## Chapter Three: Glitch Ontology and the New Aesthetic

In order to critically examine the cultural impact of the latest computational technologies and to follow the critical approach to the computational advocated by the protagonists of the New Aesthetic, we need to turn to studying the computational in a state of failure.

In this chapter we are elaborating on glitch theory, which will be used in the subsequent chapters devoted to studying glitches in digital media, consumer software and hardware ecosystems, artistic interventions and works of art. {Fig. 40} The glitch is a result of the ‘attitude’ (Bridle’s characterization) that drives the New Aesthetic; it is a fundamental aspect of New Aesthetic objects, the means by which they are apparent and recognizable to the user. We argue that glitches are one of the key constituents and manifestations of the New Aesthetic both on the conceptual and on the aesthetic level.

In *Software Studies, A Lexicon* in the chapter entitled ‘Glitch’, Olga Goriunova and Alexei Shulgin write that

In electrical systems, a glitch is a short-lived error in a system or machine. A glitch appears as a defect (a voltage-change or signal of the wrong duration – a change of input) in an electrical circuit. Thus, a glitch is a short-term deviation from a correct value and as such the term can also describe hardware malfunctions.[[1]](#footnote-2)

From the aesthetic perspective glitches can be ‘claimed to be a manifestation of genuine software aesthetics’ as they reveal the computational nature of the digital image.[[2]](#footnote-3) There is even a sense that the glitch is a challenge to the moral or ethical status of the digital object’s use, in that it manifests an incorrect value contradicting the user’s expectations. Glitch aesthetics has been discussed as a form of transmedial narratives, and has even been frequently linked to a nostalgic form of 8-bit game design, to cite one example, but in the case of New Aesthetic objects there is something more. Both low-res pixelated images and glitches are rather marginal phenomena in comparison to common contemporary aesthetics (images displayed in high resolution with millions of colors). However they allow us to break away from the screen-centric approach and make the softwarization of the digital image clearly visible. The glitch, being a direct and natural result of an algorithmic error, unveils the degree of the software’s influence on the aesthetics of digital image:

Just as digital technologies and software mediate our experience and engagement with the world, often invisibly, so the “digital” and “software” is itself mediated and made visible through the representational forms of pixelation and glitch.[[3]](#footnote-4)

In this sense, glitches are more than just a manifestation of a coding error or the result of inputted data from the user; they are both an opportunity and an encouragement for us to reconsider the myth of total immediacy of computational imagery, particularly when images are perceived as parts of software structure e.g. graphical user interface. The very notion of mediation is important because it creates a dialectical relationship between user and object, necessitating interaction or, at the very least, reaction. In *Transcoding the Digital: How Metaphors Matter in New Media* Marianne van den Boomen gives examples of such situations:

For example, when sound and vision are no longer synchronized in a movie, when subtitles suddenly disappear, or when we notice the delay in a live television interview from the studio. Paradoxically then, immediacy is the imaginary degree zero of any mediation, a lived illusion of absent mediation, deprived of all traditional markers that announce an encounter with media. When it shows itself, the spell is broken. In retrospect, immediacy turns out to be a matter of unnoticed and concealed mediation, revealing itself now in the split into a faltering medium and a stammering message.[[4]](#footnote-5)

In focusing on the appearances of glitches and miscalculations in New Aesthetic objects, we believe that at least part of its nature is revealed as an abnormal relation in the structures composed of standardized objects, especially in the creative software based on image processing algorithms or lags and artifacts that are the means of producing graphical user interfaces in contemporary software. An instance of a programming language taking over the responsibilities of coding from the programmer, while disingenuously promoting itself as a guarantor of the programmer’s and user’s end-use satisfaction, is Apple’s new programming language Swift, which is supposedly designed for ‘safety’ because ‘Swift eliminates entire classes of unsafe code. Variables are always initialized before use, arrays and integers are checked for overflow, and memory is managed automatically.’

On the aesthetic level they seem to address the approach taken by many proponents of the New Aesthetic. For Matt Jones the New Aesthetic encourages us to ‘see the grain of computation’[[5]](#footnote-6) in everyday interaction not only with the digital but with the physical world as well. The ‘grain of computation’ would be these specific aesthetic patterns associated with the digital that are becoming visible through pixelization and visual glitches in digital media and in new pixelated aesthetics in fashion, military, architecture, design and other actual objects present in the physical world. In the era of ultra-high resolution, seamless user interfaces and ubiquitous systems that Peter Knapp names the ‘era of noise canceling’, the New Aesthetic manifestations, and particularly glitches, unveil the limitations of the computational through something that Kim Cascone calls the ‘aesthetics of failure’.[[6]](#footnote-7)

Both glitch studies and the New Aesthetic seem to share the spirit of a ‘critical trans-media aesthetics’[[7]](#footnote-8) as understood by Rosa Menkman, the author of the *Glitch Art Manifesto* (2010)and the *Glitch Momentum* (2011).

these aesthetics media show a medium in a critical state (a ruined, unwanted, not recognized, accidental and horrendous state). These aesthetics critique the medium (genre, interface and expectations) […] They challenge its inherent politics and the established template of creative practice while producing a theory of reflection.[[8]](#footnote-9)

Menkman suggests that glitch aesthetics offer more than just interesting and attractive visual experiences. They give us a new perspective on digital media and applications that goes beyond the preprogrammed aesthetics and interactions paradigms. They can also challenge another praised popular culture paradigm that emphasizes the unlimited creative potential of computational technologies. Glitches in digital media processing and user-oriented applications suddenly bring to the forefront the hidden boundaries of creative practices based on affordances of the digital.

This observation drives us to the conclusion that the New Aesthetic is not a medium-specific approach, since the phenomena associated with the New Aesthetic can be encountered in any kind of digital media; be it CGI, still images, video content, GUIs, etc. The range of artworks presented in the subsequent chapter clearly proves that point. Despite the fact that there are multiple formats and media types, when faced with glitches digital media seem universally equivalent. All digital objects are susceptible to unwanted, sudden errors that lead to visual glitches. The reason for this is the fact that the very conditions for glitch aesthetics are structured by core properties of computer-based media enumerated by Lev Manovich in his *The Language of New Media.[[9]](#footnote-10)* Manovich argues that all digital media share some common properties, which are deeply rooted in their numerical nature. Consequently, all digital images are discrete since they are broken and then displayed as discrete elements with pixels (data values on chrominance and luminance). They are also modular since they are built in real-time from various layers of data types. The process of their displaying involves actual image data, specific codecs, software, user interfaces and this is even more complex in network-based imagery. The cultural and social significance of different, interconnected layers in the computational will be addressed broadly when we will discuss the ‘ontological levels of the computational’ described by David M. Berry. Another common property of digital images would be their ability to be compressed. This is important particularly in web-based imagery which has to be processed and sent with as few resources as possible. Compression has become really important in the advent of mobile devices and mobile internet access. Video streaming services, such as VOD platforms or YouTube, but also social media that heavily use visual content like Instagram or Facebook, function thanks to advanced compression algorithms. Variability and automation would be another key property of digital visual media. Both can be narrowed down to the fact that they are programmable. Manovich explains that this enables a user to create infinite versions of the same image which can vary in size, resolution, colors, composition and so on.

Following Manovich’s observations we argue that the core properties of digital media create the very conditions of existence of glitch aesthetics. It emerges as a trans-media, or better a medium-neutral abnormal momentum, which takes the user beyond a carefully designed modi operandi of each and every medium. In high-resolution photography, glitch aesthetics would manifest itself by a pixelated or broken (partially-displayed) image, in video the glitches would be seen as compression artifacts, in real-time web-based media and interfaces the glitches would result in partial or incorrect display of icons, data streams etc. We will address such cases in our glitch art analysis. In any case, glitch aesthetics challenges the logic of seamless interaction and automation maintained by the continuity of streams of processed data displayed in various media.

Of course, the ontological identity of objects is not only identifiable through the presence of glitches but also their relational capacities and effects, a crucial point to remember in the context of a narrowed discussion of New Aesthetic objects. Many scholars emphasize the promising critical potential of glitches in studying not only technologies themselves and everyday human-computer interaction practices but also their social and cultural impact; with a general consensus that it is necessary to open the black box of computation to the user.

This quasi-hacking approach in which the glitches are undeliberate after all is considered as a first step in a process of making the user aware of both technical limitations of the digital and of socio-political constraints imposed on her through these technologies. For instance, Benjamin Mako Hill, and to some extent Jussi Parikka, write about hidden affordances of technologies that are made visible to the users thanks to glitches and errors.

[…] errors can reveal the affordances and constraints of technology that are often invisible to users. Through these affordances and constraints, technologies make it easier to do some things, rather than others, and either easier or more difficult to communicate certain messages. Errors can help reveal these hidden constraints and the power that technology imposes. [[10]](#footnote-11)

In other words, Hill argues that glitches do reveal the boundaries of the digital sandbox that a user usually plays in while being enchanted by supposed limitless creative possibilities and perfect visual representations that come with user-oriented software and systems. ‘Through noise, through anomalies, we are able to decipher a range of crucial issues concerning politics, aesthetics and cultural processes of media.’[[11]](#footnote-12) Parikka goes even further, saying that a critical examination of anomalies and noise in digital media can be a starting point for a more broad analysis of the impact of the computational on society and culture. Parikka seems to follow an important line of reasoning in the humanities that was advocated by Immanuel Kant – that examining the world in the light of its aesthetics may provide us with a very productive and unique critical perspective. This approach is shared by us as well throughout this book.

Building on this approach, it is worthy to mention a very important addition to it by Olga Goriunova and Alexei Shulgin who link glitch studies with software studies. The scholars emphasize the critical potential of glitch for revealing the inner logic of software, however not solely as a technology-oriented endeavor but rather as a starting point for a wider discussion on the social and cultural consequences of a particular organization of digital spaces:

A glitch is a mess that is a moment, a possibility to glance at software’s inner structure, whether it is a mechanism of data compression or HTML code. Although a glitch does not reveal the true functionality of the computer, it shows the ghostly conventionality of the forms by which digital spaces are organized.[[12]](#footnote-13)

Goriunova and Schulgin understand glitches and errors as unique epistemic micro-states that offer a chance to critically assess the boundaries of the operational logic of the software. The scholars encourage us to conceptually understand glitches as ruptures which go vertically through different layers of the computational as they may be caused by errors in the software code, data sets, network, protocols or user interface. Glitches provide us not only with an insight into the layered structure of the computational, but also make clear the limitations of the programmability of the digital. Mark Nunes and Benjamin Mako follow a similar logic, emphasizing the importance of opening the computational ‘black boxes’ for making possible a critical analysis of HCI.[[13]](#footnote-14) The scholars claim that errors that provide clear views into black boxes provide a view into some of what we might be missing. However, they also emphasize that glitches may be of vital importance for making the users aware of the great formational power of digital technologies.

Given the growing dominance of this ideology of informatic control, error provides us with an important critical lens for understanding what it means to live within a network society. Error reveals not only a system’s failure, but also its operational logic.[[14]](#footnote-15) David M. Berry, similarly to Goriunova and Schulgin, claims that glitches do introduce a specific phenomenological condition that enables a user to interact with the computational in a state of failure. Berry conceptualizes this condition in the *Critical Theory and The Digital* as ‘glitch ontology’ which takes the user out of the constant flow of digital processes that are normally masked by autonomous content representation and seamless interaction.

Computation due to its glitch ontology continually forces a contextual slowing down at the level of the experience of the user. This is suggestive of the possibility for a micro-phenomenology that could fully explore the breaks in perception that the computer generates.[[15]](#footnote-16)

[…] just as digital technologies and software mediate our experience and engagement with the world, often invisibly, so the “digital” and “software” is itself mediated and made visible through the representational forms of pixelation and glitch.[[16]](#footnote-17)

Berry emphasizes the importance of glitches for bringing to the forefront the layered nature of computational technologies. However their role is even more significant for representing breaks in the continuity of postdigital media and software. In the era of mobile networks, clouds, IoT, data streams, preventing or better masking errors in the constant flow of the digital is crucial. Glitches, by introducing their unique micro-phenomenology, unveil these breaks, at least on the perceptual, visual level.

Berry argues that glitch ontology is one of many manifestations (e.g. code / software or ubiquitous systems) of a specific civilizational condition which is a result of the increasing presence of the digital in our everyday life. He conceptualizes this ‘new constellation of intelligibility’ as computationality. The notion is used, as explained in the previous chapter, to describe today’s transformation of our society and culture which will lead to ultimate synchronization with, or better, to subordination to the digital. This should be understood as an era when cultural and social practices are both rooted in and bound by digital technology – e.g. the various types of hardware, software, distributed networks or interaction paradigms.[[17]](#footnote-18) Lev Manovich in his *Software Takes Command* argues that even now we rely on software and hardware to create, transform and distribute information to such an extent that our society should rather be characterized as software society.[[18]](#footnote-19)

The media studies, digital art and critical theory scholars cited above are intrigued by the critical potential of glitch aesthetics. On the one hand it is emphasized that glitches offer a unique possibility to visually depict the impact of core properties of computer-based media on their functioning by exposing their limitations. On the other hand, they argue that glitches may provide us with an interesting starting point to formulate a broader critique of today’s digital technologies based on examining the glitches themselves, their milieu and their social and cultural impact.

Building on that approach we argue that the rapid pace of technological innovation that resulted not only in new technologies per se, but also in new human-computer interaction paradigms and digital image aesthetic. This evolution has left an imprint on the way glitches manifest themselves in everyday interaction with digital media based on real-time and cloud-based computational technologies, ubiquitous computing and autonomous systems.[[19]](#footnote-20) Postdigital glitch studies should, similarly to the New Aesthetic, critically challenge the mainstream technological narratives that were founded on the latest technological innovation, including the illusion of seamless interaction, automation and perfect visual representation.

For our purposes, two different sets of philosophical strategies provide intriguing and productive approaches to an ontological analysis of glitches. For the rest of this chapter, we base our approach on Heidegger’s notions of ready-to-hand and present-to-hand advocated by him in *Being and Time*. Obviously Heidegger was never exposed to the type of artifacts constituting the body of postdigital and New Aesthetic objects, and Heidegger’s philosophy at first glance doesn’t seem applicable. Nevertheless, we take courage from recent applications of Heidegger’s ideas to a diverse range of subjects; if we can use Heidegger to discuss environmentalism, psychology and religion then why not use Heidegger to discuss digital objects and their effects, especially if we consider those objects and their effects as fully phenomenologically appreciable. In fact, extending Heidegger’s ideas into the realm of postdigital and New Aesthetic objects is particularly fruitful if we take the position that Heidegger’s theory would provide us with a unique insight into the various ontological contexts in which things, or more specifically tools, can manifest themselves in everyday usage.

For Heidegger, tools are an essential aspect of our interaction with the world; the world comes at us in the manner of things, but those things which help constitute our thrownness (*Geworfenheit*) into the world are special as a means of making our place in the world and understanding it more fully. When tools become more than singular in their application as a means of transforming the world then they are labeled equipment and through this equipment human beings come to understand the notion of being-with others in the worldliness of the world as constituted by this being-with ourselves. The fact that Heidegger in his analysis also focuses on instances where tools do not function as intended, providing a clear contextualization of their specific ontic status and micro-temporality, will give us a promising analytical paradigm to distinguish and contextualize glitches and other aesthetic phenomena associated with the New Aesthetic and postdigital media and technologies.

A glitch offers a unique epistemic perspective. The unexpected error caused by the inability of the software to process real-time data or an inadequate capacity to recognize and recombine images into a functioning single image, reveals not only the software’s inner structure, as Rosa Menkman says, but also makes visible the limitations of real-time data transmission and makes the omnipotence of digital quantification questionable. Glitches in web-based graphical user interfaces, video-streaming services, or satellite imagery services are some of the last remaining instances of the unreadiness-to-hand of the computational in the era of multi-layered autonomous software and ultra high-resolution display systems. We could then argue that a glitch becomes a manifestation of a malfunctioning piece of equipment that emerges from a functional transparency or immediacy of a computational system and becomes a sign of its unready-to-hand condition. It should also be emphasized that a glitch goes beyond a binary distinction between a working and not-working computational system, but is rather situated in-between these two states.

Before applying Heidegger’s taxonomy to our analysis of the New Aesthetic in today’s technological milieu, we think that its ontic status should be clarified as well. As already argued, the computational has become even more opaque because of the combination of interconnected layers of both material (hardware) and immaterial (software) generating ever changing data streams, based on protocols, and standardized tools. If we want to avoid generalizations in our analysis of the New Aesthetic, which occurs at any level or layer of our contemporary technological milieu, we feel it is essential to at least briefly characterize these levels. To do that we will use David M. Berry’s theory of ‘ontological levels of the computational’ advocated in *Critical Theory and The Digital.*

### The Glitch as an Unready-to-hand Condition

Heidegger’s phenomenological analysis of things has never been more relevant. Particularly pertinent for a networked digital society, he moves beyond the seemingly self-evident, but ultimately incomplete, under-standing of things as entities or objects. Instead, he provides a much richer phenomenological account of how thingness is in fact inextricably related to human concerns and dealings that occur in a distinctly insubstantial and non-thing-like fashion. In doing so, Heidegger illuminates the seemingly intangible but actually fundamental phenomenological aspects of mediated things – those things we commonly experience as “equipment”.[[20]](#footnote-21)

Heidegger argues that things are actual things acquiring their proper ‘thingly character’ only when they are used for a particular purpose. The thing is then available as ‘ready-to-hand’. However, its unique ‘readiness-to-hand’ is manifested only through putting the thing to work, as we can’t grasp it only through its appearance. He explicitly states that ‘no matter how sharply we look at the “outward appearance” of Things in whatever form this takes, we cannot discover anything ready-to-hand’.[[21]](#footnote-22) The specific mode of being that belongs to the thing appears as a using of something for something.[[22]](#footnote-23) Heidegger’s famous example of this logic is a hammer and a nail. The specific thingness (manipulability) of the hammer is unveiled through putting it to actual work – nailing the nail. [[23]](#footnote-24) The process of putting the things to actual work disclose them and their thingness to the user. David Gunkel and Paul A. Taylor argue that if we’d follow Heidegger’s line of reasoning we would conclude that ‘Readiness-to-hand is therefore not just a temporary attitude or viewpoint we adopt with regards to things. It acts to define the very being of things as things.’[[24]](#footnote-25) The Readiness-to-hand defines things both ontologically and categorically. From the perspective of media and communication studies, the things should then be understood as intermediary means to and end or simply put, media (in a broader McLuhanian sense). However, usually we do not reflect on the nature of a hammer, nail or any tool. We focus instead on completing the task by using a particularly thing or medium. The thing and its thingness become transparent or unremarkable. The tool follows the logic of immediacy, being a mere mean to an end. ‘The paradox of the ready-to-hand is therefore the fact that in its most authentic form, it necessarily withdraws from direct view’, Gunkel and Taylor write.[[25]](#footnote-26)The Glitch as Non-operative Modi

Now we’ve arrived to a point when Heidegger’s theory on things meets with principal assumptions about human-computer interaction and digital content representation that have been challenged by the New Aesthetic and the postdigital. Even before mass popularization of consumer-oriented computing, the visionaries of the computing age envisioned computers as tools that would serve as autonomous machines that would assist humans in storing, processing and accessing information. From an electromechanical device called Memex, described in ‘As We May Think’ by Vannevar Bush,[[26]](#footnote-27) through Sketchpad designed by Ivan E. Sutherland in 1963[[27]](#footnote-28) and PARC User Interface (Xerox 8010 Star Information System) from the early 1980s to various modifications of the personal computers from the 1990s: all have been designed with the principle to ‘augment the human intellect’, while being as transparent as possible.[[28]](#footnote-29) The logic of the immediacy of the computational has prevailed even more in the age of ubiquitous computing, cloud-based and multi-device ecosystems. Their ultimate readiness-to-hand is a necessary condition of their actual interoperability and versatility. They are perfect tools as long as they stay in the shadow. As soon as they break down, or a visible glitch occurs in any node of the system – particularly near to the end user – in graphical user interfaces or in the visual media they process and display, the tools become present-at-hand. Heidegger points out that such a situation causes concern among users, and ‘the entities which are most closely ready-to-hand may be met as something unusable, not properly adapted for the use we have decided upon. […] we discover its unusability, however, not by looking at it and establishing its properties, but rather by the circumspection of the dealings in which we use it’.[[29]](#footnote-30)Gunkel and Taylor also emphasize the fact that the evolution from being ready-to-hand to present-to-hand of certain tools, takes place not in the user’s perception of a tool, but through putting it to actual use. ‘Something becomes present-at-hand when the thing in question fails to work, breaks down or interrupts the smooth functioning of what had been already handy and ready-to-hand.’[[30]](#footnote-31) If we return to our broader understanding of the New Aesthetic, described as a theoretical approach that takes to the forefront of our perception the conditions of existence of the computational in the postdigital age together with its limitations, the critical potential of studying certain technologies and media in their unready-to-hand conditions, looks very promising.Heidegger uses three different notions to describe specific conditions of things when they reveal their presence-at-hand through unique unreadiness-to-hand. The modi of conspicuousness, obtrusiveness and obstinacy introduce a micro-temporal context, an epistemic condition that through the state of failure allows us to apprehend the characteristic of presence-at-hand, a handiness that is usually masked by a perfect functioning of the equipment.

In a technological context, the unready-to-hand condition of the equipment can be characterized as a condition in which a computational apparatus is facing a sudden or unusual obstacle that can’t be overcome by its (pre)programmed mode of operation and interaction with the user. However, it may not imply that the machine’s inner logic of operation is defective. The state of unreadiness-to-hand goes far beyond a mere problem of incalculability. Something – a tool, device, application – is *conspicuous* when it becomes unusable. Unusability means in this context a situation when a thing no longer serves the use for which it was initially designed.[[31]](#footnote-32) It is not just about breaking the seamless interaction and utility paradigm in partially working machines or software. The conspicuousness is a result of a complete failure of the computational, a situation in which a user is confronted with a broken piece of hardware, or an application that fails to launch.A thing becomes *obtrusive* when it is missing. As Heidegger argues, the thing is then not ‘handy’ but is not ‘to hand’ at all. The more we need what is missing to perform a task, the more intensive it enters into the state of obtrusiveness.[[32]](#footnote-33) The problem of obtrusiveness occurs when for example a certain media file cannot be opened or processed due to lack of a specific codec, or when a cloud-based application cannot access data which is stored on the remote server. The state of obtrusiveness will become even more relevant as the interaction and functioning of computational technologies will be based on interconnected software and hardware ecosystems composed of various devices, software and data types. Any malfunction in such an ecosystem can result in an obtrusive piece of equipment (both material and immaterial) at the level of user-computational interaction. The last variation of unreadiness-to-hand is the state of *obstinacy*. The *obstinacy* is encountered when it ‘stands in the way’ of our concern and interrupts our activities. Anything which is un-ready-to-hand in this way is disturbing to us, and enables us to see the obstinacy of that with which we must concern ourselves first before we do anything else.[[33]](#footnote-34) If we were to study glitch in the light of obstinacy, we could claim that a glitch is an unexpected deviation from the intended functioning of a computational system which prevents the user from completing the task (in a usual manner). However, the state of obstinacy does not mean a complete failure of the system – a compression artifact in a video content may introduce a different aesthetics, or may lead to a break in continuity of narrative in the usually fluid continuity of the postdigital (cloud-based and real-time) media – but it does not make the file completely unusable nor make the content unwatchable. Similarly, glitches in the display of elements of graphical user interfaces or image artifacts in web-based services such as Google Earth, Apple Maps, do break the immediacy of a particular tool, challenging the seamless interaction and perfect visual representation paradigms, but the tool as a whole itself is still functioning.Many phenomena and artistic interventions associated with the New Aesthetic are manifestations of the state of obstinacy. They do interfere with a particular software or device to an extent that they cannot be ignored by the user (altering media aesthetics, modifying the scope of software’s operations logic), but they do not lead to a complete failure of a system / machine understood as a tool. In this paradoxical, ontic condition we see a great critical and analytical potential of glitches and the New Aesthetic.

### Where Should we Look for Glitches?

The oscillation creates the “glitch” that is a specific feature of computation as opposed to other technical forms (Berry 2011a). This is the glitch that creates the conspicuousness that breaks the everyday experience of things, and more importantly breaks the flow of things being readily at hand.[[34]](#footnote-35)

Following Heidegger’s analysis we could conclude that glitches which occur in contemporary computational systems can be characterized as different instances of unreadiness-to-hand, particularly as manifestations of conspicuousness and obstinacy in everyday functioning and interaction with digital media and computational technologies. In order to position glitches in a context of specific technologies, we should firstly deliver a clear ontological backbone for understanding various ontological levels of the computational which is rooted both in the material (networks, infrastructure, devices) and the immaterial (software, protocols, data).

David M. Berry argues that all manifestations of the computational, be it certain technologies, devices, software, data protocols etc. exist on different ontological levels. His categorization structures the complex technological world into six different categories:

1 Physical: Material and transactional level (of the hardware)

2 Logical: Logical, network and informational transactional level (level of software as diagram or platform)

3 Codal: Textual and coding logics (level of code as text and/or process)

4 Interactional: Surface/interface level (between human beings and non-humans mediated through code)

5 Logistics: Social and organizational structure (at the level of institutions, economies, culture, etc.)

6 Individuational: Stratification of embodied personality (the psychology of actors, the user, etc.) [[35]](#footnote-36)

If we were to look again at the constellation of the various visual phenomena associated with the New Aesthetic – glitches in software and visual media, works of art based on the pixelated aesthetics, interventions that challenge dominant HCI paradigms or critically examine the autonomy of ubiquitous systems – we would see that they can be positioned on various ontological levels of the computational, as advocated by David M. Berry, and would see even further that some of them do exist in the actual physical world. However, the most interesting levels for our analysis would be these where a user meets the computational and consequently, where the computational enters into the physical reality and begins to change it. Following that perspective, we argue that the Interactional, Logistics and Individuational levels of the computational have become the realm of the New Aesthetic. Different New Aesthetic artifacts function and interact with themselves and users across these ontological levels, blurring the clear distinctions between the analog and the digital and the human and the machine.

Why do we need a clear categorization of media, tools, works of art and artifacrs associated with the New Aesthetic both at the micro-level (Heidegger) and in a broader context of today’s technological milieu (Berry)? In order to grasp the critical potential of the New Aesthetic we should be aware of the very conditions of manifestation of these phenomena, to put it simply, we should know where to look for them in todays stream- and cloud-based software media and what is their place in the broad landscape of the computational. We conclude our discussion of the glitch with two examples showing the importance of critical glitch studies to our endeavor that aims to conceptualize the New Aesthetic. Many New Aesthetic products and objects that will be discussed in the following chapters do fall into the category of obstinacy that is encountered across ‘ontological levels of the computational’.

Clement Valla, a New York-based artist, has critically analyzed glitches in Google Earth, which appear as distorted images of the earth’s surface i.e. drooping roads and bridges. His analysis resulted in the ‘Universal Texture’ artwork presented in 2012.[[36]](#footnote-37) According to Valla, Google uses the Universal Texture mapping system which applies hybrid images, a patchwork of two-dimensional photographic data and three-dimensional topographic data extracted from a slew of sources, data-mined, pre-processed, blended and merged in real-time in order to create this particular god-like fluid planetary navigation system – Google Earth.[[37]](#footnote-38) {Fig. 41} Valla argues that drooping roads and bridges, and distorted building facades in Google Earth are not in fact mere errors but rather anomalies within the inner logic of the computational system. Clearly, their existence does not lead to a complete breakdown of Google Earth. Consequently, they should rather be considered as noise, an anomaly or, as Heidegger would put it, an obstinacy within a functioning system.

Many glitches that appear in contemporary visual media are symptomatic for the technologies of the postdigital age. We would argue that that they reveal a new model of seeing and of representing our world. Software and tools of the postdigital era are based on dynamic, ever-changing data from a myriad of different sources, which are endlessly combined and constantly updated to create an illusion of seamless interaction and perfect automation. Google Earth is an example of such a system, an interface for the assemblage of data coming from various stakeholders and sources. The data is constantly updated, and Valla claims that many of these glitches have disappeared from the system due to improvements in the algorithms. The postdigital era is marked by the logic of constant, seamless and equally obfuscated updates, which do not longer take place at the interface level. Today’s cloud-based and ubiquitous computing systems such as Google and Facebook algorithms, are being constantly rewritten and updated, often without the user’s knowledge. Noticing, analyzing and archiving glitches in the ever-changing postdigital technologies is one of the few practices that enable us to critically reflect on the development of flux technologies of the postdigital age.

*The Pirate Cinema* (2013) by Nicolas Maigret is another artistic intervention that uses glitches to critically examine contemporary technologies.[[38]](#footnote-39) {Fig. 42} It produces cut-ups from media files shared on P2P networks in real-time. Maigret argues that ‘this immediate and fragmentary rendering of digital activity […] depicts the topology of digital media consumption and uncontrolled content dissemination in a connected world.’ Thanks to glitch aesthetics the underlying mechanics of protocological and packet media transmission can be revealed. Image breakdowns and pixelization are results of loss in data packets transmission or even temporal unavailability of data. *The Pirate Cinema* visualizes a specific micro-temporality of networked and real-time based media in the postdigital age. The usual continuity and immediacy of high definition media content is challenged through a state of obstinacy, an unready-at-hand condition manifested through glitch aesthetics. The whole process take place in real-time, unveiling the fact that beneath the interface level, the computational in the postdigital age is in fact composed of chaotic and unstable (data) scraps.

1. Olga Goriunova and Alexei Shulgin, ‘Glitch’, in Matthew Fuller (ed.) *Software Studies: a Lexicon*, London: MIT Press, 2008, p. 110. [↑](#footnote-ref-2)
2. Goriunova and Shulgin, ‘Glitch’. [↑](#footnote-ref-3)
3. Berry et al. *New Aesthetic, New Anxieties,* p. 43. [↑](#footnote-ref-4)
4. van den Boomen, *Transcoding the Digital*, p. 65. [↑](#footnote-ref-5)
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