material be used? Does the act of appropriation work to reveal an imbalance of power, or amplify an underrepresented voice, or expose a site of oppression? Might the work even repair or stitch together broken relations?

Library of the Printed Web was recently acquired by The Museum of Modern Art Library. I'm seeing the project from a different perspective now, absorbed into the ultimate archive of artists' publications: at a critical distance, removed from my control, and in the context of a much larger timeline. More than a year after the installation of *Printed Web 4* at *Public, Private, Secret*, the project serves as a kind of cultural marker, pointing us more directly toward

inherent anxieties embedded in our culture of accumulation. The condition of total saturation has arrived, and it's not going anywhere. As we struggle to make sense of all of our material, questions around agency, trust, surveillance, automation, and labor seem imperative now. The collective need to know, print, share, track, preserve, and interrogate our archives is doubtless an urgent one. The question now is not whether but how to mobilize curatorial practice as a strategy of resistance.

CONCLUSION /

Post-Digital Print — The Mutation of Publishing since 1894
Alessandro Ludovico

post-digital print: a future scenario

There is no one-way street from analogue to digital; rather, there are transitions between the two, in both directions. Digital is the paradigm for content and quantity of information; analogue is the paradigm for usability and interfacing. The recent history of video and music provides a good example, since the use of digital technology for these types of content is much more advanced than it is for publishing.

In the case of video, the medium (whether VHS or DVD) is merely a carrier, since the content is always ultimately displayed on screens. The same is true for music, where cassettes, vinyl records and CDs are only intermediate carriers; the actual listening always happened through speakers (and increasingly through headphones). In both cases, the for- mat changed without dramatically affecting the watching or listening experience. Sometimes the experience was improved by changes in the media technology (with HD video); sometimes it was almost imperceptibly worsened (with the loss of frequencies in MP3s).

Print, however, is a very different case, since the medium — the printed page — is more than just a carrier for things to be shown on some display; it is also the display itself. Changing it consequently changes people's experience, with all the (physical) habits, rituals and cultural conventions involved. E-publishing therefore still has a long way to go before it reaches the level of sophistication which printed pages have achieved over the course of a few centuries.

But as more and more content moves from print to digital, we seem to be approaching an inevitable turning point, where publishers soon will be releasing more electronic publications than printed materials. A key factor in this development is that e-publishing is gradually becoming just as simple and accessible as traditional publishing — not only for producers, but also, thanks to new interfaces, habits and conventions, for consumers as well. However, the real power of digital publishing lies not so much in its integration of multiple media, but in its superior networking capabilities. Even if it were possible to write some spectacular software to automatically transform e-books into another media standard (for instance, an animation of book or magazine pages being turned) or vice-versa, this would be far less interesting for users than new and sophisticated forms of connectivity — not only to related content

hosted elsewhere, but also to other humans willing to share their knowledge online. To this end, digital publishing will have to establish universal interoperability standards and product identities that don't lock customers into the closed worlds of one particular application or service.

Traditional print publishing, on the other hand, is increasingly presenting its products as valuable objects and collector's items, by exploiting the physical and tactile qualities of paper. It thus acts as a counterpart to the digital world, while looking for ways to cope with a gradually shrinking customer base — particularly in its traditional sectors such as newspaper production and distribution (where costs are becoming unsustainable) or paper encyclopaedias (which have already become vintage status symbols rather than practical information tools). A number of products will thus need to be re-invented in order to still make sense in print.

At the time of writing, the development towards print as a valuable object can best be observed in the contemporary do-it-yourself book and zine scene. Until the late 1990s, this scene was mostly focused on radical politics and social engagement; the contemporary scene however is more fascinated with the collection of visual-symbolic information into carefully crafted paper objects. Despite its loyalty to print, this new generation of DIY publishers has created offline networks for print production and distribution which, in their bottom-up structure and peer-to-peer ethic, very much resemble Internet communities. At the same time, the work they create is meant to remain offline and not be digitised, thus requiring a physical exchange between publisher, distributor and reader. This ethic is squarely opposed to the so-called 'go all digital' philosophy which advocates a completely digital life, getting rid of as much physical belongings as possible, and relying only on a laptop and a mobile phone filled with digitised materials.

For sure, the DIY print publishing ethic is closely related to the (often dormant) bottom-up social dynamics of the Internet. But as it currently stands, it still lacks one crucial aspect (besides production and sharing): it does not include mechanisms able to initiate social or media processes which could potentially bring the printed content to another level — what I would call the 'processual' level. In the past, print activism (using pamphlets, avant-garde magazines, Punk zines, etc) was deployed for spreading new ideas meant to induce new creative, technological and — by implication — social and political processes. The future of post-digital print may also involve new processes, such as remote printing, networked real-time distribution, and on-demand customisation of printed materials — all processes with (as of yet) unexplored social and political potential.

Conversely, digital networking technologies could make better use of print. Those who advocate and develop these new technologies should perhaps become more aware of print's cultural significance. Many readers will continue to choose print products above electronic publications, possibly leading to a demand for networked (perhaps even portable) printers allowing individuals to print materials at any location, anywhere in the world. Combined with personal binding devices (however primitive), such personal 'book machines' would allow readers to 'teleport' print publications to and from any location. Furthermore, resistance to the ubiquitous and non-stop surveillance of the Internet may well take a more radical turn: individuals and groups could make a political statement out of going completely offline and working in isolation as neo-analogue media practitioners.

If print increasingly becomes a valuable or collectable object, and digital publishing indeed continues to grow as expected, the two will nevertheless cross paths frequently, potentially generating new hybrid forms. Currently, the main constraint on the development of such hybrids is the publishing industry's focus on entertainment. What we see, as a result, are up-to-date printable PDF files on one hand, and on the other hand online news aggregators (such as Flipboard and Pulse) which gather various sources within one application with a slick unified interface and layout. But these are merely the products of 'industrial' customisation — the consumer product 'choice' of combining existing features and extras, where the actual customising is almost irrelevant. Currently, the industry's main post-digital print entertainment effort is the QR code — those black-and-white pixellated square images which, when read with the proper mobile phone app, give the reader access to some sort of content (almost always a video or web page). This kind of technology could be used much more creatively, as a means of enriching the process of content generation. For example, printed books and magazines could include such codes as a means of providing new updates each time they are scanned — and these updates could in turn be made printable or otherwise preservable. Digital publications might then send customised updates to personal printers, using information from different sources closely related to the publication's content. This could potentially open up new cultural pathways and create unexpected juxtapositions.

Martin Fuchs and Peter Bichsel's book Written Images is an example of the first 'baby steps' of such a hybrid post-digital print publishing strategy. Though it's still a traditional book, each copy is individually computer-generated, thus disrupting the fixed 'serial' nature of print. Furthermore, the project was financed through a networked model (using Kickstarter, a very successful 'crowdfunding' platform), speculating on the enthusiasm of its

future customers (and in this case, collectors). In other words, this book is a comprehensive example of post- digital print, through a combination of several elements: print as a limited-edition object; networked crowdfunding; computer-processed information; hybridisation of print and digital — all in one single medium, a traditional book. On the other hand, this hybrid is still limited in several respects: its process is complete as soon as it has been acquired by the reader; there is no further community process or networked activity involved; once purchased, it will remain forever a traditional book on a shelf. And so, there is still plenty of room for exploration in developing future hybrid publishing projects.

When we are no longer able to categorise publications as either a 'print publication' or an 'e-publication' (or a print publication with some electronic enhancement), then the first true hybrids will have arrived. It may be worth envisioning a kind of 'print sampling', comparable to sampling in music and video, where customised content (either anthologies or new works) can be created from past works. Such a 'remix' publishing strategy could create new cultural opportunities, and open up new 'processual' publishing practices. We can already see this happening to some extent, in contemporary zine and DIY art book publishing, as well as underground e-book websites.

Since software is a prerequisite for any digital technology (and is also being used for the creation of most analogue works today), its 'processual' nature should be reflected in the structure and dynamics of future publishing: enabling local and remote participation, and also connecting publishing to real-life actions. The younger 'digital native' generation has no compunction in irreverently sampling, remixing and 'mashing up' traditional and social media (as several adventurous small organisations, born out of the current financial crisis and the 'Occupy' movement, have already demonstrated). Print is, unsurprisingly, an important component of this 'mashup', because of its acknowledged historical importance as well as its particular material characteristics. And so this new generation of publishers, able to make use of various new and old media without the burden of ideological affiliation to any particular one of them, will surely be in a position to develop new and truly hybrid publications, by creatively combining the best standards and interfaces of both digital and print.

This project consists of this print publication and a website. **The last one addresses how Archives can have an important role in the preservation and visibility of hybrid publishing, through the selection of projects that explore web to print, print to web publishing.**

(+ See the Website page here https://projecto2122.wordpress.com/2022/01/30/thinking-the-postdigital-hybrid-publishing-archive/)

THINKING THE POSTDIGITAL HYBRID:
PUBLISHING ARCHIVE
— Print Publication & Web

BOOK
180x240mm
110 pages
Munken Linx 120g

SPECIAL THANKS
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THINKING THE POSTDIGITAL HYBRID

Publishing Archive

POST DIGITAL

post-digital: a term that sucks but is useful

post-what?

digression: what is digital, what is analog?

what, then, is ‘post-digital’?

post-digital = ‘old’ media used like ‘new’ media

technically, there is no such thing as ‘digital media’ or ‘digital aesthetics’

postdigital constellation

THINKING THE POSTDIGITAL HYBRID

Publishing Archive

POST INTERNET

networked spaces as “internet art” scene

internet as a distribution platform

ARCHIVE INDEX GALLERY (ABOUT) THE PROJECT

THINKING THE POSTDIGITAL HYBRID