Introduction

From the virtual to matters of fact and concern

All that is solid melts into air
Karl Marx and Friedrich Engels, 1848

Technology is society made durable
Bruno Latour, 1991

The 1982 Time magazine's 'Man of the Year' election was a special one. For the first time in the history of this traditional annual event, a non-human was celebrated: the computer was declared 'Machine of the Year 1982'. The cover displayed a table with a personal computer on it, and a man sitting passively next to it and looking rather puzzled. On the 2006 Time's election cover once again a computer was shown, now basically a screen reflecting the 'Person of the Year': 'YOU. Yes, you. You control the Information Age. Welcome to your world.'

Within 24 years the computer seemed to have changed from an exciting, mysterious machine with unknown capabilities into a transparent mirror, reflecting you, your desires and your activities. Apparently, digital machines embody no unsolved puzzles any more. At the beginning of the 21st century, they are so widely distributed and used that we take them for granted – though we still call them 'new media'. Computers, e-mail, the Internet, mobile phones, digital photo albums, and computer games have become common artefacts in our daily lives. Part of the initial spell has worn off, yet new spells have been cast as well, and some of the old spells still haunt the discourse about the so-called new media.

Three decades of societal and cultural alignment of digital machinery yielded a host of innovations, trials, failures, and problems, accompanied by hype-hopping popular and academic discourse. Meanwhile, new media studies crystallized internationally into an established academic discipline, especially when the first academic bachelor and master programs were institutionalized ten years ago, including the Utrecht program, New Media and Digital Culture.[1] A decade of unfolding the field implores us to reflect on where we stand now. Which new questions emerge when new media are taken for granted, and which puzzles are still unsolved? Is contemporary digital culture indeed all about 'you', or do we still not really fathom the digital machinery and how it constitutes us as 'you'? The contributors to the present book, all teaching and researching new media and digital

culture, and all involved in the Utrecht Media Research group, assembled their 'digital material' into an anthology to celebrate the tenth anniversary of the Utrecht program. Together, the contributions provide a showcase of current state-of-the–art research in the field, from what we as editors have called a 'digital-materialist' perspective.

Immaterial, im/material, in-material

Popular discourse in the 1990s framed new media chiefly as possessing new and amazing qualities. They were believed to fundamentally transform the way we think, live, love, work, learn, and play. *Hypertext*, *virtual reality*, and *cyberspace* were the predominant buzzwords. They announced a new frontier of civilization, whether from an optimistic utopian perspective – pointing to the emergence of virtual communities, new democracy, and a new economy – or from a more pessimistic and dystopian angle – with warnings against the digital divide, information glut, and ubiquitous surveillance. Yet, both outlooks were rooted in the same idea: that new media marked a shift from the material to the immaterial, a general transformation of atoms into bits (Negroponte 1995) and of matter into mind (Barlow 1996). These lines of reasoning were characterized by what we may call *digital mysticism*, a special brand of technological determinism in which digitality and software are considered to be ontologically immaterial determinants of new media. New media and their effects were thus framed as being 'hyper', 'virtual', and 'cyber' – that is, outside of the known materiality, existing independently of the usual material constraints and determinants, such as material bodies, politics, and the economy. Though this kind of discourse was criticized right from the start as a specific ideology (Barbrook and Cameron 1995), it proved to be persistent, and traces of it can still be discerned in the current academic discourse.

When new media appeared on the radar of media and communication studies, the initial attempts to ground digitality consisted of remediating theories from the study of 'old' media, such as the performance arts (Laurel 1991), literature (Aarseth 1997; Ryan 1999), and cinema (Manovich 2001), or even taking 'remediation' itself as the regulative mechanism of digital media (Bolter and Grusin 1999). Over the years, new media studies gradually became emancipated from its remediating inspirers. The field claimed its own medium specificities, yet remained multidisciplinary, as it appropriated theoretical concepts and research methodologies from disciplines like media studies, cultural studies, philosophy, sociology, science and technology studies, and critical discourse analysis. This led to the emergence of subfields such as Internet studies, virtual ethnography (Hine 2000), game studies (Copier and Raessens 2003; Raessens and Goldstein 2005), and software studies (Fuller 2008).

During the past decade academic endeavors gradually left the initial speculative cyber-discourse behind. The focus shifted to the plurality of new media and digi-

tal cultures, and how they are embedded in society and everyday life (Lievrouw 2004; Bakardjieva 2005). New media were no longer considered as being 'out there' but rather as being 'here and amongst us'.

Still, this does not necessarily imply the complete dissolution of digital mysticism. The complexity of digital code is necessarily black boxed in user-friendly interfaces, and this makes assumptions of mysterious immateriality hard to exorcize. Even explicit attempts to foreground 'digital matters' in order to counter the relative underexposure of the material signifier speak of 'the paradox of im/materiality' (Taylor and Harris 2005) when addressing the issue of digital ontology. The solution of this paradox is usually to phrase it in the vein of Michael Heim's classic 'real and material in effect, not in fact' (Heim 1993), thus still presupposing an immaterial digital domain.

However, already in the early days of the digitization of culture and communication, the move beyond the seemingly insuperable dichotomy was attempted. In 1985 Jean-François Lyotard curated an exhibition at the Centre Georges Pompidou in Paris, entitled *Les immatériaux* (Lyotard 1985). This was the first public, experimental encounter with the cultural shift the computer was about to produce. The exhibition was accompanied by an interactive catalogue, written by various authors on the French Minitel system, thus representing one of the first pieces of collaborative electronic writing (Wunderlich 2008). While Lyotard and his co-authors – very much in tune with the predominant utopian fantasies of that period – mused about a future without material objects, the very title of the project already pointed towards the incorporation of the virtual into the material world. The simple use of the plural turned the immaterial, the realm of abstract thought, into palpable parts of something that is, although it cannot be touched, an inseparable part of the material world.

In a similar vein, the authors of this volume want to go a step further in recognizing digital materiality, not so much as 'im/material' but rather as 'in-material' – as software for instance cannot exist by itself but is intrinsically embedded in physical data carriers (Schäfer 2008). In other words, as stuff which may defy immediate physical contact, yet which is incorporated in materiality rather than floating as a metaphysical substance in virtual space. We consider digital cultures as material practices of appropriation, and new media objects as material assemblages of hardware, software, and wetware. As such, they are 'society made durable' (Latour 1991), that is, material artefacts and facts, configured by human actors, tools and technologies in an intricate web of mutually shaping relations.

This approach aligns with the 'material turn' that can be witnessed in cultural and media studies and has led to a renewed interest in anthropological and sociological theory in these fields. William J.T. Mitchell described the theoretical turn towards material aspects of everyday culture and the concern with objects or things (Brown 2004) as a reaction to immaterialization in a postcolonial world: 'The age of the disembodied, immaterial virtuality and cyberspace is upon us, and

therefore we are compelled to think about material objects' (Mitchell 2004, 149). We would rather argue that this interest is a reaction to the myth of the immaterial, rather than pointing to an actual immaterialization of culture.

The material gatherings (Latour 2005; 1993) of new media that are explored in this book can take on many forms and formats, on various scales. They may be objects such as computer games, desktop icons, digitized archives, computer art, blog debates, or handheld gadgets, but also actions such as checking e-mail, uploading a movie to YouTube, online role-playing, listening to mp3 music, or using an e-learning environment. When it comes to digital material, the lines separating objects, actions, and actors are hard to draw, as they are hybridized in technological affordances, software configurations and user interfaces. Consequently, we aim to present an integrative approach in this book that takes into account 'technological' aspects as well as the social uses of media, including the accompanying discourses. Contrary to accounts that conceive digital artefacts as being immaterial, this book considers both the technological specificities as well as the sociopolitical relations and the effects on social realities as an inherent aspect of new media. The contributions cover different areas of digital culture, but they all endorse a material understanding of digital artefacts by situating their objects of research in a dispositif that comprehends the dynamic connections between discourses, social appropriation, and technological design (Kessler 2006).

Processor, memory, network, screen, keyboard

Together the chapters in this book will give an overview of, and at the same time develop a theoretical approach to, digital cultures as material practices – material practices as performed and experienced in daily life as well as configured in technology. They show how the idea of a digital materiality can be grasped and theorized within the field of new media studies, drawing on the diverse backgrounds and research objects, ranging from wireless technologies, software studies, computer graphics and digital subcultures to Internet metaphors and game-play.

To stay true to the digital-material approach that we envisage in this book, we have divided this book into five sections, each alluding to a material computer: PROCESSOR, MEMORY, NETWORK, SCREEN and KEYBOARD. While these concepts explicitly foreground technology, they should also be read as 'metaphorical concepts' (Lakoff and Johnson 1980), that is, as heuristic devices which highlight specific aspects of new media configurations. As computer components, they seem to refer primarily to hardware objects, yet it should be stressed that they all need software to work. Moreover, none of the components can function independently. Metaphorically, each component provides access to a different configuration of digital material, as each reflects another assemblage of the versatile research ground that new media studies entail. The PROCESSOR is the beating heart of a computer system; in this book it exemplifies the procedural inner work-

ings of a machine, or better several machineries: technological, economical, and political. MEMORY refers to devices for storage and retrieval; metaphorically it stands for history, recurring patterns and persistent ideas. The NETWORK enables connections, transmissions, and extensions; as a metaphorical book section it interrogates how the social-cultural assemblages of contemporary machinery are connected to society and daily life. The last two sections – SCREEN and KEYBOARD – pertain to passage points: how users interact with digital machines through interfaces. The SCREEN represents how the machinery reflects and refracts its users, how their activities are channeled, and how hardware, software, and visual culture are related. And last but not least, the KEYBOARD foregrounds how users interact with the machinery; metaphorically it shows how users appropriate digital tools.

Inside the assemblage

The first three sections – PROCESSOR, MEMORY and NETWORK – stress the social-cultural assemblage of contemporary machinery. The PROCESSOR section consists of contributions that focus on questions pertaining to how digital machinery carries out certain cultural 'programs' or instructions. It specifically pays attention to how and by whom they are executed and created, whether in terms of ideology, participatory culture or design.

In his chapter *Serious games from an apparatus perspective*, Joost Raessens draws our attention to so-called serious gaming when he engages in a critical discussion about educational games that are meant to incite learning through playing. By approaching them as a ludic apparatus within the conceptual framework of the Lacanian philosopher Žižek, Raessens reveals the political-ideological tendencies that are inscribed in such games, through both design and play.

In *Empower yourself, defend freedom! Playing games during times of war*, David Nieborg takes us to quite another instance of 'serious gaming', as developed inside the military machine. Discussing the branding of the game *America's Army*, which was developed to recruit for the real American army, he examines how national propaganda can be effective in the context of global entertainment. Nieborg demonstrates that the global dissemination of this game among youth culture may weaken the purpose of recruitment, but at the same time endows it with a more implicit persuasive power that has its own ideological value.

In his contribution, *Formatted spaces of participation: Interactive television and the changing relationship between production and consumption*, Eggo Müller gives a historically comparative analysis of the television machinery by fleshing out the concept of participation in interactive television and how this has transformed associations between producing and consuming. By discussing three cases of interactive television and video sharing sites, Müller argues that participation can be best understood in terms of formatted spaces that are culturally determined.

The last chapter in this section returns to educational processing, now enabled not by games or entertainment but by the design of e-learning systems. In her contribution *Digital objects in e-learning environments: The case of WebCT*, Erna Kotkamp argues that a different approach to the design of e-learning environments such as WebCT and Blackboard is needed when educational tools change their objectives towards user interaction rather than content transference.

To function as a machine, a computer needs at very least a processor and MEMORY. The first is needed for execution and calculation, the second for storage and retrieval of data. In accordance, the MEMORY section of this book comprises chapters that deal with how digital machinery stores and retrieves data, thereby producing, reproducing and negotiating cultural artefacts. As Michel Serres famously noted in his conversation with Bruno Latour (Serres and Latour 1995), things are only contemporary by composition, and some parts are always related to memory and the past. Digital materials should correspondingly be seen as assemblages that hold various temporal references, tapping from previously stored and inscribed cultural resources. The chapters in this section examine in different ways how contemporary digital technologies relate to inscriptions of other times.

Imar de Vries draws our attention to a temporal dimension of new media when he discusses utopian discourses surrounding mobile devices. In *The vanishing points of mobile communication*, he ascertains that just like discussions in the early 1990s about the Internet, utopian visions about mobile communication embody an age-old quest for ideal communication. Yet, as De Vries shows, such utopian discourses of progress are incongruent in certain respects with how mobile technologies are experienced in everyday life. Hence, living in a connected culture entertains a paradoxical relationship with utopian ideals of perfect communication.

The MEMORY section takes on a more philosophical stance with Jos de Mul's discussion of Walter Benjamin. In *The work of art in the age of digital recombination*, De Mul contends that Benjamin's notion of 'exhibition value' should be replaced by that of 'manipulation value' to be able to understand art in the digital age. He claims that a 'database ontology' can serve as a suitable paradigmatic model to account for digital art, both by its technological affordances and its metaphorical power.

In *The design of world citizenship: A historical comparison between world exhibitions and the web*, Berteke Waaldijk examines historical dimensions of digital practices by comparing 19th-century world fairs with the Internet. She shows that the promise of seeing everything on the web bears clear similarities to the promise of seeing the world at world exhibitions. In both cases there is a disparity between ideological promises of seeing and the vulnerability of being watched and controlled as well as an oscillation between global and local positionings of citizenship.

In Isabella van Elferen's contribution *'And machine created music': Cybergothic music and the phantom voices of the technological uncanny*, memory takes on yet another meaning by asserting that a fascination with the past is a constitutive part of cybergothic music cultures that celebrate the mixing of human and technological agency of past and present. Thus situated in a twilight zone, these subcultures replay and reshape sounds and voices from the past in a contemporary digital and technological setting.

The parts of our metaphorical computer can never function separately, but need to be connected to other parts to work properly. In the NETWORK section of this book, this facet is highlighted as attention shifts to how digital material should be conceived as being part of a more widespread network. How the participatory role of the user should be acknowledged as part of a network is addressed in the first two chapters of this section. William Uricchio relates the digital present to the analogue past when discussing in *Moving beyond the artefact: Lessons from participatory culture* how the 'digital turn', and the possibilities of participation as promised by Web 2.0 discourse, changed our concept of archiving historical data. He argues that the users' possibilities to add and alter content have changed our concept of archiving in old and new media.

In *Participation inside? User activities between design and appropriation*, Mirko Tobias Schäfer engages in a critical discussion about how the line between creation and consumption has blurred since the emergence of Internet applications like Napster. Though user appropriation of such file-sharing technologies challenges the established media industry whose business models rely on controlling the distribution of media objects, user activities should not be conceived as unequivocally subversive. Schäfer therefore calls for a critical analysis of how digital network technologies are appropriated, recreated and reassembled by various actors.

Marinka Copier plays up another dimension of networking technologies in describing how playing on-line games like *World of Warcraft* becomes a part of daily practice. In her contribution *Challenging the magic circle: How online role-playing games are negotiated by everyday life*, she argues that playing such games is so much interwoven with trivial daily activities that the idea of entering a 'magic circle' (Huizinga 1938) when playing a game no longer suffices. Instead, she proposes treating games like *World of Warcraft* as networks that are anchored in our everyday life.

In Douglas Rushkoff's chapter the digital world is understood as a network of stories in which the power of making stories is becoming more egalitarian. In *Renaissance now! The gamers' perspective*, he heralds a new generation of gamers who will generate a resurrection of participation in making stories. He foresees a new digitized world of playing in which we can be active agents in producing the stories that make the world go round, thus generating new narrative networks by controlling the buttons and breaking hegemonies.

Points of passage

The last two sections of the book concentrate less on the inside and more on the negotiations between the outside and inside of digital machinery, by respectively taking on the SCREEN and the KEYBOARD as perceptual interfaces and conceptual metaphors that serve as points of passage between user and machine. In the SCREEN section, contributions focus on how screens function as a membrane or locus of passage that hybridize and connect different realms and categories.

Frank Kessler undertakes a constructive comparison between analogue and digital photography and film in how they relate to 'the real' in *What you get is what you see: Digital images and the claim on the real*. He claims that debates about the real or authentic quality of recorded images has shifted since the emergence of new media, where an image is no longer necessarily pre-recorded and data become more mutable. He evaluates whether and how the Peircian term 'indexicality' (pertaining to a sign that points to a physical or existential relation) still holds validity for digital images.

Also in Eva Nieuwdorp's contribution *The pervasive interface: Tracing the magic circle*, matters of physicality and reality are addressed, here in relation to pervasive games rather than images. Pervasive games intentionally mingle with daily life and therefore need a theoretical framework that takes this into account. She argues that the notion of interface can serve as a central tool to recognize the 'liminal' character of such games that are not situated within a clearly delineated virtual game world. Hence Nieuwdorp calls for an interfacial approach to pervasive games that allows us to acknowledge the connection between its fantastical dimensions and daily life.

In the following chapter *Grasping the screen: Towards a conceptualization of touch, mobility and multiplicity*, Nanna Verhoeff analyzes the interface in another manner, when discussing the Nintendo DS as a particular new screen practice, that is at the same time mobile, tactile and making use of a double screen. Like Raessens, she proposes using the concept of dispositif. She appropriates this concept to show how the Nintendo DS, as a 'theoretical object', marks a rupture from the cinematic and televisual screen dispositif in terms of multiplicity of mobility and a shift from perception to tactile productivity.

In the last chapter of this section, Sybille Lammes analyzes cartographical screens in strategy games. In *Terra incognita: Computer games, cartography and spatial stories*, she discusses the use of cartography in such games. She particularly focuses on the mutable qualities of digital maps that are visible on the computer screen and how they are intertwined with landscapes that players have to master. Lammes shows that the distinction between tour and map as theorized by De Certeau (1984) needs to be revised in order to culturally comprehend the spatial functions of such games.

Lastly, in the KEYBOARD section, attention shifts to another interfacial aspect of new media, namely how users interact with digital material. Closely related to the section about screens, here the accent lies on how users have 'hands-on' contact with digital machinery. The main perspective changes here towards the user of the computer, whether writer, reader, player, or artist.

In the first chapter Thomas Poell discusses the user as reader and writer participating in public debates on the Internet. In *Conceptualizing forums and blogs as public sphere*, he explores whether and how the concepts of public sphere and multiple public spheres can be used to understand the role of web forums and blogs in public debate. Taking the heated debate that developed on the Internet after the assassination of Dutch critic and film director Theo van Gogh as his main case, he shows that even updated versions of Habermas's public sphere theory do not entirely cover the medium-specific dynamics of forums and blogs.

Marianne van den Boomen examines the user as a 'reader' and operator of material metaphors. In *Interfacing by material metaphors: How your mailbox may fool you*, she aims to yield insight into interface metaphors, such as the mail icon, which function as 'sign-tools'. She unravels these material metaphors as condensed icons that absorb and conceal their indexical relations to software and hardware processes. Similar to Kessler, she discusses computer icons as Peircian indexical signs, but also as Heideggerian tools.

While Van den Boomen discusses the user as an operator of sign-tools, Ann-Sophie Lehmann speaks about the user as artist. In *Hidden practice: The representation of artists' working spaces, tools and materials in digital visual culture*, she compares the way that painters' practices were represented in the pre-modern era with how the work of digital artists is presented in contemporary visual culture. She shows how media artists make use of similarly complex and custom-made tools as artists in the pre-industrial age, but contrary to representations of the painter at work, the practice of making digital art is rendered invisible.

Just like the parts of the metaphorical computer that structure this book, each chapter in this book highlights different constituents of the digital machine, mapping out how new media can be traced as digital material. One prevalent manner of doing so is by showing how technology is interwoven with culture and history. The Utrecht Media Research program has long been concerned with research into media's cultural construction, both diachronically and synchronically. This tradition stands in sharp contrast to definitions of media based solely upon a supposition of their technological, sociological, semiotic or aesthetic specificity. Our research is a quest for what may be termed the dynamics of media dispositifs, that is, tracing constellations of factors, including discursive formations, economic strategies, socio-cultural functions, as well as technological affordances and appropriation by users.

The contributions in this book all recognize that new media are not only embedded in but also generate and reassemble material cultures. This pertains to what Matthew Fuller has called the 'reality-forming nature of a medium' (Fuller 2005, 2). Contrary to views of new media as producing virtual experiences that lie outside everyday material realities, or as generating 'just representations', or 'just metaphors', this book emphasizes that they embody, assemble and reproduce gatherings that are always material – both in effect and as matters of fact. Or better, as matters of concern, since matters of fact should never be taken for granted. As Bruno Latour (2005, 114) writes: 'The discussion begins to shift for good when one introduces not matters of fact but what I now call *matters of concern*. While highly uncertain and loudly disputed, these real, objective, atypical, and above all, *interesting* agencies are taken not exactly as object but rather as *gatherings*.' New media and digital material are all about such interesting gatherings, as we hope to show in the present book.

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Note

1. For more information, see newmediastudies.nl

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