

BEYOND MATTER,
WITHIN SPACE

Curatorial and Art Mediation
Techniques on the Verge
of Virtual Reality

Edited by Lívia Nolasco-Rózsás
with Marianne Schädler

HATJE
CANTZ

BEYOND MATTER, WITHIN SPACE

For Peter Weibel (1944–2023)

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A MESSAGE FROM THE GERMAN MINISTER OF STATE FOR CULTURE AND THE MEDIA

Peter Weibel, the longtime chairman of ZKM|Center for Art and Media Karlsruhe who passed away in March 2023 at the age of seventy-eight, was a fascinating pioneer of media art and a powerhouse of creativity. He once neatly summed up the task of art as “opening doors that no one sees are there.” The international project “Beyond Matter. Cultural Heritage on the Verge of Virtual Reality” throws open the doors for the museum of the future, for art and for its mediation: How does digital technology influence our conception of space, and how does that affect the work of museums and the way art is shared with the public? How does digital transformation change our aesthetic experiences? Artists, researchers, and museum experts in Europe worked together for four years to answer these questions: from the Centre Pompidou in Paris to ZKM in Karlsruhe and the Ludwig Museum of Contemporary Art in Budapest; from Aalto University in Helsinki to Tallinn Art Hall in Estonia and tech companies in Germany.

Digital transformation is one of the major challenges of our time for culture and the media as well. This challenge demands creative minds and innovative approaches. It is in our common interest to make sure that museums can continue to accomplish their mission under rapidly changing conditions, both as institutions of art and culture, and as sites of social and democratic discourse.

This publication and the related project website are a valuable resource for everyone who has the task of expanding their digital offerings and providing museum services that meet current and future needs.

I am glad that the office of the Federal Government Commissioner for Culture and the Media was able to support the digital transformation of museums by contributing funding to the Beyond Matter project. I am grateful to Peter Weibel’s dedicated team at the ZKM and to all those who participated in this project for their commitment, and I hope the readers of this volume will find it interesting and inspiring.

Claudia Roth

Member of the German Bundestag
Minister of State for Culture and the Media

Berlin, April 4, 2023

FOREWORD FROM ZKM|KARLSRUHE

Peter Weibel (1944–2023) spent more than twenty-four years shaping ZKM|Center for Art and Media Karlsruhe into an unparalleled institution of artistic and scientific research and exhibition practice. Through a never-ending stream of questions pertaining to the connections between art, philosophy, science, and technology, ZKM|Karlsruhe has cultivated an expertise in realizing projects for which there are no blueprints or safety nets. *Beyond Matter* has been exemplary of this tradition, setting out in an open field of questions, possibilities, and novel solutions for the accessible digital documentation and networked presentation of art and exhibitions.

Exhibitions have been the established medium for the presentation of art since the mid-nineteenth century. We are equally familiar with the exhibition catalog, which documents artistic production and translates it into the two-dimensionality of printed paper. What had been lacking was a transposition of the exhibition as a curated narrative into three-dimensional virtual space. *Beyond Matter* has bridged that gap. Galleries and other cultural institutions can benefit from its digital exhibition platforms developed as templates for making exhibitions freely available in the digital realm.

Beyond Matter is rooted in a long-standing cooperation between ZKM|Karlsruhe and the Centre Pompidou in Paris, and this was reflected not least in the traveling exhibition *Matter. Non-Matter. Anti-Matter. Past Exhibitions as Digital Experiences* (2021–23). The digital exhibition models were developed based on the two iconic exhibitions *Les Immatériaux* (Centre Pompidou, 1985) and *Iconoclash. Beyond the Image Wars in Science, Religion and Art* (ZKM|Karlsruhe, 2002).

This publication, *Beyond Matter, Within Space. Curatorial and Art Mediation Techniques on the Verge of Virtual Reality*, offers a wide variety of contributions that allow for comprehensive insight into the complexities, research processes, and solutions arising from endeavors to “transfer the essence and the curatorial concept of an exhibition into the digital space,” as described by Livia Nolasco-Rózsás, initiator and head of the project.

We would like to thank all staff members, partners, artists, scientists, and authors who have contributed to *Beyond Matter* as a collaborative European project. Special thanks are owed to the ZKM project team with Livia Nolasco-Rózsás, Felix Koberstein, and Marianne Schädler.

We are grateful for the financial support provided by the Creative Europe Program of the European Union (EU) and the Federal Government Commissioner for Culture and the Media (BKM). We truly appreciate your trust in ZKM|Karlsruhe and its research.

Alistair Hudson

Scientific-artistic chairman of ZKM|Center for Art and Media Karlsruhe

Dr. Helga Huskamp

Managing director of ZKM|Center for Art and Media Karlsruhe

INTRODUCTION.

Beyond Matter. An Inquiry into the Modes of Exhibition Practices in the Virtual Condition

Livia Nolasco-Rózsás

This publication documents the broad spectrum of initiatives that took place within the framework of the international, collaborative, practice-based research project “Beyond Matter. Cultural Heritage on the Verge of Virtual Reality.” The book also gathers voices that contribute to the theoretical groundwork the project stands on, and thus unites various disciplines of the sciences and the arts—theories and practices with a keen interest in curation and art mediation in computer-generated and hybrid spaces and their impact on the spaces of the exhibition.

Beyond Matter engaged with a contemporary shift in the production and mediation of visual art within institutional frameworks that is largely attributable to the rapid development and ubiquitous presence and use of computation and information technology, specifically augmented and virtual reality but also artificial intelligence.

The shift is seismic and it is leading to a condition that may be summarized as “the virtual.” If the postmodern condition was a “crisis of narratives,” as Jean-François Lyotard put it,¹ then the virtual condition reveals a crisis of dichotomies. Its analysis suggests that dichotomies are losing their validity: presence and absence, physical and computer-generated, real and simulated. The algorithmically-generated increasingly dominates our reality, intertwines the physical with the virtual, and skews the linearity of time. This has extensive implications for the spatial aspects of the curation and mediation of visual arts, as well as their reception by a public whose affinity for technology is ever-increasing. The museum transmogrifies into a hybrid entity whose geographical location is extended by various digital platforms; instead of one there is an affluence of exhibition spaces, an extended but also porous system of multiple dimensions.

The creation of generative networked spaces to display art and produce knowledge is not a novelty: it has unfolded hand in hand with the development of computation’s ability to visualize simulated or generated spaces that may or may not resemble our observable surroundings and the ways in which we perceive them.

This publication summarizes the various activities that have resulted from the practice-based research on the virtual condition undertaken by the Beyond Matter partner institutions. Through our common endeavor, the partners aimed to produce a “pool of tools”² and related knowledge to help arts practitioners, curators, and museum professionals understand the shift described above and then plan and use best practices. Putting an emphasis on the spatial aspects of art

1 See Jean-François Lyotard, *La condition postmoderne: rapport sur le savoir* (Paris: Éditions de Minuit, 1979).

2 The expression “pool of tools” was used by Peter Weibel in the context of the exhibition *Renaissance 3.0* (2023–24, ZKM|Karlsruhe).

production, curation, and mediation, the project included the digital revival of selected past landmark exhibitions, the curation of new art and archival exhibitions, conferences, artist residency programs, an online platform, and publications. These multiple actions were based on the virtual condition but also reflected on it.

Beyond Matter was led by ZKM|Center for Art and Media Karlsruhe, and the collaborators comprised of researchers and curators at: Aalto University, Espoo; Centre Georges Pompidou, Paris; Ludwig Múzeum – Kortárs Művészeti Múzeum (Ludwig Museum – Museum of Contemporary Art), Budapest; Tallinna Kunstihoone (Tallinn Art Hall); Tirana Art Lab – Center for Contemporary Art; and the associated partners EPFL Pavilions, Lausanne; HAWK – University of Applied Sciences and Arts, Hildesheim, GIM Gesellschaft für Innovative Marktforschung mbH, Heidelberg and Bio Design Lab at the HfG Karlsruhe. These are institutions of varied scales and profiles with a shared interest in the innovative use of digital technologies to reach non-local audiences, to expand their exhibition spaces digitally, and to create hybrid access to the content they wish to mediate. With this project they each tread upon new territory.

At the heart of Beyond Matter was an exploration of the potential harbored in computer-generated exhibition spaces. The key focus areas, examined through an array of approaches, were formed by notions of space and their meaning in the context of artistic and exhibition practice, as well as by perceptions of the reciprocal relationship between computer-generated virtual and physical spaces—and the immersive features in them—from the points of view of all actors of the constellation of an exhibition.³ This exploration manifested variously throughout the projects, for example in the modeling of two historical exhibitions or through inviting artists to elaborate their take on the virtual from diverse angles.

In the context of art production and mediation, the word “virtual” often appears together with “reality.” Virtual reality is predominantly understood as a term for computer-aided interactive and immersive environments accessed via screened images and in many cases additional devices (such as head-mounted displays). Dissecting the term “virtual reality,” including its etymology, aids in understanding the condition brought about by the technological opportunity to create relatively sophisticated representations of anything we can perceive and calculate digitally. Indeed, deconstruction serves as a basis for constructing new terms, which in turn serves to contextualize art production and mediation. Donna Haraway came up with a seemingly deconstructive yet genuinely constructive method to evolve the abbreviation SF into versatile pairings of words.⁴ Generally standing for science fiction, SF was subjected to a word game as Haraway formulated other terms that it could stand for, all of which relate in meaning to science fiction or offer an alternative to it, such as “speculative fabulation” and “string figures.” Inspired by how all these new SF terms joined Haraway’s arsenal of methodologies, we applied her formula to VR and found that it could stand for a variety of terms beyond virtual reality: viral radiation, valid readings, vaporous restoration, variable relations, visible revision, visionary ramblings, and many more. This publication takes these enfoldments of VR as an initial set of points to frame the Beyond Matter endeavor. Each chapter takes one enfoldment as its initial point and elaborates on the newly coined term through commissioned essays and descriptions of the outputs of the practice-based research conducted throughout the project, or, in the case of the last chapter, through interviews with the artists and scholars who participated in the Beyond Matter residency program.

While some of the essays discuss the subjects of inspiration and themes grounding the ambitions of the arts practitioners who contributed to the project, others analyze or directly relate to the project’s results. Reflections on different facets of the work at ZKM|Karlsruhe

3 The term “constellation” is used here in the sense Beatrice von Bismarck used in *The Curatorial Condition* (Berlin: Sternberg Press, 2022).

4 See Donna Haraway, *SF: Speculative Fabulation and String Figures/SF: spekulative Fabulation und String-Figuren, So Far, 100 Notes – 100 Thoughts/100 Notizen – 100 Gedanken*, documenta (13) (Ostfildern: Hatje Cantz, 2011).

are also included in order to embed Beyond Matter within a historical trajectory and within the prospective future of the institution that most shaped it. These contributions are provided by authors of various disciplinary backgrounds: philosophy, sociology, art theory and history, curatorial studies, media theory, technoscience, and information technology. Most of the commissioned essayists represent a European tradition and walk along the continental path in philosophy, with a few refreshing exceptions which have different references. What unites these positions is a deliberate distanciation from Modernism on various levels, and shimmering through the essays are thus a prospective cosmotechnical future and a genuinely posthumanist approach.⁵ The texts resonate with the outcomes of the project, which are documented here in the forms of illustrated descriptions of the research processes and the software and hardware developments, curatorial texts, interviews, summaries of evaluation measures, and reflections on the sociopolitical environments around the project. These texts incorporate the various concepts linked to the archival, curatorial, design, and research processes, as well as interviews with the Beyond Matter residency artists and other involved practitioners.

In addition to the thematic clustering, the structure of the publication follows a loosely chronological order and starts with the documentation of the first large-scale exhibition organized in the framework of Beyond Matter: *Spatial Affairs* took place in 2021, in the midst of the Covid-19 pandemic. The various waves of lockdowns made planning of public events, travel, and workflows challenging. Throughout this time art institutions largely relied on online formats. Spatial online art mediation formats had constituted the main focus of Beyond Matter before the pandemic-related lockdowns accelerated this process of digital expansion. *Spatial Affairs* had been conceived as a hybrid exhibition, while the *Tirana Floating Archive*, also presented in the book's first chapter, had been conceived as an online exhibition and curated archive, accessible via an app and a website.

Entitled "Viral Radiation" and including *Spatial Affairs* and the *Tirana Floating Archive*, the first chapter describes generated virtual spaces that "radiate" and mediate curated artistic knowledge and aesthetic components that are unbound from where their physical carrier is actually situated, or where their exhibition takes place. These spaces offer answers to queries about the significance of the space of the exhibition after the post-digital turn, and how art institutions can react to this paradigmatic shift. In an interview, Beatrice von Bismarck discusses these questions, and the relationship between the virtual and curatorial conditions. The chapter also presents Bogna Konior's ruminations on the already announced but not yet actualized *metaverse*, which may well belong to the future virtual condition of art institutions, as their exhibition halls expand to spaces on the "world wide virtual web." Spatial thinking was central to the exhibition *Spatial Affairs*, and Irmgard Emmelhainz discusses this aspect of the show, extending the discussion to two further exhibitions with which Beyond Matter engaged deeply: *Iconoclash. Beyond the Image Wars in Science, Religion and Art* (2002, ZKM|Karlsruhe, curated by Bruno Latour and Peter Weibel) and *Les Immatériaux* (1985, Centre Pompidou, curated by Jean-François Lyotard and Thierry Chaput). Emmelhainz elaborates on the notion of digital materiality to prospect and lay the groundwork for the chapters to come.

"Valid Readings" is the title of the second chapter, which documents the traveling exhibition *Matter. Non-Matter. Anti-Matter* with a specific focus on its extended iteration at

5 "I developed the concept of cosmotechnics to suggest that there is not one universal and homogenous technology, but rather that it is necessary to rediscover and articulate how there are multiple cosmotechnics historically and philosophically. I gave a preliminary definition to cosmotechnics as the unification of moral order and cosmic order through technical activities. However, this definition has to be further articulated, for example by specifying the moral and cosmic order to which we refer, and the process of unification." In: Yuk Hui, *Art and Cosmotechnics* (Minneapolis, MN: University of Minnesota Press, 2021), 41.

ZKM|Karlsruhe. Each presentation of this exhibition, varying in size and context, had the same element at its core: *The Immaterial Display*, a hardware installation developed to present digital exhibition spaces—also described in the chapter. The two digital exhibition models shown on the display engaged with *Iconoclash* and *Les Immatériaux*. Based on those two paradigmatic exhibitions, the exhibition and its accompanying program explored the possibilities of virtual exhibition histories, a topic taken up by two essays in the chapter: Sybille Krämer contemplates the simultaneity of the non-simultaneous enabled by digitality, and Siegfried Zielinski posits digital exhibition models as constituting an artificial memory practice. The exhibition title *Matter. Non-Matter. Anti-Matter* calls for reflections on the changing notion of materiality, and these are provided here by Christiane Paul, while Bernard Dionysius Geoghegan remembers seminars with Bruno Latour and Bernard Stiegler—and reflects on the pandemic—as he analyzes the digital affordances offered by installations such as *The Immaterial Display*.

After an outline of the framework and the hardware on which the digital exhibition models were presented in exhibition spaces, chapter three concentrates on the two models themselves. “Vaporous Restoration” denotes a non-physical and non-reconstructive approach aiming at the emulation, modeling, or proxy-creation of the two selected past spatial assemblies of artworks. These virtual exhibition models, created in the framework of Beyond Matter, are based on extensive archival research, interviews with experts and the curators, and an iterative design process among a large interdisciplinary group. The chosen exhibitions were well-known, complex, self-reflexive instantiations of the medium that outlined escape routes from modernity while elaborating on notions of representation and materiality. The digital models inevitably prompt the question of whether the aura of an artwork, or even of the entire exhibition, can be migrated into the digital realm. In their essays Elena Papadaki and Graham Harman reflect upon this, analyzing the notion of the virtual as well as the roots and current imaginations of virtual reality and the metaverse. Anna Longo and Kim West approach these subjects from different perspectives in their contributions. The authors concentrate on one or the other case study; Harman, for example, focuses on *Iconoclash*, while Amanda Beech looks at *Les Immatériaux*.

The tension between presence and absence and the digital dissolution of the dichotomy between the two form the focus of the fourth chapter, “Variable Relations,” which connotes the multiplicity of connections between visitors, artworks, artifacts, scenographies, curatorial concepts, artists, scholars, museum professionals, objects, and subjects. These new relations across virtual and physical spaces give rise to an epistemological shift that manifests in the *Beyond Matter VIEW Platform*, in the virtual exhibition platform of Tallinn Art Hall, and in an online guided-tour tool realized for the online exhibition *Spatial Affairs. Worlding*. Corina L. Apostol relates the cinematic approach to exhibition documentation at Tallinn Art Hall, while a discussion between Annet Dekker, Marialaura Ghidini, and Gaia Tedone refers to the *Beyond Matter VIEW Platform*. The three curators also contextualize the latter within an unfinished history of online curatorial endeavors. Non-locality or the sense of presence while being absent is the topic of Elena Esposito’s reflection. The technological possibilities that enable such variable relations between the actors that constitute exhibitions propel a revision of the boundaries of museum or exhibition space.

The fifth chapter, “Visible Revision,” examines how the hybrid museum experience can be defined, and what can be expected in the exhibition space when intelligent “things” contribute to its constellation. It does this through a description of the “Hymex – Hybrid Museum Experience 2021” symposium, and through contributions by Yannick Hoffmann, Cecilia Preiß, and Daria Mille tracing perspectives that open up from within ZKM. The chapter also includes a manifesto-like text by Mauro Martino on the role of AI in the construction and negotiation of collective memory and cultural identity, as well as an insight into the inner procedures and the anatomy of the project through the analysis of the MA fellowship program and the preparations for the *Matter. Non-Matter. Anti-Matter* exhibition at ZKM. An examination of curatorial agency in digitally expanded exhibition spaces from an external perspective is provided by Kai-Uwe Hemken. The evaluation

methods applied within the project are also discussed here. Performance-oriented research and audience and community studies were conducted and followed *The Immaterial Display* on its journey through Europe, while an evaluation automaton was developed and used to evaluate the digital content and interfaces in a hybrid exhibition qualitatively and quantitatively.

Beside practice-based research, Beyond Matter enabled artistic research and creation. A residency program saw fourteen artists to join one of three participating institutions and ramble—in their minds at least. Due to pandemic travel restrictions, not all resident artists and researchers could be present at the host institution and some had to develop and/or exhibit their residency project online. The *Beyond Matter VIEW Platform* contains the entirely online environments and the online parts of larger projects by some of the artists. Despite these logistical challenges, all the results of the residencies could be exhibited or performed in one or another framework provided by the Beyond Matter project—in the *Matter. Non-Matter. Anti-Matter* exhibition in Tirana, at ZKM, or as part of the group show *Immerse!* at Tallinn Art Hall. The chapter “Visionary Ramblings” documents the projects of the residency artists in the form of interviews and written recordings of performance-lectures, and storytelling events.







Beyond Matter entangled and intertwined formats, actions, processes, and results; it had a complex project architecture. Each partner contributed a layer of research and was involved with different activities. A project map depicts this network of institutions and projects to document their collaboration. A comprehensive appendix aids the reader in navigating this publication and its themes. A glossary of terms gives detailed explanation of terminology that has shaped the project. These [Glossary terms](#) are highlighted throughout the publication.

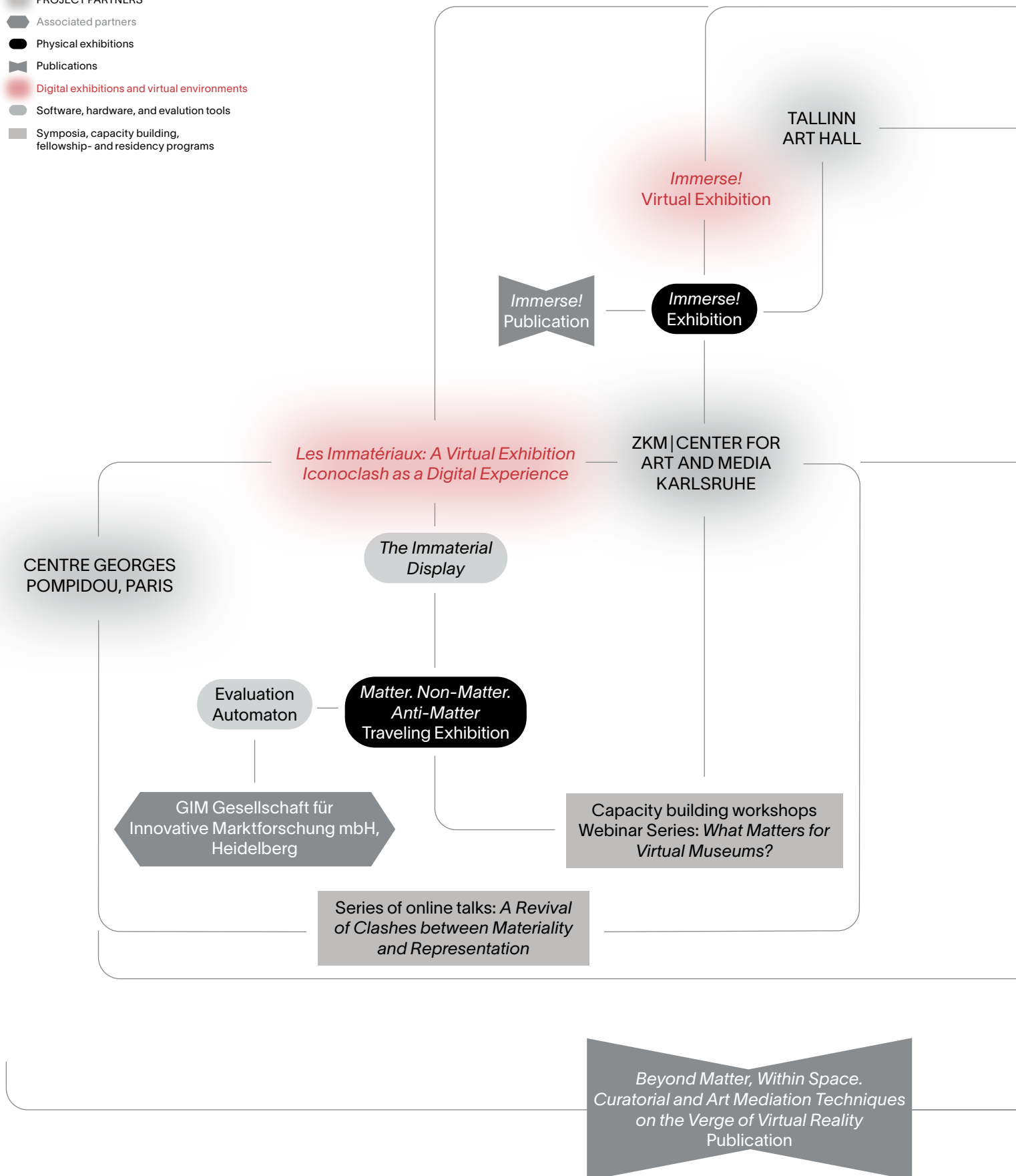
Beyond Matter has engendered new content—through exhibitions, symposia, discussions, and publications—but it also facilitated professional exchange between art institutions, mainly within European countries, contributed to cultural professionals’ skillsets around digital media-tion formats, and fostered a transnational mobility of artworks and arts professionals. The project also contributed to the digital commons through digitized archival materials and the development of open-source software that is available online and usable by any other cultural organization wishing to provide online access to the cultural heritage in its guardianship.

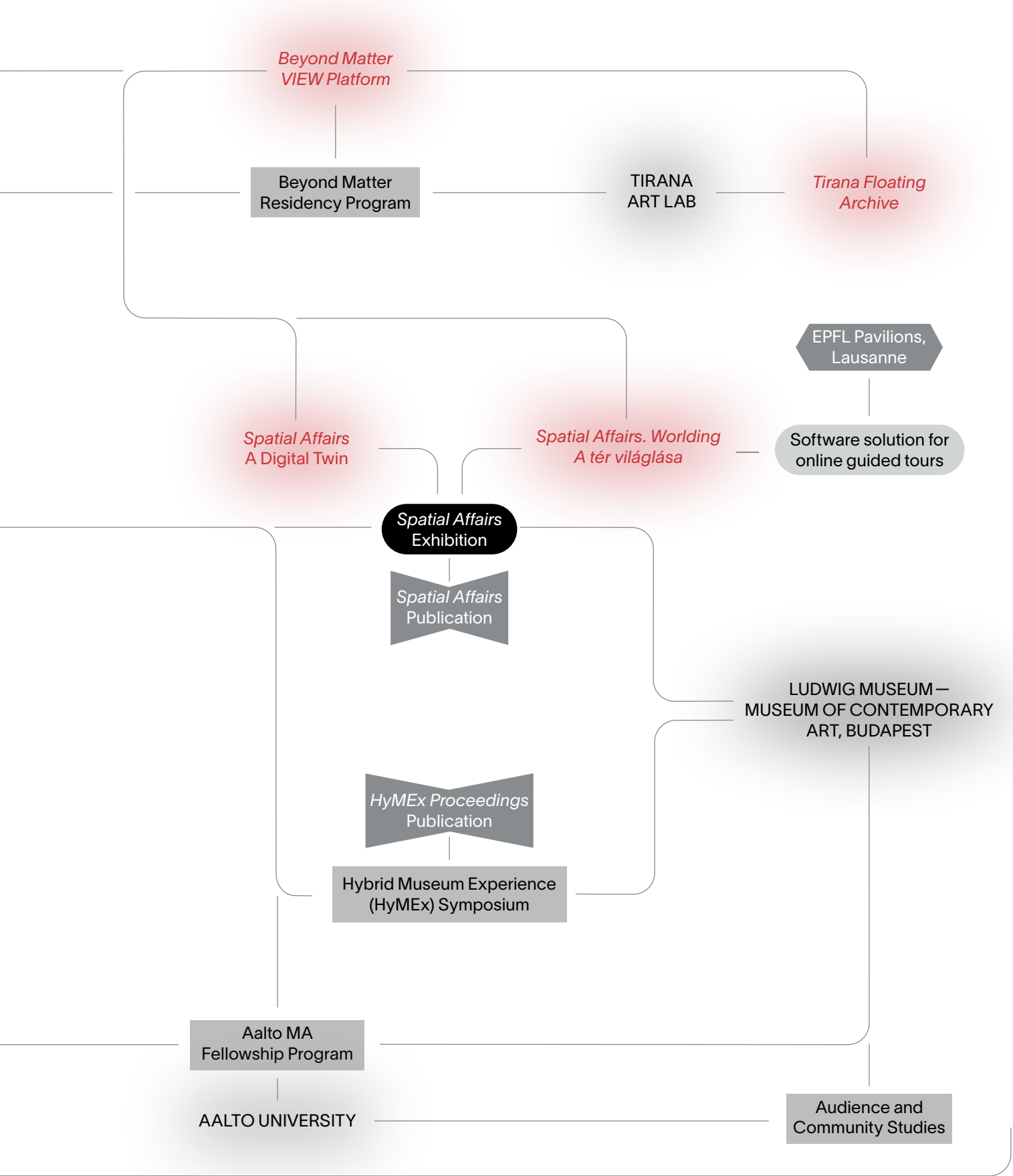
The new approaches to digital conservation provided by Beyond Matter are much-needed because exhibitions are both tangible and intangible. Preservation of and access to them, as a part of our cultural heritage with a long-term identity-shaping character, can help us understand current and future streams of events. Parallel to cultural heritage, digital culture increasingly influences cultural identities in Europe and globally. Beyond Matter has revived cultural heritage and connected it to today’s digitality.

The project laid down possible directions for practice-based research and creation in non-academic environments such as art centers, museums, art halls, or art labs in the hope that not only the outcomes but the methodologies elaborated over the last four years will prevail, that art institutions will carry on with digital world-making and create online platforms that function as assemblies, that hybrid experiences in art mediation will soon be widely accepted, and AI-based construction of digital platforms for sharing knowledge will become ubiquitous.

PROJECT PARTNERS

-  Associated partners
-  Physical exhibitions
-  Publications
-  Digital exhibitions and virtual environments
-  Software, hardware, and evaluation tools
-  Symposia, capacity building, fellowship- and residency programs





1. VIRAL RADIATION. Spaces of the Exhibition in the Virtual Condition

SPATIAL AFFAIRS. A Triple-Aspect Interrogation of Our Evolving Perception of Space

Computer-generated environments, virtual realities, and networked digital platforms—from cyberspace to metaverse—are no longer fictitious locations found in science-fiction. Their roles are now as significant as those of real spaces. The immaterial spheres generated by information technology have become legitimate parallel dimensions of our perceptions, experiences, knowledge, communication, and ourselves. Real and virtual are no longer antithetical. We must therefore re-examine our three-dimensional conception of space.

In a presentation spanning a physical exhibition, a digital twin of that exhibition, and a specially designed multi-user online environment that displays born-digital artwork, *Spatial Affairs* probed the mutual dependence between physical and digital presence through conceptual and contemporary artworks and manifestos. It proffered multiple artistic positions, in various media and from both before and after the emergence of computer technology, on the development and social impact of science and technology through the notion of space (see figs. 1–5). The co-dependence of the tangible real and the intangible digital was thus thrown into sharp relief.

In the process, *Spatial Affairs* reassessed certain widely accepted but not necessarily valid ideas about space. Instead of exploring differences between transcendental and material conceptions of space, it asked whether and how our conventional knowledge of space is influenced by computer technology and computer-generated spaces.

As early as the 1960s, the pioneers of computer art demonstrated that the computer could create and represent artificial spaces—take the computer-generated designs of Japanese philosopher Hiroshi Kawano or of German academic Georg Nees, for instance. Supplanting

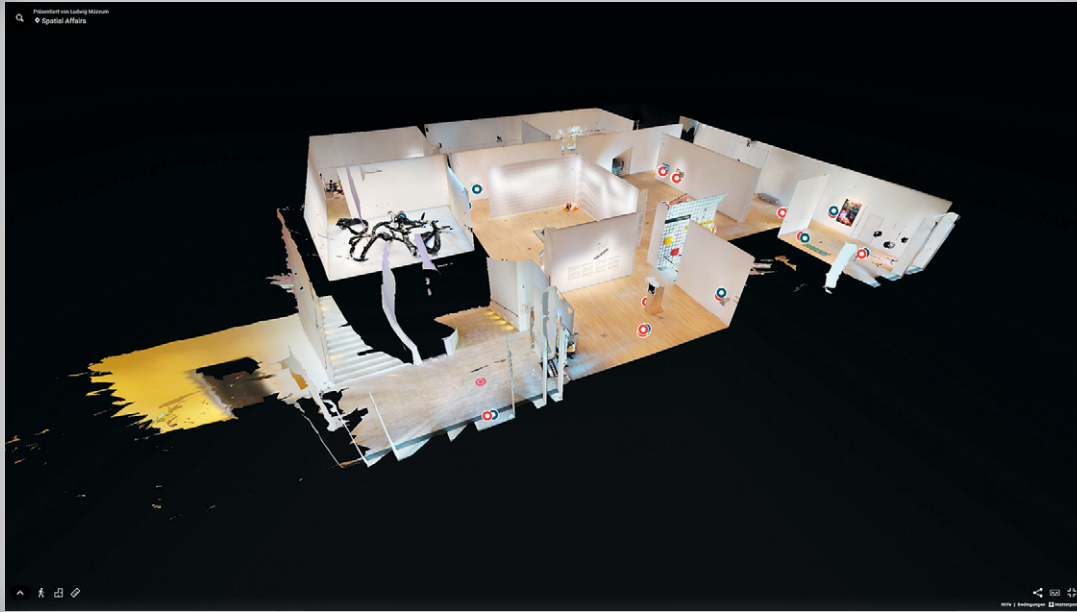


Fig. 1.
Visual identity of the
exhibition *Spatial
Affairs*, Ludwig
Museum, Budapest,
2021.



Figs. 2 and 3
Exhibition views
Spatial Affairs, Ludwig
Museum, Budapest,
2021





Figs. 4 and 5
The digital twin of the
physical exhibition
Spatial Affairs.
Screenshots.

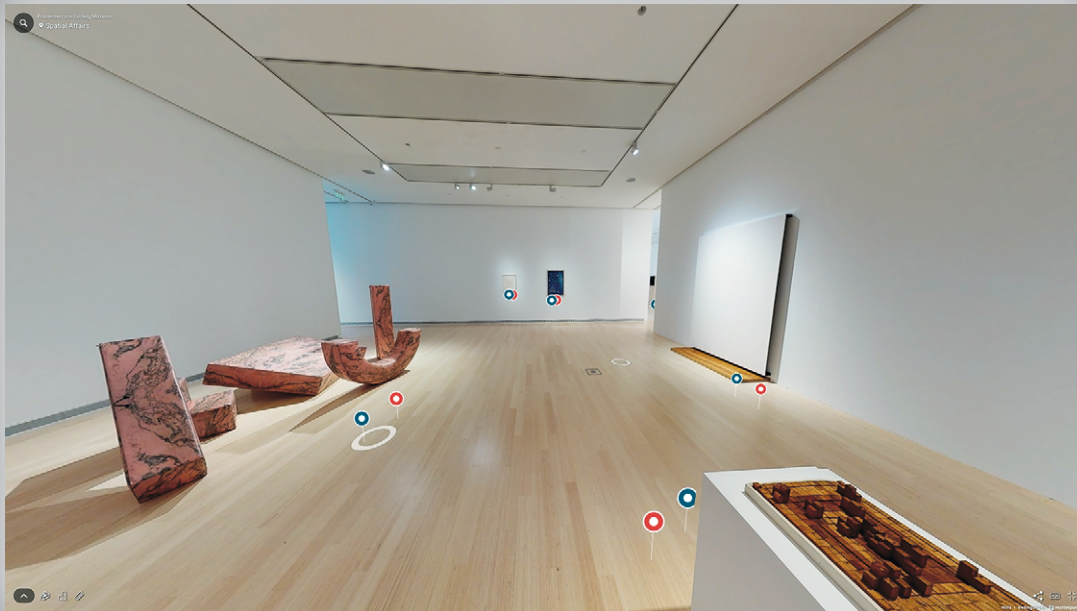




Fig. 6
Screenshot of *Spatial Affairs. Worlding – A tér világlása*. A virtual environment. Design and programming by The Rodina. Screenshot.

early descriptive and formalist practices, the focus of contemporary artists has shifted towards criticality: the 2016 digital video artwork *Information Skies* by the Metahaven design collective, for example, visualizes the ubiquity of networked social spaces and the epistemological complications they generate, including the virtual condition of fake news.

Long before the ubiquitous presence of computers, the impact of information technology and science became noticeable in the visual arts and the understanding of space. It inspired manifestos and new types of artworks. Key examples include the 1936 *Dimensionist Manifesto* by the Hungarian poet Károly Tamkó Sirató, or the Italian artists's, Lucio Fontana's environments from the 1940s and 1950s.

Depicting space that is an inherently invisible entity, is a complex task, whether approached as absolute, relative, real, or virtual. In exposing modernist conceptions of space and their non-modern reflections, *Spatial Affairs* necessarily explored the possibilities offered by information technology.

Spatial Affairs. Worlding – A tér világlása is the online extension of the physical *Spatial Affairs* exhibition, designed by the post-critical design studio The Rodina (see fig. 6). This multi-user virtual environment, in which born-digital artworks and visitors are represented by crawling avatars, was inspired by the theory Konrad Zuse expounded in *Calculating Space* (*Rechnender Raum*, 1969), which envisions the universe as a space inhabited by self-reproducing and self-reprogramming cellular automata. In such a virtual world, boundaries between digital objects and active subjects dissolve for good. The online environment designed for *Spatial Affairs. Worlding* is one possible answer proposed by The Rodina to the curators' questions: How can the content of an online exhibition be developed into a spatial and adaptive experience? What if artworks are represented by avatars? What if the exhibition becomes an ecosystem and, to use Zuse's phrase, generates a computing cosmos?

Spatial Affairs, in its physical and digital iterations, was documented by a catalog containing reproductions of exhibited artworks as well as essays by Adam Lovasz, Sven Lütticken, and Ceci Moss, and selected manifestos by Katarzyna Kobro and Władysław Strzemiński, Károly Tamkó

Sirató, Lucio Fontana, Gyula Pauer, Stanislav Filko, John Perry Barlow, Metahaven, Matteo Pasquinelli and Bogna Konior supplemented by additional content via an Augmented Reality App for smartphones by the studio Transbooking.

Exhibited artists:

Morehshin Allahyari, Andreas Angelidakis, Carola Bonfili, Adam Broomberg & Guy De Lancey & Brian O'Doherty, Petra Cortright, Agnes Denes, Aleksandra Domanović, Louise Drulhe, Wojciech Fangor, Stanislav Filko, Lucio Fontana, Dora García, Sam Ghanous, János Gulyás, Hans Hollein, Lauren Huret, JODI, Hiroshi Kawano, Katarzyna Kobro, Alicja Kwade, Oliver Laric, Sam Lavigne and Tega Brain, Jan Robert Leegte, Lou Cantor, Stano Masár, Cildo Meireles, Rosa Menkman, Metahaven, Imre Nagy, Georg Nees, Robert Olawuyi, Gyula Pauer, Goran Petercol, Sascha Pohflepp & Alessia Nigretti & Matthew Lutz, Àngels Ribé, The Rodina, Rafaël Rozendaal, Jeffrey Shaw, Andrej Škufca, Károly Tamkó Sirató, Viktor Timofeev, Unrated (Besorolás Alatt), Gyula Várnai

Curators:

Giulia Bini, Livia Nolasco-Rózsás

Assistant curators:

Jan Elantkowski, Fruzsina Feigl

Spatial Affairs was a collaboration between ZKM | Center for Art and Media Karlsruhe and the Ludwig Museum – Museum of Contemporary Art, Budapest, with the contribution of the Aalto University. *Spatial Affairs. Worlding – A tér világlása* was co-produced by ZKM | Center for Art and Media Karlsruhe and EPFL Pavilions, Swiss Federal Institute of Technology Lausanne.

SPATIAL RELATIONS IN THE MUSEUM. *Spatial Affairs*

Jan Elantkowski and Fruzsina Feigl

The exhibition *Spatial Affairs* was held in spring 2021 at the Ludwig Museum – Museum of Contemporary Art in Budapest. It was unique in its format—not least because it was the first exhibition to be realized within the Beyond Matter project. Both authors of this text were involved in the creation of the exhibition as members of the Ludwig Museum team. We would like to reflect on the spatial relations in the museum and to describe our personal experiences of the making of *Spatial Affairs*. We will point to three main factors that, in our opinion, determined the project's final form: (1) the concept of the exhibition, (2) the coronavirus pandemic, and (3) the uncertain state of suspension that the pandemic caused.

The Exhibition Concept

The exhibition *Spatial Affairs* investigated the relationship and interdependence between physical presence and space on the one hand and digital presence and space on the other. The curatorial aim was to base this investigation on modern, conceptual, and contemporary works of art as well as artistic manifestos. The notion of [\space](#) linked artistic approaches from before computerization to post-computational works. Regardless of the medium, the artworks attested to developments in science and technology and their social impact on humanity, raising questions about physical and digital spaces.

From the beginning, *Spatial Affairs* was understood as a project combining these two types of space—its [hybridity](#) in that sense was part of the concept. Designed as a physical exhibition, its so-called [digital twin](#)—a 3D scan of the physical exhibition—can be accessed online. *Spatial Affairs. Worlding – A tér világlása* is an [interactive](#) virtual extension of *Spatial Affairs* that virtually expands on the spatiality of the physical exhibition.

According to the concept, *Spatial Affairs* and *Spatial Affairs. Worlding* could be seen as one exhibition that interweaves complementary physical and virtual spheres. The physical white-cube [exhibition space](#) of the Ludwig Museum and the digital environment of *Spatial Affairs. Worlding* were closely linked. While *Spatial Affairs* in its physical form was dismantled in June 2021 (its digital twin is available online), *Spatial Affairs. Worlding* is an evolving online platform that will be available to the public until the end of the Beyond Matter project (July 2023).

The Pandemic

The global outbreak of Covid-19 meant a sudden crisis in every sphere for humanity: for governments, healthcare systems, economies, but also for arts and culture. Arts institutions all over the world faced the question of how to function in this strange new situation. The crisis seemed to undermine the role of museums and their modus operandi. A radical solution was needed to allow functioning under such extraordinary circumstances, including total lockdown in some places.



Arts professionals sought alternative modes of operating, and at museums this meant considering possible extensions to traditional physical presence that would still allow a museum experience.

The pandemic hit when the Ludwig Museum's curatorial team was in the midst of preparing the exhibition *Slow Life. Radical Practices of the Everyday*, planned to open on April 9, 2020.¹ In Hungary the first wave of Covid-19 and the first lockdown came in mid-March, just as the majority of the artworks had arrived at the museum and preparations for its installment were progressing. The museum closed overnight. Entering the building was prohibited, and all exhibitions were cancelled. The pandemic turned everybody's lives upside down and we had to decide on how to realize our annual program and maintain our mission at a time when all staff were required to work remotely. The sudden closure forced us to come up with a strategy for an online museum in the making: we decided to create a digital museum experience into which we could move the unfinished physical exhibition. We started by setting up a microsite which we filled with various contents over the next few months: a curatorial text, artwork descriptions, images, excerpts of videos, interviews with artists, other audio and video materials, key concepts for the exhibition, and online programs.² Our aim was to transpose as much of the museum experience into the digital as possible and to reduce the void caused by the closing of the physical exhibition space. During this time, the closest we came to a "real" museum experience was transforming the content generated for the physical exhibition into virtual space.

Fig. 1
***Spatial Affairs*, 2021,**
book cover. Ludwig
Museum, Budapest,
Hatje Cantz.

1 The exhibition was postponed and realized one year later: *Lassú élet. Radikális hétköznapiak (Slow Life. Radical Practices of the Everyday)*, July 14–September 5, 2021, curators: Petra Csizek, Jan Elantkowski, József Készman, Zsuzska Petró, Viktória Popovics, Krisztina Üveges. Since the exhibition couldn't be shown in 2020 at Ludwig Museum Budapest, due to the change of program, a smaller version was presented at Ludwig Museum in Koblenz (*Slow Life. Radikale Praktiken des Alltags*, November 1, 2020–March 15, 2021). The show in Germany, however, was also affected by the ever-looming lockdowns.

2 See: <http://slowlife.ludwigmuseum.hu/en/>.