

Digital Imaginaries

African Positions



Beyond Binaries

KERBER

Digital Imaginaries





Digital Imaginaries.
African Positions Beyond Binaries
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Julien McHardy, Philipp Ziegler (eds.)

Kër Thiossane / Afropixel, Dakar, Senegal
Wits Art Museum / Fak'ugesi, Johannesburg, South Africa
ZKM | Center for Art and Media Karlsruhe, Germany

KERBER CULTURE

It stood on the central reservation of a busy street in Dakar—the *Spacecraft*. Surrounded by cars, clouds of dust, noise, and inquisitive people who gravitated toward the extraordinary structure. On one side of its mobile architecture a bicycle generated electric current, which was used to project films on a screen. Inside the *Spacecraft* various technologies for textile design were presented and explained as well as irrigation methods. Or people could watch and see how to build your own computer and how 3D printing works. *Spacecraft* was a laboratory for new technologies where there were no expensive VR headsets in sight, where instead visions were examined in terms of their practicality and their relevance to everyday life in the here and now.

Digital technologies are always local technologies, too; they develop out of the needs and contexts of a dynamic society, and it is there that they can be used creatively. The project *Digital Imaginaries* has rendered this visible in three exhibitions. Digital imaginaries must be closely tied to a busy street in Dakar. Or a street market in Accra. Or with the mines in Bulawayo. All of these places have their own historic, economic, and political contexts, which codetermine the deployment of digital devices. However, there is not just one type of digital development in Africa—there are many different lines of development in many different Africas.

With the project *Digital Imaginaries* the ZKM | Center for Art and Media in Karlsruhe, Kër Thiossane and the Afropixel Festival in Dakar, the Wits Art Museum, and the Fak’ugesi Festival in Johannesburg have explored and made visible the complex interrelationships between technological developments and perceptions of the continent of Africa. The German Federal Cultural Foundation would like to thank all those who contributed to making this exceptional and important collaborative project possible, especially the curators Oulimata Gueye, Julien McHardy, and Philipp Ziegler, the initiator Richard Rottenburg, Marion Louisgrand Sylla from Kër Thiossane, Tegan Bristow from the Fak’ugesi Festival, Fiona Rankin-Smith from the Wits Art Museum, and Peter Weibel from the ZKM | Karlsruhe. And last but not least we thank the artists, researchers, practitioners, and visionaries whose contributions to this project have played such a significant part in challenging our ideas of Africa and diversifying them.

**Hortensia Völckers
Artistic Director/Member of the Executive Board
of the German Federal Cultural Foundation**

**Kirsten Hass
Head of Administration/Member of the Executive Board
of the German Federal Cultural Foundation**

Since 2002, Kër Thioissane has concentrated its focus on African initiatives that think about digital technologies and science from a critical perspective of reappropriating local means of action and emancipation. It encourages the integration of multimedia and open-source technologies into traditional artistic and creative practices. It seeks to support the cross-fertilization of disciplines related to the environment, society, and public space. For its sixth edition, which was held in 2018, the Afropixel Festival probed the potential for alternative positionalities at a time when digital cultures are increasingly subordinate to the monopolistic and hegemonic models of a few large international companies. The African continent cannot escape the celebration of digital culture indexed on today's ultra-liberal economy, a celebration that simultaneously conceals the most negative effects of the massification of technologies: pollution, electronic waste, conflicts in coltan mining areas, and the capture of attention for commercial purposes. There is much talk about the African continent's capacities for innovation. Kër Thioissane's Afropixel Festival raises the question of a possible "non-alignment" with the dominant models.

Afropixel #6 was the first leg of *Digital Imaginaries*, as part of which a succession of workshops, residencies, meetings, and exhibitions took place from March to June 2018. Prior to the festival, international artists Tabita Rezaire, Francois Knoetze, Studio Wudé, Marcus Neustetter, DK Osseo-Asare, and Yasmine Abbas were invited to immerse themselves in the Senegalese context and, together with the production team, design a project around the theme of *non-aligned utopias*. Also prior to the festival, professional artists and participants from different sectors—arts and design, traditional crafts, integration and training, university studies—were afforded time for sharing and for knowledge transmission through workshops, the Dakar typographic remix, the manufacturing workshop for the mobile FabLab *Spacecraft_Kër Thioissane*, the cinécyclo, the WebTV, the VR, and the AR.

For the team of Kër Thioissane, apart from the time of the Dakar Festival, it was the entire process of reflection afforded before the festival and during the following legs with a series of curators, thinkers, academics, artists, and the teams of other partner spaces and institutions, such as the Wits Art Museum, Fak'ugesi, and the ZKM, that would make *Digital Imaginaries* such a unique and enriching experience.

Marion Louisgrand Sylla
Artistic Director Kër Thioissane,
Dakar, Senegal

Oulimata Gueye, Julien McHardy and Daniel Sciboz
Co-Curators of Afropixel #6 Festival,
Dakar, Senegal

The exhibition entitled *Digital Imaginaries—Premonition*, curated by Fiona Rankin-Smith and Tegan Bristow, originated as a collaboration as part of a larger joint project between Kër Thiossane in Dakar, Senegal, and the ZKM in Karlsruhe, Germany, between social scientists and artists inquiring into imaginaries of how globalized digital technology has and will continue to shape and shift African futures. It was held at the Wits Art Museum (WAM), which is part of the University of the Witwatersrand in Johannesburg, South Africa. For the project the Wits Art Museum collaborated with the Fak’ugesi African Digital Innovation Festival, an annual festival of culture, creativity, and technology in Johannesburg.

The vaguely sinister exploratory notion “Premonition” references an exhibition that explores questions surrounding data, knowledge, and decolonization within a globalized information society. Artists and students engaged with WAM’s collections in a number of ways, and their explorations led them to include artworks from WAM’s important African art collections. Artworks based on divination practices were used by Marcus Neustetter in the form of a video projection; an exploration of algorithmic thinking via beadwork was developed by Tegan Bristow, Russel Hlongwane, João Roxo, and Alex Coelho, who invited the public to make their own digital beadwork designs; and in a brand new exploration by Wits Digital Arts students in an unpacking of the presence of fractal mathematics in precolonial African cultures, presented via an AR application that allows you to “take” these objects home. The collections were activated as a resource for contemporary concerns within an investigation of alternative knowledge systems.

We are very pleased to have been part of this project, which made it possible to reflect together with artists, theorists, and thinkers from all over the world on the role digital technology will play in Africa’s future.

**Fiona Rankin-Smith
Special Projects Curator, Wits Art Museum (WAM), University
of the Witwatersrand, Johannesburg, South Africa**

**Tegan Bristow
Director of the Fak’ugesi African Digital Innovation Festival,
Johannesburg, South Africa**

ZKM | Karlsruhe is an art institution unlike any other in the world. It was founded in 1989 with the mission of bringing the classical arts forward into the digital age. At the intersection of art, science, technology, and society, ZKM unites research and production, exhibitions and events, collections and archives, participation and documentation. ZKM is thus far more than a museum; it is both a center and a laboratory of the future in which all forms of art may be experienced and the public animated as active co-creators of developments yet to come.

Since its founding, ZKM has been committed to exhibiting the most state-of-the-art developments in media arts and to illuminating the many and diverse relationships between technological and social changes. Always standing at the heart of this endeavor are current tendencies and potential future scenarios, as well as the question concerning what effects these have on our lives. With thematic exhibitions, projects, and symposia like *GAM—Global Art and the Museum* (2006–2016), *Thermocline of Art: New Asian Waves* (2007), *The Global Contemporary and the Rise of New Art Worlds* (2011–2012), *Move On Asia* (2013), and *New Sensorium: Exiting Failures of Modernization* (2016), and especially through the festival *Global-Digital* (2015–2016), time and again ZKM reflects globally relevant developments in the field of art and, for some of these projects, publishes substantial catalogs. Together with international partners like the Goethe Institute, ZKM also produces a considerable number of traveling exhibitions—such as, *Global Control and Censorship* (2015–2016) and *Games and Politics* (2016–present), an exhibition about computer games—that get people from all over the world excited about digital production.

With the 2018 project *Digital Imaginaries*—undertaken in collaboration with Kër Thiossane and the Afropixel Festival in Dakar, as well as the Wits Art Museum and the Fak’ugesi Festival of African Digital Innovation in Johannesburg, and funded by the German Federal Cultural Foundation, TURN Fund, and the German Federal Ministry for Economic Cooperation and Development—ZKM turned its attention to the technological upheavals on the continent of Africa and to the question of the role that Africa has to play in the formation of our imaginaries of the digital. The exhibition *Digital Imaginaries—Africas in Production* (2018–2019) took place at ZKM in parallel with the large-scale exhibition and education experiment *Open Codes* (2019–2019) and was accompanied by a comprehensive supporting program of lectures, conferences, symposia, and workshops representing the various manifestations of life in digital worlds. It is to the credit of *Digital Imaginaries* that the questions addressed in *Open Codes* are enriched by the perspectives of African artists—often underexamined in the Western-oriented discourse of media and technology—and the complex of themes dealt with in their works, in which the fundamental changes to life in Africa get negotiated through digitization.

**Peter Weibel
Chairman and CEO ZKM | Karlsruhe**

**Philipp Ziegler
Head of Curatorial Department ZKM | Karlsruhe**

Table of Contents

Introductions

- 12** *Digital Imaginaries: Beyond Binaries*
Julien McHardy, Richard Rottenburg, Oulimata Gueye,
and Philipp Ziegler
- 54** *Digital Imaginaries: Dakar, Johannesburg, Karlsruhe*
Julien McHardy, Richard Rottenburg, Oulimata Gueye,
and Philipp Ziegler

Critique/Commerce

- 62** *The Digital Birth of a Mixed Reality Future*
Sunny Dolat and Njoki Ngumi (The Nest Collective)
- 70** *Data Mines 3.0*
Christopher McMichael, Jamal Nxedlana, Lex Trickett,
Themba Konela (Bubblegum Club)

Form/Content

- 82** *Core Dump*
Francois Knoetze
- 88** *Fashioning Digital Resistance*
Maurice Mbikayi
- 98** *Techno-Dandy: Figuration of an African Digital Entrepreneur*
Michel Wahome

Fragmentation/Connection

- 110** *Digitalizing Trust?*
Lessons from the Most Expensive Election in the World
Nanjala Nyabola
- 124** *What Makes a Revolution “Real”? A Discussion on*
Social Media and Al-Thawra ثورة في السودان in Sudan
Siri Lamoureux, Enrico Ille, Amal Hassan Fadlalla,
and Timm Sureau
- 146** *Pan-Sonic Soundscapes*
Aude Tournaye and Younes Baba-Ali
- 152** *The Difficult Emergence of African Video Games*
Mehdi Derfoufi

Dystopia/Utopia

- 166** *Non-Aligned Utopias: Leave Postcolonial*
Imperialism, Live New Technological Fictions!
Oulimata Gueye

Table of Contents

<i>Utopias or Afrodystopia?</i> Joseph Tonda	178
<i>Futures of Reason in the Digital Age</i> Achille Mbembe	184
Progress/Tradition	
<i>&spacecraft: Building an Afronautics Program</i> DK Osseo-Asare and Yasmine Abbas	194
<i>HubCités Africaines: A Conversation with Sénamé Koffi Agbodjinou and Manuel Bürger</i> Oulimata Gueye	216
Commons/Uncommons	
<i>Commoning the Digital, Digitizing the Commons</i> Bettina Korintenberg	230
<i>Co-creative Dynamics at the Defko Ak Niép Lab: Prospects and Stakes</i> Thomas Hervé Mboa Nkoudou	242
<i>Video Games as Tools</i> Bethlehem Anteneh	252
<i>Lead the Way Sumbandila</i> Marcus Neustetter	262
Origin/Circulation	
<i>The Primitivist Veil</i> Mamadou Diallo and Judith Rottenburg	270
<i>Towards a Vocabulary for Vernacular Algorithms</i> Tegan Bristow	278
<i>Changing Codes in Search for Liminal Pathways</i> Richard Rottenburg	286
<i>Decolonial Healing: In Defense of Spiritual Technologies</i> Tabita Rezaire	320
Featured Works	347
Workshops and Events	390
Biographies	392

Imaginaries:

Beyond

Digital

Binaries

Major historical shifts such as the advancing omnipresence of the digital sphere, are not abstract, technical, or universal. Lifeworlds shift when technologies, infrastructures, and lives are woven together in new patterns, something that happens in particular places with particular histories, politics, and possibilities. Consequently there is no one digitalization, but multifarious forms of digitalization that unfold in specific yet interconnected circumstances. Despite the planetary reach and diversity of digital practices, technological and economic infrastructures and discourses, digitalization continues to be dominated by a relatively small group of actors concentrated in a small number of high-tech nodes located still predominantly in the Global North and Asia. This severely limits digital imaginaries, impoverishing discussions about the possibilities and dangers of the digitalization.

The artistic and scholarly contributions developed in the context of the project *Digital Imaginaries* take particular African histories, circumstances, and methods as starting points to engage with digital realities and imaginaries. Beyond a purely technical description of digital transformations on the African continent, they make alternative digital futures not just thinkable, but tangible. The *Digital Imaginaries* project thus encourages us to rethink, from specific African positions outward, our imaginaries of the digital in richer, more multifaceted and global ways. The significance of this work can be grasped in contrast with the universalizing, technophil discourses of Africa and digitalization that tend to dominate digital realities and imaginaries on the African continent as elsewhere.^[1]

Treating Africa as one entity is always problematic, because it flattens tremendous diversity, yet it is frequently done, certainly in discourses about African digitalization. Before we introduce the works in this volume, that speak to and from particular circumstances, we provide a brief outline of “African Digitalization” that captures some broader trends while also giving an idea of the universalizing discourses about Africa that this volume aims to disrupt.

The term “leapfrogging,” often used in connection with digitization is meant to emphasize the fact

Introduction

that many African countries have “leapt” directly into widespread use of mobile information and communication technologies, bypassing conventional landline networks, which, in many places on the continent, were implemented only partially or piecemeal.

The notion, borrowed from economics, of a metaphorical leap—here in reference to skipping an analog stage of infrastructural development—suggests that African countries have moved abruptly into the digital age. The emergence of digital ventures such as M-Pesa, an app developed in Kenya by Safaricom and Vodafone that has revolutionized mobile money transfers, became oft-cited examples for cutting-edge digital innovation from the continent. Digitalization indeed moved rapidly in many African countries. The notion of a technological and market-driven jump, however, hides longer, specific histories and practices of communication technologies on the continent, running danger to repeat postcolonial narratives of African countries catching up. The underlying notion of a seemingly universal global space is tightly linked to the founding myths of the internet: once uncoupled from its original Cold War-era military application, the internet’s expansion in the early 1990s seemed to promise an unbordered, egalitarian global sphere. The internet was meant to equalize opportunity, to expand the possibilities for participation and emancipation for all humankind. Over the course of the first two decades of the 21st century, the dystopian aspects of such utopian ideas have become increasingly clear. During the same period, Africa, the continent with the youngest population in the world, attracted the intensifying interest of international communication corporations. The discourse of Africa as the “continent of the future,” promising “enormous,” “as yet unsaturated,” “young” markets and innovation, is perpetuated by global Big Tech firms who are looking to invest on a large scale.[2] South Africa, Ethiopia, Rwanda, Nigeria, Ghana, and Kenya in particular are pursuing ambitious agendas to build digital infrastructures that hold out the promise of economic and political advantages. Large international high-tech firms are concerned in this process above all with the extraction of data, while political actors, here

as elsewhere, are pursuing e-governance and population surveillance that are frequently bound up with commercial interests.

Despite the nearly blanket-coverage distribution of mobile phones, digital infrastructures, like others around the world, are nevertheless characterized by local and global asymmetries. Well-connected digital hubs do exist, while at the same time new forms of inequality are developing. At first, digital inequality was understood as the gap between those who use the internet and those who have no or only limited access to it. Facilitating connectivity to the global communication system seemed to be the solution. As internet access and the dissemination of mobile communication around the world is expanding almost without hindrance, it is becoming obvious that access alone does not ensure equality of opportunity. The gap between those who generate and consume data and those who collect, analyze, and manipulate data for commercial as well as political purposes actually grows with greater connectivity.[3] Understood this way, the dividing line of digital inequality extends less along a clearly defined North-South boundary than it adheres to a distinction between data collectors and data suppliers—a distinction that does not respect national borders.

The present publication is dedicated to works, initiatives, and considerations aimed at digital self-determination in Africa, and elsewhere. It is grounded in the 2018/2019 research and exhibition project *Digital Imaginaries*, which focused on the contradictory diversity of the digital on the African continent. Over the course of the project, participating partners Kër Thiossane and the Afropixel Festival in Dakar (Senegal), the Wits Art Museum and the Fak'ugesi Festival of African Digital Innovation in Johannesburg (South Africa), and the ZKM | Center for Art and Media Karlsruhe (Germany) developed a series of independent yet interconnected programs, including workshops, seminars, lectures, artist residencies, performances, and exhibitions. The diverse events organized within the parameters of the project brought together artists, architects, producers, hackers, and scholars from Belgium, Cameroon, Congo, France, French Guiana, Gabon, Germany, Great Britain,

Introduction

Kenya, Morocco, Nigeria, Senegal, South Africa, Sudan, Togo, the United States, Zambia, and Zimbabwe, in an effort to rethink, collectively and in dialogue with diverse publics, how globalized digital technologies are shaping some aspects of the continent's infrastructures and how, at the same time, local development and initiatives have the potential on their part to influence global imaginaries of the digital. The present publication on *Digital Imaginaries* thus not only documents the completed project but also represents its fourth instantiation. It creates a conceptual space that brings the various strands, works and conversations together in new constellations.

Like the exhibitions, workshops, and events that took place in Dakar, Johannesburg, and Karlsruhe, the present publication does not limit itself to a straightforward description of the manifold digital transformations. Many of the contributions to this volume grapple with the inequalities of global circulation, argue against unified and disempowering imaginaries and methods of digitization, and champion possibilities to creatively appropriate digital technologies. Starting out from positions developed in various countries and in the African diaspora, these contributions press for more diverse, richer global digital imaginaries capable of helping stave off digital futures that may otherwise be dominated by market-oriented interests, state surveillance, and postcolonial hegemonies.

Beyond Binaries

As may be expected, the diversity of artistic, scholarly, and essayistic contributions to the present publication, and the heterogeneity of the imaginaries with which they are concerned, circumvent any sort of linear arrangement. Instead we ordered the book more loosely, under binary headings to suggest points of connections and frictions between the contributions and to draw attention more broadly to the ways in which binary divisions organize digital imaginaries.

Without binary distinctions between true/false, before/after, below/above, left/right, bigger/smaller, identical/nonidentical, signifier/signified, cause/effect, contradictory/

noncontradictory, and so on, one cannot think, cannot contest the terms of one's life, cannot master everyday practical matters. Alongside elementary distinctions that construct and enable our understanding of the world, there also exist historically contingent and institutionalized classifications for our orientation in the world, such as subject/object, fact/value, masculine/feminine, rational/irrational, passionate/dispassionate, partial/impartial, white/black, and many others. Such binary codings rarely come alone but overlap in networks of justification that shape and restrict the outlines of our imaginaries. Mutually stabilizing, habitualizing, and ultimately institutionalizing one another, they come to appear impervious to questioning, or at the very least take a long time to sever or dissolve.

Even critiques of binary divisions cannot come about without recourse to oppositional juxtapositions. In such cases of consciously deployed binary distinctions, the use of which is intended to subvert the binary order, one can speak of a "strategic essentialism" or a "strategic binarity."^[4] The critique aims in this way to decouple binary oppositions from their essentializing claim, to overcome either/or constructions in order to open up a liminal space that is not determined by oppositional juxtapositions.^[5]

Several contributions in this volume make strategic use of certain binary categories in order to question others and to thus extend the code of digital imaginaries. The following arrangement of contributions does not provide an ultimate order but some possible reading routes through the publication.

Critique/Commerce



60–79

The diverse digital scenes that have emerged in well-connected centers like Dakar, Nairobi, Accra, and Johannesburg offer new economic and

Introduction

social perspectives and extend the potential for global participation. In these urban hubs, the ambivalence of digital infrastructure is uniquely palpable: There exist previously unimagined design spaces, and yet these spaces are at the same time imprinted with the history of colonialism. The high-tech hubs that dominate digital infrastructure and define many of its decisive parameters are located in the Global North, with which even China and India are increasingly affiliated. The Nairobi-based artist collective The Nest Collective, represented here by co-founder Njoki Ngumi, positions itself within the bipolar interplay between commerce and critique and makes a strong impression with its critical-reflexive production of fashion, photography, text, and film (see this volume, 62–69). The video work shown at ZKM | Karlsruhe *We Need Prayers: This One Went to Market* is notable for its ironic reference to the digital aesthetics of Afrofuturism, calling into question the reductionist definition of “African” productions on the international (art) market.

The likewise artistically and commercially active Johannesburg artist collective Bubblegum Club uses a strategy similar to that of the Nest Collective. The works of both collectives make plain that African actors have long since arrived in the globalized digital sphere—a sphere they both critically scrutinize and productively construct. In their works they show, among other things, that the colonial logic of extraction still persists, albeit not only on the order of natural resources but increasingly on the order of the data that can be obtained in African countries. This parallel between the extraction of raw materials and the extraction of data is thematized in the Bubblegum Club’s text and photo contribution *Data Mines 3.0* (see this volume, 70–79).

The range of spheres in which both collectives are active is a result, on the one hand, of a lack of a significant funding structure for culture makers in the domain of media art and, on the other, of economic fluctuations, themselves liable to the demand for “African positions” in an international art market with a notoriously short attention span. Precisely because or perhaps in spite of this complicated point of departure in the interplay between commercially

applied and critical praxis, artists are developing works that elude simple classification, in that they are experimenting with new medial distribution channels and thus maintaining a critical distance from established genres. The photographs in the Bubblegum Club contribution, for example, employ visual language that we recognize from self-curatorial habits on Instagram, while at the same time undermining it. They stage the slag heaps of Johannesburg, famous for their toxicity and burdened with a tragic past, in brilliant colors, as if composing a dream landscape. At the same time, the montage of text and image creates a kind of runway, as if promising an exit from the city's poisonous inheritance, even if toward an uncertain albeit hopeful future.

Form/Content



80–107

It is often overlooked that, without Africa, global digitization would be impossible. The continent is not only an important market and one of the largest importers of electronic waste, but it is also, continuous with its colonial history, a significant source of the rare earth deposits and raw materials like cobalt, lithium, and coltan that are needed for the manufacture of electronic devices and batteries for electric vehicles. The increasing influence of China on the African continent, which is attempting, through its economic involvement, to secure not only future markets but also drilling rights to coveted raw materials, complicates today's geodigital situation and produces new dependencies and possibilities.

In the context of *Digital Imaginaries*, artist Francois Knoetze developed the first two parts of his now four-part film series *Core Dump*, which deals with production and value-creation chains. These chains are related to the dependencies within the global electronic industry, which Knoetze depicts in the present publication in the form of a graphic novel (see this volume, 82–87).

Introduction

Core Dump follows the circulation of raw materials used in the manufacture of electronics, which are to a large extent first obtained from the Democratic Republic of Congo, then transported throughout the world, and finally returned to various African countries in the form of electronic scrap. The extraction and circulation of raw materials, processes of digitization, and the stories bound up with these manifest in Knoetze's work in a hybrid figure: a zombie who rises up from the digital scrap heaps. In the zombie, who cannot die, the boundary between life and machine is abolished. The present is entangled with the past and future in such a way that the course of history appears as a path gone awry, and precisely therefore also hopefully suggestive of a potential way out.

The sculpture *Techno Dandy* by artist Maurice Mbikayi and his text *Fashioning Digital Resistance* (see this volume, 88–97) present a different take on the hybrid figuration of the digital. Mbikayi's work consists of countless computer keyboard keys turned into pieces of clothing. The work references the figure of the "Black dandy"—a figure that dates back to the African American-influenced youth subculture and fashion trends of the 1950s in Kinshasa, formerly known as Léopoldville. This particular fashion trend was known as "Billisme," also incorporates much older elements borrowed from the mythology of the precolonial Luba Empire. Mbikayi's hybrid figure thus interweaves the signs of globally circulating technologies, which have since become a kind of second human skin, with a specifically Congolese semantics, in this way thematizing the relation between form and content in light of the elaboration of identity in the context of digitization.

The contribution *Figuration of an African Digital Entrepreneur* by sociologist Michel Wahome takes up Mbikayi's figure of the *Techno Dandy* and uses it as a point of reference for her study of the interplay between the self-presentation and self-understanding of digital entrepreneurs (see this volume, 98–107). Wahome is interested in the dominance of Silicon Valley-influenced imaginaries of digital entrepreneurship and in the potential leeway that opens up along the frictional interface between globally circulating

imaginaries of successful startup entrepreneurship and local contingencies.

Fragmentation/Connection



108–163

The commercialization and fragmentation of the internet, resulting from its profit orientation and national regulations, run counter to the original notion of an egalitarian transnational digital sphere. This is increasingly the case in Africa as well. Growing state surveillance of digital space and the targeted manipulation of democratic processes both call into question the promise of the internet as an emancipatory open space. These developments are global phenomena that in Africa—as elsewhere—assume local characteristics. The concrete situation can therefore be understood only when its local and global features are viewed in tandem. Ethiopia's net infrastructure, for instance is governed by a largely Chinese-financed and -implemented state monopoly. Following the Chinese model of a state-regimented internet, the Ethiopian government repeatedly cut off the local network in response to political unrest, thus severing the country from the worldwide dataflow.[6]

Two contributions to this volume are concerned with various forms of the fragmentation, restriction, and manipulation of datastreams. Nanjala Nyabola's contribution (see this volume, 110–123) highlights forms of commercial-political manipulation by way of the 2017 elections in Kenya. This extremely costly election represents one of the first attempts to digitize voting. At the same time, the election also became an occasion for manipulation and the first Cambridge Analytica scandal. Nyabola's study investigates the imaginaries undergirding electronic voting and offers a detailed analysis of how the technological promise of trust and independence collided with local political and historical realities.

The contribution by Siri Lamoureux, Enrico Ille, Amal Hassan Fadlalla, and Timm Sureau,

Introduction

What Makes a Revolution "Real"? (see this volume, 124–145) explores the role of social media in the mass protests that were brutally put down by the Sudanese government in 2019. In the form of an e-mail thread that weaves together the different realities of the Khartoum-, Paris-, and New York-based authors, their contribution documents the echoes of both state violence and resistance in social media. Immediately affected and yet to a great extent spatially very far apart from one another, the authors seek the traces of insurrection in real as well as state-surveilled digital space.

The various studies collected in this volume that explore the commercial and politically motivated fragmentation and surveillance of the internet all show how important it is to regard the specific circumstances of global digitization in their local contexts. An examination of the techno-romantic tendency to equate localization with emancipation makes clear that local appropriation and situatedness are not to be confused with emancipation, nor do they automatically bring it about. We learn that this fallacy must be avoided if we wish to reconceive imaginaries and spaces of possibility beyond the fundamentally misguided essentialization of binary oppositions.

In his installations *Call for Prayer* and *Everything is a Border*, which were shown in Johannesburg and Karlsruhe, Younes Baba-Ali experiments with the sonic dimension of digital surveillance. In Johannesburg, on the external façade of the Wits Art Museum—over a noisy and crowded intersection—he mounted a megaphone that broadcasted at the prescribed intervals the Muslim call to prayer translated into Morse code. This was a political sonic intervention by which Baba-Ali let resound in Johannesburg the increasing radicalization of Islam in West Africa, a phenomenon that is largely financed by the Middle East. The translation of a call to prayer into Morse code—in other words, into abstract sounds—inverts the familiar distinction between signal and noise and forces a new technologically informed attention on the message.

In their essay *Pan-Sonic Soundscapes* (see this volume, 146–151) Aude Tournaye and Younes

Baba-Ali note, with reference to the trope of the panopticon, that surveillance and its digitization are understood almost exclusively as visual procedures. The reduction of surveillance to the visual, she argues, makes us deaf to the civil and religious use of sound and to the acoustic modulations of psychological, physiological, and architectonic conditions. Tournaye thus makes Baba-Ali's works legible—and audible—as investigations of the digitally enabled sonic landscapes of power.

The consumption of digital media today has massively changed our imaginaries. Digital games in particular—which have meanwhile exceeded the film industry in both sales and distribution—have advanced to become one of the most important vectors of the imagination. Mehdi Derfoufi's contribution (see this volume, 152–163) delivers a critical overview of the history and conditions that determine the computer game industry on the African continent. By virtue of the formative influence they have on the imaginaries of their users, he argues, these may be capable of triggering social changes: They could, for instance, bring new forms of pan-Africanism to expression or may contribute to the decolonization of the imaginary. This would require, Derfoufi contends, not only that games be designed accordingly but that the production of digital games itself be decentralized.

Dystopia/Utopia



164–191

In her text, Oulimata Gueye further develops the idea of *Non-Aligned Utopias* that she initially established (see this volume, 166–177), in the context of *Digital Imaginaries*, as the central theme of the 2018 Afropixel Festival in Dakar. The movement of Non-Aligned States—which undergirds Gueye's own idea and to which, at present, all but two African countries belong—emerged in reaction to the Cold War by non-Western countries that refused to belong

Introduction

to either military block in an effort to combat persistent forms of colonialization and resource exploitation. Gueye's concept of a digital non-alignment is inspired by the aim of this earlier movement: to rearticulate global politics from the perspective of the Global South, this time on the terms of digital ties. She thus brings to the fore the limitations that result from any given either/or opposition and opens a view onto the manifold potentialities that, by contrast, are enabled by a both/and position. In proposing non-alignment as a possibility, Gueye also implicitly subverts the juxtaposition of utopia and dystopia as an essentialist either/or distinction.

The concept of "Afrodystopia" developed by Joseph Tonda follows a similar intention by understanding digitization as a colonization of the subconscious (see this volume, 178–183) and thus forms an argumentative counterpart for Gueye's text. Tonda's Afrodystopia, like Gueye's digital non-alignment, suggests a shift in perspective that opens a space for digital imaginaries beyond well-known narratives of innocent technological progress.

Achille Mbembe's *Futures of Reason in the Digital Age* (see this volume 184–191) takes up general arguments in the debate over digitization that go beyond specific examples and thus help to think of the opposition utopia/dystopia as always simultaneously present possibilities. Similarly to Gueye and Tonda, Mbembe foregrounds the dystopian moment in order to make an urgent claim that therein also lie hidden utopian moments. He denounces the historically unique consolidation of power in the hands of just a few globally active corporations and suspects this is the causal force behind not only the far-reaching digitization of all spheres of life but also the immediate ecological catastrophe. Digitally amplified finance capital, Mbembe argues, links economic influence with the ability both to navigate the ocean of data and to make it utilizable by way of instrumental pattern recognition. In Mbembe's analysis, this fundamental form of digital manipulation threatens the capabilities of human reason and subject formation. His dystopian reflections then spill into a utopian question: Is it still possible to use

the self-corroborating instruments of global digital articulation for emancipatory aims?

Progress/Tradition



192–227

Prior to the Afropixel Festival in Dakar, the architect duo DK Osseo-Asare and Yasmine Abbas held a workshop called *Spacecraft_KT: Fabrication d'un fablab mobile*, in collaboration with artisans and producers from Ghana and Senegal; they built a modular open-source kiosk and makerspace prototype. The aim of the workshop was to grapple with questions of architecture, mobility, practical techniques using innovative technological tools, as well as the design and use of public space. These aims were carried out primarily by way of building the mobile pavilion named *Spacecraft*, the construction of which was initially undertaken in Accra (Ghana) in the context of the project *Agbogbloshie Makerspace Platform* (AMP), where it was originally developed as a prototype for Agbogbloshie, an infamous electronic scrap heap on the city's perimeter (see this volume, 194–215). Osseo-Asare and Abbas were joined there by a group of engineers, local artisans, and members of the Agbogbloshie Scrap Dealer Association in order to design a prototype and production unit at the interface of the STEM disciplines (science, technology, engineering, and mathematics), artisanal knowledge, and the various skill sets of autodidactic computer tinkerers. Both architects view their project *Spacecraft* as a third space that, as a catalyzer, brings local artisanal and lay knowledges together with state-of-the-art technology in an effort to reconfigure the scrap heap as a site of postcolonial knowledge production.

The FabLab team at Defko Ak Niép in Dakar, using do-it-yourself (DIY) and do-it-together (DIT) approaches, made it possible to involve children and young people from the vicinity of Kër ThioSSane in the construction and use

Introduction

of the *Spacecraft*. This way the team was able to facilitate the local youth's learning of different techniques and to support individual young people in acquiring mastery over their digital environment. The workshop offered courses in the application of open-source computers and electronics, on manufacturing simple electronic circuits, on Arduino electronics, and in the use of 3D printers and other digitally controlled machines. Throughout the time that *Digital Imaginaries* was in Dakar, the installation was ultimately being used outside of Kër Thiossane, at various public spaces in the city, turning it into a prominent and widely visible commercial and production space, as well as a space for events and presentations by artists. The participating artists understand this process as a pan-African and South-South technology transfer. Their intervention articulates the transfer of technology as a potentially emancipatory and decentralized practice. The intervention challenges underlying assumptions that technology transfer always moves along a North-South gradient, and it thus represents an effort to reclaim the concept.

The WoeLab—initiated in 2012 under the direction of architect Sénamé Koffi Agbodjinou, founder of *HubCité*, an alternative and participatory urban redevelopment and redesign project under the auspices of the African Smart City program and the platform *L'Africaine d'architecture*—is one of several innovation laboratories that draws its inspiration from traditional social structures. Given its commitment to a grassroots-democratic approach and to imparting technical competencies to local neighborhoods, the endeavor is to be understood as a utopian social project. In fact, it positions itself as a locally situated alternative to contemporary Smart City prestige projects that are currently being developed on international models in cities like Lomé, Dakar, and a number of other metropolises. This practical rethinking and design of projects, a Smart City or like the above-mentioned technology transfer, simultaneously registers critique and expresses potential alternatives. The vision of a locally situated, well-connected Smart City came about through conversation

Digital Imaginaries: Beyond Binaries

between Oulimata Gueye, Sénomé Koffi Agbodjinou and graphic designer Manuel Bürger, who worked with Agbodjinou on his installation for the exhibition at ZKM | Karlsruhe (see this volume, 216–227). At the root of Agbodjinou’s distinctive Smart City concept lies the endeavor to reclaim and reinvigorate the core concepts behind the rhetoric of digital progress, as well as the understanding of technology appropriation that undergirds the Agbogbloshie Makerspace Platform.

Commons/Uncommons



228–267

Both Agbodjinou’s vision of an African Smart City and Kër Thiossane’s work are committed to the concept of the commons. Both take locally specific situations as their points of departure for experimenting with the questions of whether and how digital technologies might be capable of redefining the commons. Bettina Korintenberg’s text *Commoning the Digital, Digitizing the Commons* (see this volume, 230–241), which deals with both initiatives, delves into the question as to how global discourses and methods of commoning find renewed strength through localization and hybridization. The idea of the makerspace is central both to Kër Thiossane’s work and to Agbodjinou’s vision. Throughout the Afropixel Festival, the courtyard of Kër Thiossane was filled with discussions concerning what sort of social role makerspaces like Defko Ak Niëp in Dakar or the WoeLab in Lomé play in the digital transformation. These questions—about the reality and the potential of makerspaces in West Africa, Kër Thiossane in particular—are taken up and elaborated in the contribution by Thomas Hervé Mboa Nkoudou (see this volume, 242–251).

Bethlehem Anteneh’s essay *Video Games as Tools* (see this volume, 252–261) introduces the project *Enter Africa*, a project developed in cooperation with the Goethe Institute to produce digital

Introduction

games dedicated to collaboratively reimagining urban spaces. In Anteneh's work, undertaken primarily in African metropolises, digital games serve as tools not just for communal design but also for the design of new forms of the communal. In these makerspaces, digital methods are brought together with traditional crafts, rediscovering the promise of a digitally facilitated localization. In this conjunction, a community emerges that resolves the tensions between modernist imaginaries of progress and computerized production, on the one hand, and locally situated tradition and skill. Agbodjinou observes, with reference to WoeLab, that there are congruences between the working methods of hackers and makers and the informal forms of organization that are more important today in African societies than elsewhere. In accord with this observation, Anteneh observes that informal urban forms of organization in African cities display commonalities with the logic of computer games.

The three-part work that Marcus Neustetter created for *Digital Imaginaries, Lead the Way*, comprises collaborative performances in each of the three exhibition spaces in Dakar, Johannesburg, and Karlsruhe, as well as a culminating arrangement in the exhibition space of physical as well as audiovisual remnants of each of the performances. For the present publication, Neustetter teamed up with Zambian writer Mwenya B. Kabwe to develop a fourth collaborative instantiation of his performance, which is represented here in the form of a text and drawings (see this volume, 262–267). The work is dedicated to the damaged South African satellite SumbandilaSat that still orbits the earth. For Neustetter, the satellite materializes the promise, the hopes, as well as the wrong turns involved in technological innovation. The installations in Dakar, Johannesburg, and Karlsruhe, including dancers, writers, musicians, traditional artifacts, robots, electronics, and shadow puppetry, examine conflict-ridden postcolonial imaginaries and racist stereotypes, on the search for traversable paths and a partial commonality.

Origin/Circulation



268–345

The attempt to categorize globally circulating technologies, imaginaries, and creative design possibilities as either African or European or, more precisely, as Senegalese, South African, or German, raise the question as to whether the source of a given technology is its determining factor or whether all technologies in effect come into being in the process of their circulation through different places. Broadly speaking, two opposing positions can be distinguished: The one cautions that all yearning, no matter how well-intentioned, for one's (own) roots unavoidably stokes the flames of nativist, national-populist movements that we find today newly reigniting all around the world. The other warns that the globally circulating technoscientific solutions of Western origin, even when well-intentioned, are colonizing of African societies and imaginaries. The contributions to *Digital Imaginaries* reveal a productive tension between the search for the putatively good—because one's own—source and the likewise putatively good—because unifying humankind—circulation of technologies. Read together, the contributions collected here articulate above all the necessity of illuminating concrete and situated methods of decolonization, without permitting these to disappear behind a prefabricated and overpowering interpretive scrim.

Mamadou Diallo and Judith Rottenburg's contribution *The Primitivist Veil* (see this volume, 270–277) scrutinizes the ongoing influence of colonial imaginaries that figure Africa as the other of modernity, as a fictitious place that is ostensibly free of technology. The authors caution that the search for alternative configurations of the digital in Africa may reinforce colonial imaginaries of its social relations as more authentic. Thus the endeavor to discover and develop antihegemonic configurations of digital methods must, the

Introduction

authors argue, dispense with any recourse to Africa as an imaginary reservoir of alternative and authentic realities and instead come to grips with the collusion, ascertainable all over the planet, between digitization and global capitalism. This text therefore expresses a fundamental ambivalence that is illuminating for the present publication as a whole: Strictly opposed to problematic visions of Africa as a source of alternative social orders, the contribution nevertheless remains committed to the idea that antihegemonic digital methods on the continent are particularly important with respect to colonial-historical and postcolonial exploitation.

The artistic research project *Vernacular Algorithms* (see this volume, 278–285), which was started in the context of *Digital Imaginaries*, brings traditional beadwork from Mozambique and the South African province of KwaZulu-Natal together with digital coding methods. The beadwork features regular patterns that can be read as binary coding and, in effect, digitally reproduced using algorithms. The project's objective goes beyond mere critique of the delusion that Europe was the sole originator of binary coding and demonstrates how binary abstraction and traditional knowledge are interwoven in the beadwork. Ultimately, the project poses the question as to whether and how digital code might incorporate other forms of knowledge and how this might make programming methods more accessible.

Richard Rottenburg's text *Changing Codes in Search for Liminal Pathways* (see this volume, 286–319) is committed, in the face of immediate ecological catastrophe and refractory postcolonial structures, to an attempt to break with a modern methodology's exclusive claim to legitimacy. In the first place, his text traces the idea that the modern methodology and the technology built upon it are in fact, despite claims to the contrary, self-corroborating in that the methodology and the corresponding technology determine the limits of the perceptible, which has, in short, led us into the twofold plight of brutal inequality and ecological collapse. The text thus argues that we need new ways to transgress the self-imposed limitations of methodology, in order to make

different knowledge formations possible. We have to leverage us beyond the one and only reality that the modern methodology deems experienceable and thus make possible other ways of imagining and giving shape to reality. Against the background of insights garnered from science and technology studies (STS), Rottenburg argues that possibilities for such border crossings emerge through the encounter between specific lifeworlds and circulating technologies. In the second place, then, this approach elucidates that the source of technical developments is to be sought in the circulation of ideas and artifacts and not in a given, situated culture, whether the West, Silicon Valley, Japan, or alternatively Africa, Zimbabwe, Latin America, pre-Columbian cultures. In this movement or this circulation, the argument concludes, all people, all societies, and all cultures participate. Flux and movement are not opposed here to some unmoved source but are rather themselves the source of alternative configurations of digitization. Building from this, the text offers a theoretical foundation for the project *Digital Imaginaries*, in which artistic works are understood as experiments that, in various ways, make the boundaries of self-corroborating digital technology visible, in an effort to identify possibilities for an alternative configuration of digital praxis.

In her work, artist Tabita Rezaire, who has lived in Johannesburg for a long time, denounces racist biases of the internet and draws attention to colonial continuities in media technologies by calling for active resistance against all forms of imperialism. Her work is characterized by the search for alternative narratives and methods, which she understands as a kind of spiritual and, at the same time, technological healing, in the sense of a digital decolonization. Her various contributions to *Digital Imaginaries* involve, in Dakar, collective stargazing and research into megalithic stone circles from the seventh to the fifteenth centuries; in Johannesburg, a thematization of the entanglement between spiritual and digital networks and of methods of divination in African cultures; and, in Karlsruhe, the call to cyber-resistance. In her essay *Decolonial Healing: In Defense of*

Introduction

Spiritual Technologies she asks how technologies may be linked to the other indigenous, spiritual, and organic dimensions and in this way provide a foundation for digital decolonization (see this volume, 320–345).

Julien McHardy, Richard Rottenburg, Oulimata Gueye, Philipp Ziegler

Translated from the German by Lauren K. Wolfe.

[1] Clapperton Chakanetsa Mavhunga, ed., *What Do Science, Technology, and Innovation Mean From Africa?* (Cambridge, MA: MIT Press, 2017).

[2] A consortium headed by Facebook is currently laying a new submarine cable around the African continent under the project name “2Africa,” which is supposed to triple the capacity of Africa’s network connectivity.

[3] Mark Graham, ed., *Digital Economies at Global Margins* (Cambridge, MA: MIT Press, 2019).

[4] Gayatri Chakravorty Spivak, “Subaltern Studies: Deconstructing Historiography,” in *Selected Subaltern Studies*, ed. Ranajit Guha and Gayatri Chakravorty Spivak (New York: Oxford University Press, 1988), 3–32; Sandra Harding, “Latin American Decolonial Social Studies of Scientific Knowledge: Alliances and Tensions,” in *Science, Technology & Human Values* 41, no. 6 (2016): 1063–87.

[5] See Public Seminar (publicseminar.org), *A Dialogue on ‘Anthropology, Critique and Hope’ by Richard Rottenburg and Richard Bernstein. Interview by Jeffrey Goldfarb at the New School for Social Research* (2015), <https://www.youtube.com/watch?v=6tfb61tEjrY>.

[6] The data are taken from the country report by Freedom House, see Freedom House (2019), https://freedomhouse.org/country/ethiopia/freedom-net/2019#footnote7_ucf2t18.



Digital Imaginaries, opening. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.



Digital Imaginaries, opening. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.



Marcus Neustetter, *Lead the Way – Speculative Scapes*. Performance with Lamine Kora Kouyaté and Fatou Cissé. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.



Marcus Neustetter, *Lead the Way – Speculative Scapes*. Performance with Lamine Kora Kouyaté and Fatou Cissé. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.

>Dakar >J >K

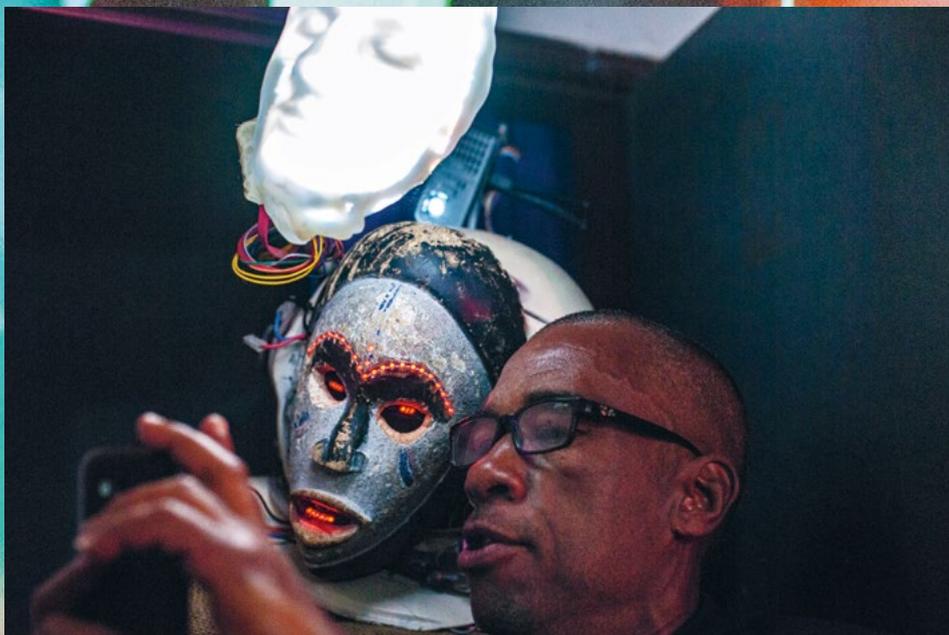


Marcus Neustetter, *Lead the Way – Speculative Scapes*. Performance with Lamine Kora Kouyaté and Fatou Cissé. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.





Digital Imaginaries, opening. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.



Digital Imaginaries, opening. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.

>Dakar >J >K



Tabita Rezaire, *Le Conseil des Etoiles*, collective star gazing. Afropixel #6, Ecole Supérieure Polytechnique, Université Cheikh Anta Diop, Dakar (SN), May 10, 2018.

>Dakar >J >K





Audience at *Décoloniser internet, une utopie?*, public debate.
Afropixel #6, Kër Thiossane, Dakar (SN), May 9, 2018.



Audience at *Décoloniser internet, une utopie?*, public debate.
Afropixel #6, Kër Thiossane, Dakar (SN), May 9, 2018.



Joseph Tonda and Tabita Rezaire at *Décoloniser internet, une utopie?*, public debate. Afropixel #6, Kër Thiossane, Dakar (SN), May 9, 2018.

>D >Johannesburg >K



Digital Imaginaries, opening. Wits Art Museum, Johannesburg (SA), July 24, 2018.



Audience at *Premonition and Digital Imaginaries*, Fak'ugesi Talks: Fak'ugesi African Digital Innovation Festival, Johannesburg (SA), September 8, 2018.



View from the window at *Fak'ugesi Talks: Premonition and Digital Imaginaries*, public debate. Fak'ugesi African Digital Innovation Festival, Johannesburg (SA), September 6, 2018.



Participant at *It's Alive! AR Workshop*. Wits Art Museum, Johannesburg (SA), August 18, 2018.



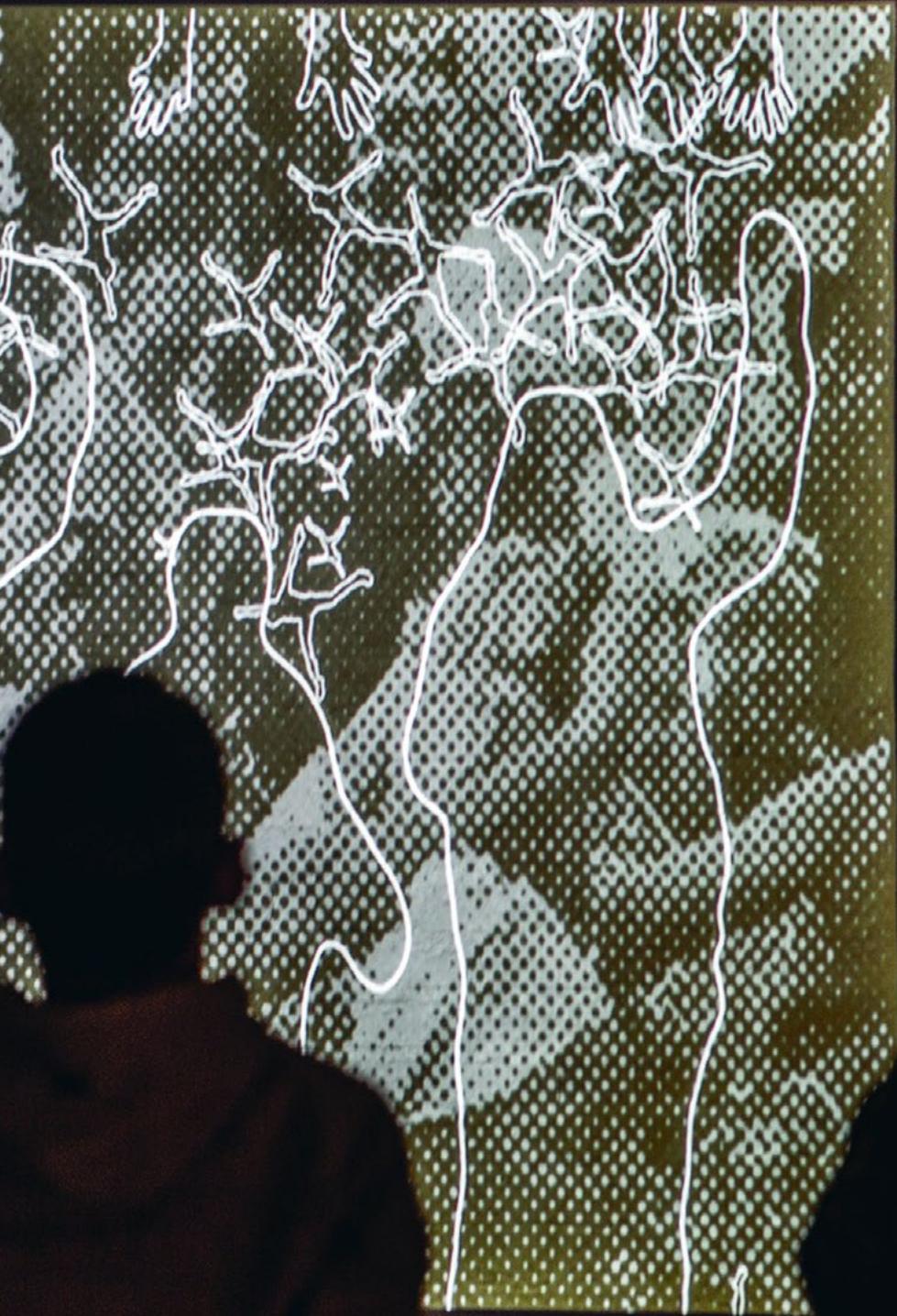
Tegan Bristow, Alex Coelho, Russel Hlongwane, João Roxo, *Towards a Vocabulary for Vernacular Algorithms*, 2018. Installation view, Wits Art Museum, Johannesburg (SA), 2018.



Laura Seal, *Infinity and Thuvhele Medicinal Horn*, 2018. AR App developed during the course African Fractals & WAM Research supervised by Tegan Bristow, Wits School of Arts, Johannesburg (SA), 2018. Installation view, Wits Art Museum, Johannesburg (SA), 2018.



Kombo Chapfika, *Borderlands*, 2018. Installation view,
Wits Art Museum, Johannesburg (SA), 2018.



>D >I >Karlsruhe



Francois Knoetze, *Core Dump Karlsruhe*, performance.
ZKM | Karlsruhe (DE), November 16, 2018.



Maurice Mbikayi, *Billisme Ya Sika*, 2018, and *Mask of Heterotopia 1*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.



Larry Achiampong & David Bland, *FF Gaiden: Delete*, 2018 and *Finding Fanon. Part one*, 2015. Installation view, ZKM | Karlsruhe (DE), 2018.



Francois Knoetze, *Core Dump*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.



Marcus Neustetter, *Lead the Way*, performance, ZKM | Karlsruhe (DE), November 16, 2018.



Francois Knoetze, *Core Dump*, 2018. Installation view,
ZKM | Karlsruhe (DE), 2018.



Isaac Kariuki, *Weaponise the Internet*, 2017, and Larry Achiampong, *Pan African Flag for the Relic Travellers*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.



Imaginarities:

Dakar,

Johannesburg,

Digital

Karlsruhe

The first venue for the project *Digital Imaginaries* was Dakar, capitol of Senegal and one of the most noteworthy, fastest-growing cities in francophone West Africa. Kër Thiossane, an independent laboratory for digital arts and social innovation, founded in 2002 by Marion Louisgrand Sylla and her husband Momar François Sylla, has been host to the biennial experimental media arts festival Afropixel since 2008. The festival presents its audience with critical and unconventional approaches to media, art, and technology, in an effort to contribute to social change on the local as well as the global level. Together with its affiliated makerspace, Defko Ak Niép, its community garden and comprehensive workshop and guest-artist program, Kër Thiossane brings international professionals and initiatives into contact with local causes and resources, in order to connect multimedia techniques with traditional artistic and creative methods and to promote new digital approaches in the arts. As part of a network of pan-African institutions, as well as those of the Global South at large, Kër Thiossane fosters interdisciplinary research into the social potential of art and new technologies.

The 6th Afropixel Festival, which took place during the 13th Dak'Art Biennale, was dedicated to the theme *Non-Aligned Utopias*. Under this rubric, the festival introduced African initiatives that creatively deploy digital technologies in order to reappropriate these, beyond the dominant discourse, as a means of action and emancipation.

Between February and May 2018, in the context of Afropixel, the project *Digital Imaginaries* sponsored workshops, residencies for guest artists and designers, scientific conferences, and public discussions, in addition to organizing an exhibition in which the artists Younes Baba-Ali, Francois Knoetze, DK Osseo-Asare, and Yasmine Abbas (Agbogbloshe Makerspace Platform), Marcus Neustetter, and Tabita Rezaire took part. Once the festival had concluded, these artists then worked to further develop a number of the works that grew out of the Afropixel program, with an eye to the respective exhibitions spaces in which they would go on to be shown. Ultimately, in the context of the *Digital Imaginaries* project, these works were later presented in Johannesburg, South Africa, and Karlsruhe, Germany. The process of

Introduction

developing, translating, and adapting the works to the conditions and requirements of various sites and various media was very much by design, since it is in precisely such a processual modus operandi that one finds reflected the form of digital imaginaries that are at once site-specific and globally connected.

Johannesburg was the second venue for the *Digital Imaginaries* project. Every year, the South African metropole, home to one of the most prominent and productive digital scenes in Africa, hosts the Fak’ugesi African Digital Innovation Festival. Since its founding in 2014, it has evolved into one of the most vibrant and diverse festivals for digital culture on the continent. From July to September 2018, in the context of *Digital Imaginaries*, the Fak’ugesi Festival teamed up with the Wits Art Museum, located in the Braamfontein neighborhood near the festival grounds, in order to put together a program including workshops, guest artist residencies, public discussions, student projects, as well as an exhibition. The exhibition at the Wits Art Museum, founded in 2012 as part of the University of Witwatersrand, was centered on the concept of premonition. Today especially, as the idea of nature as a calculable and thus governable phenomenon becomes increasingly untenable, it seemed to us important to assemble pieces from the museum’s collection of African art in which the traditional practice of telling the future plays some sort of a role. Thus works by Younes Baba-Ali, Kombo Chapfika, Tegan Bristow together with Alex Coelho, Russel Hlongwane, and João Roxo, as well as Francois Knoetze, Marcus Neustetter, and Tabita Rezaire explore not only various overlapping historical and postcolonial developments but also contemporary changes in the way we model the future, all against a background of digital transformation.

The Fak’ugesi Festival, which took place contemporaneously with the exhibition in 2018, featured the following motto: “Tap Your Afro Source Code.” The festival was designed to reach a wider audience than the accompanying exhibition. Alongside its comprehensive program of lectures and workshops, it also involved events organized around computer game development and the music industry, which asked how we might rethink global

digital methods from an African perspective and, in this way, create alternative systems of knowledge. Like Kër Thiossane, both the Wits Art Museum, represented by Fiona Rankin-Smith, and the Fak'ugesi Festival, under the direction of Tegan Bristow, crucially shaped the project *Digital Imaginaries* through their respective programming, perspectives, and approaches and transformed it into a platform for intercultural exchange concerning the question of digitization in African contexts.

The exhibition *Digital Imaginaries—Africas in Production* hosted by ZKM | Karlsruhe between November 2018 and March 2019 was the third venue for the project, now concluding with the present publication, which has been collaboratively edited by Kër Thiossane, the Wits Art Museum, and ZKM | Karlsruhe. As an internationally renowned cultural institution in the field of media art, ZKM | Karlsruhe is dedicated, by way of its diverse programming, above all to the exploration of the digital transformation and its wide-ranging social effects. The exhibition *Digital Imaginaries—Africas in Production* took place at ZKM | Karlsruhe in parallel with the exhibition and educational experiment *Open Codes*, in the context of which, between 2017 and 2019, the institution was invested in exploring life in digital worlds. The latter experiment thus provided thematically diverse points of contact for *Digital Imaginaries*. The third exhibition at ZKM | Karlsruhe presented a considerable number of new works that were developed over the course of the project's previous stages. What's more, the exhibition in Karlsruhe aggregated documentation of the events in Dakar and Johannesburg, as well as additional videos, photographs, sculptures, and installations from artists who had not previously taken part in the project. These additional materials expanded the spectrum of the presentation and helped make it legible to a non-African audience. Moreover, the exhibition was accompanied by a supporting program organized in concert with a local hacker initiative, thus linking *Digital Imaginaries* to the local German context.

The works shown in Karlsruhe—by Larry Achiampong, Sénamé Koffi Agbodjinou (L'Africaine d'architecture), Younes Baba-Ali, David Blandy,

Introduction

Tegan Bristow, Kombo Chapfika, Joshua Chiundiza, Alex Coelho, Joni Brenner, Nothando Bhebhe & Scott Hazelhurst, CUSS Group, Milumbe Haimbe, Russel Hlongwane, Olalekan Jeyifous and Wale Lawal, Wanuri Kahiu, Isaac Kariuki, Francois Knoetze, Maurice Mbikayi, Marcus Neustetter, DK Osseo-Asare and Yasmine Abbas (Agbogbloshie Makerspace Platform), Tabita Rezaire, João Roxo, and The Nest Collective—did not present a unified narrative. They did, however, collectively challenge the dominant imaginaries of the digital and in this way contributed to a more multifaceted and multifarious configuration of the digital world.

The events that took place in Dakar and Johannesburg in the context of *Digital Imaginaries* activated both specific local histories as well as contemporary methods. Many of the additional works shown at ZKM | Karlsruhe pursue a similar strategy: Far beyond simple description, they appertain to African concerns, circumstances, and developments, in order to critically scrutinize and reconfigure digital methods beyond capitalist profit maximization and state surveillance. Insofar as these works grapple with African situations, they expand the horizon of future digital perspectives—in Africa, in Europe, and throughout the world.

Acknowledgements

The editors' deep thanks go to all the artists, authors, and project partners who took part in *Digital Imaginaries* and its comprehensive supporting programs in Dakar (SN), Johannesburg (SA), and Karlsruhe (DE). We extend particular thanks to Marion Louisgrand Sylla, Fiona Rankin-Smith, and Tegan Bristow for their inspiring interchange in terms of the project content as well as their partnership in the conception and implementation of this transcultural cooperation. Our thanks go to Judith Rottenburg for networking the project partners, to Andrea Buddensieg for connecting the content of *Digital Imaginaries* to programming at ZKM | Karlsruhe, and to Anne Fleckstein, project director for the German Federal Cultural Foundation's TURN Fund, for her magnanimous and amicable support for the project. On behalf of Kër Thiossane

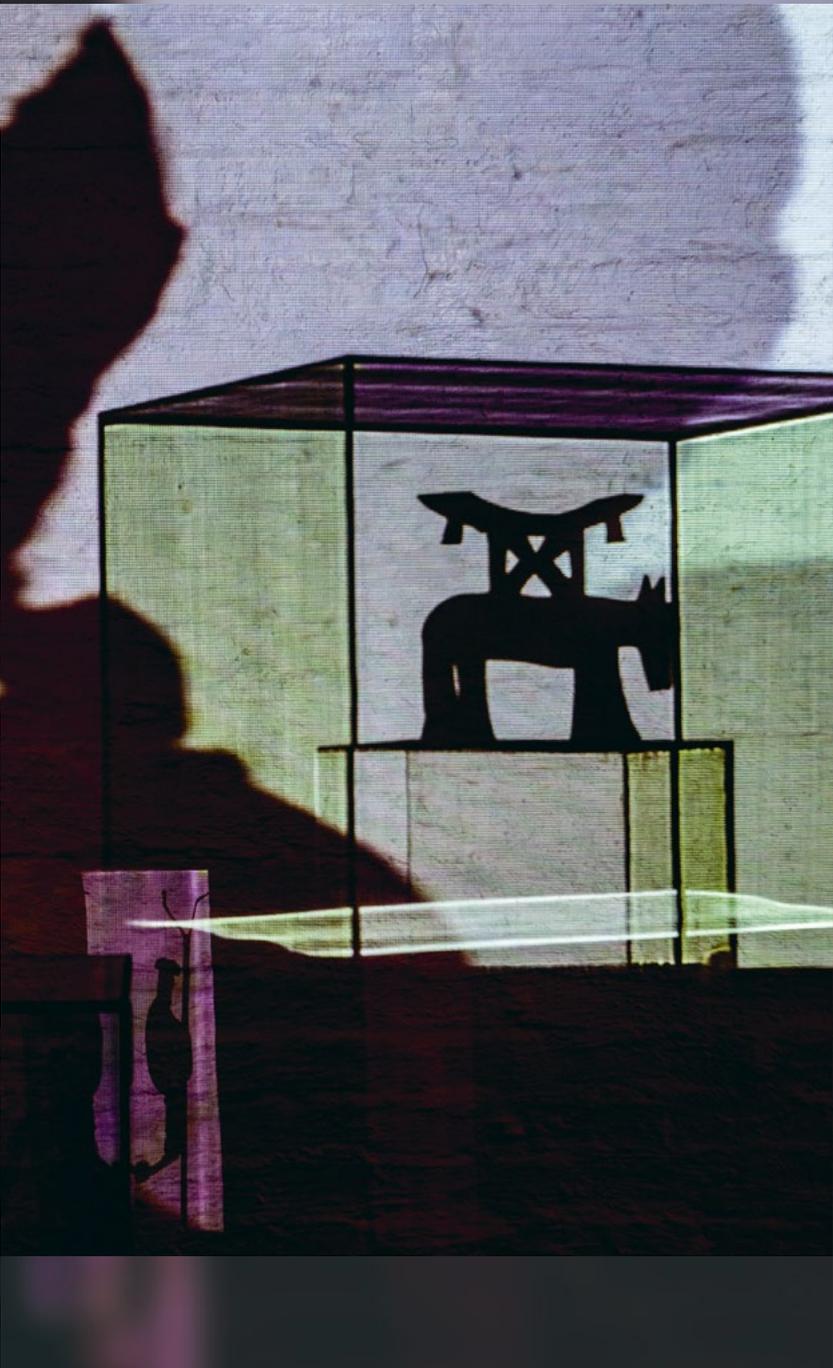
and Afropixel, we would like to offer a very heartfelt thanks to Daniel Sciboz, Marion Aïdara, Martha Cissé, Cyrille Esoh, Daouda Koté, Amayel Ndiaye, and Idrissa Sall; on behalf of the Wits Art Museum and the Fak'ugesi Festival, our thanks go to Kiera Crowe-Petterson.

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In addition to the support for *Digital Imaginaries* received through the German Federal Cultural Foundation's TURN Fund, the project-affiliated workshop series in Dakar and Johannesburg were granted additional funding through the German Federal Ministry for Economic Cooperation and Development. Residencies for the participants in the conference Échanges sur les imaginaires numériques en Afrique [Exchanges on digital imaginaries in Africa] at the Faculté des Sciences et Technologies de l'Éducation et de la Formation (FASTEF) on the occasion of *Digital Imaginaries* in Dakar were supported through the German Research Foundation's (DFG) program Point Sud as well as other programs by the DFG. Without their extraordinarily generous engagement, the exhibitions in Dakar, Johannesburg, and Karlsruhe, as well as publication in this form, would not have been possible.

Julien McHardy, Richard Rottenburg,
Oulimata Gueye, Philipp Ziegler

Critique



Commerce

Commerce



Critique

The Digital

The miracle and the privilege of that alone was still simmering in our hearts and minds, because we have always and will always love those alchemical moments in which a passing mental image becomes real, gets set to sound and ready to showcase.

Birth of

Reality Future

a Mixed

The Digital Birth of a Mixed Reality Future

The Nest Collective would never be what it is without the power of the digital space to bring people together, as well as its use as a stage and gallery. The possibilities for showing work to global audiences are endless, as people just tritely state these days: “When you upload something, everyone on earth can see it.”

It’s easy to take this earth-shattering possibility for granted, given how fast anything from texts to images and video can be placed online. But we will never forget the week when we released our very first series of short fashion films, *Chico Leco Presents*, on YouTube. The site analytics showed us that several people from a wide diversity of places—everywhere from eastern Europe to South America, Australia to Nigeria and many others—had contributed to the first few thousand views in the first days it was up.

We were just a bunch of wild kids with some wild ideas in a wild city (anyone who’s been here can tell you Nairobi is quite literally wild—the only city in the world with a national wildlife park within its borders), who met some designers who had made some wild pieces, and we knew some models who could do wild things, and we were able to bring everything together one wild Saturday. The miracle and the privilege of that alone was still simmering in our hearts and minds, because we have always and will always love those alchemical moments in which a passing mental image becomes real, gets set to sound and ready to showcase.

But we are still deeply enchanted by this magical idea of sharing what we make with the world, to this day. Before, people needed institutional support and budget lines for advertising that seem impossible now (because they are, considering the fragility of several economies globally). These days, sharing work requires only a touch of a button.

Since *Chico Leco Presents*, we have done multiple projects that have also had the honor of being screened in many different places, despite their genesis, inspirations, and aesthetics being deliberately home brewed and made. We’ve always wanted to focus on people and issues that are marginalized, that don’t get room in mainstream discourse, in order to ask hard questions and share prickly thoughts, in ways and spaces that accord them beauty and honor. While many conversations are deliberately erased, sidelined, or misrepresented, black people and Africans as a whole are the last among even these to be afforded due consideration. This is why we are determined that our work stay rooted here. In 2013, we spoke to more than 250 people who identified themselves as LGBTQ (lesbian,

gay, bisexual, transgender, or queer) from nine cities and towns in Kenya. The generosity of LGBTQ Kenyans who have shared their stories gave us a documentary archive, which we called *Stories of Our Lives*. We developed and curated it by theme into a book, with introductory and reflective essays (which is now in its second edition), and further scripted and shot an anthology feature film. The film's fortunate jaunts across the planet have enabled us to meet people and have conversations we would otherwise never have imagined being part of.

Aside from these serendipitous connections to people far away, this project has also engendered kinship with our fellow African countries, specifically populations of queer people. For us, that is an even more special gift, particularly because systemic homophobias work to unhome the queer not only from their bodies, as Kenyan scholar and writer Keguro Macharia has been known to say, but from the continent itself. Finding new friends across our borders to share this experience with is in many ways healing.

This public democratized space has also led to increased power among audiences, as well as to the rise of the fan and the critic as key decision makers in the process of developing, producing, and exhibiting work. We're best at hearing and reflecting with our audiences at the very beginning, when the themes of our new exploration are partly in a primordial soup and finding a form, and at the end, when we hear back about what our work has made audiences feel, think, and experience. For us, the work is not complete until we receive feedback. We've woven the audience into our work before as active narrative decision makers: with our first web series, *Tuko Macho*, we explored the backstory of an urban vigilante gang who made citizens decide if criminals were guilty or innocent using an online vote. Our real-life audiences made actual choices and ended up seeing the result of their votes in the following episode. They held rousing debates in our comments about the ethical dilemmas in the narrative and their parallels to real life.

Having ungated access for most of our digital projects is deliberate. Africans in general are not considered "worthy" of nice things. A lot of us euphemize high quality as having to be "foreign": not from the place we call "home." As such, if we can make anything beautiful, if it is shareable in this particular way, we want to share it as much as we can. Still, the digital realm remains fraught with its own inequalities, which reflect those of the mainstream. The gender gap in access to devices or to disposable income to buy data that can then be used for internet access is already well known and documented.

The Digital Birth of a Mixed Reality Future

Beyond this, access to energy sources to charge the said devices is an issue. Women are less represented on social media sites, even as we can be starry eyed about the reach of some of these apps geared toward the masses. All of this means that online works and interventions, left to their own devices, will inevitably skew toward access and consumption by men. We remain alive to those realities.

More philosophically, because there's relatively little work being produced in our country or even on the continent compared to the massive demands by a diverse audience, people want this work to meet a universal hunger. For instance, many people wonder why African work always has to be



The Nest Collective, *Let This Be A Warning*, 2017. Video still.

heavy or themed in reflection on the many issues the continent is facing. Some people want to laugh and escape; others want to reflect deeply or learn something new. It is difficult for one work to serve all these purposes. Some people want to see our realities, such as how our languages remain in active negotiation with colonizer languages, like English, French, and Portuguese, with often hilarious results. The enduring tensions between rural and urban ways of living, with the city as a character, is another classic theme. Other people want to dream and create completely new worlds from our histories, or even make up new futures. The only way to make all these demographics happy is to have many, many more producers



The Nest Collective, *We Need Prayers: This One Went To Market*, 2018. Video still (detail).

The Digital Birth of a Mixed Reality Future

of work and commensurate resources available to produce, market, and distribute this work.

Our converse thought is about the limits of the digital realm as a space for cultural practice. The digital can facilitate and spread, but it may not always be the primary actor or interface of expression. Our short fashion film *To Catch a Dream* involved a creative process in which we wrote a script, then commissioned fashion designers we knew to make garments for the characters of the piece. All this happened long before the first image was even taken, let alone shared. With our space intervention *Strictly Silk*, we explore the idea of safety for diverse women and nonbinary folks, because the physicality of freedom and self-expression is not one that any online space can mediate for this particular group of people regarding their experience of going out partying and being part of nightlife in the same way that male citizens can.

One of our members, Sunny Dolat, was the executive producer of a fashion performance ritual and intervention at the Ngola Biennale 2019. Parts of that process have been recorded to share online, but the work grew and was present physically because he set foot on the soil of Sao Tome, talking to many designers all over the continent and getting history as a person from other people, which is infinitely different from gleaning it online.

What a work does digitally is not the same as what it does in physical space. In our minds they exist in a continuum, balancing each other in achieving different things, in the same way that one can meet a lover online half a world away on a dating app and create real intimacies, which are then built on in even more different ways by a physical meeting, or even vice versa, from a shared-space romance to a long-distance one. Neither process diminishes the other: in either, people are able to work with what is available. The digital adds a “forever” transcendent element to work that would otherwise be physically constrained. At the same time, the idea of place shouldn’t be divorced from the usefulness of connecting with other bodies, hearing voices, seeing work expand in physical space, or understanding how a work remains in communication with the places in which it is installed or experienced.

There’s a lasting assumption that digital interventions can be relied on to be cheaper, so that Africans can “innovate” ways out of installations and creations that require higher spatial investments, budgetary allocations, and technical expertise. It assumes that these digital frameworks do not have the burden of being high quality or beautiful, which goes back to the

lasting question about what Africans can possibly have to say that requires putting so much effort into aesthetics over social impact. This is a question about artist priorities and audience worthiness. One of our members, Jim Chuchu, made a sci-fi short as his first film several years ago, and many relentlessly questioned the choice of genre, as well as the perceived lightness of his chosen narrative, two lovers discovering each other.

Many of these queries are unanswerable with theories and beautifully worded, eloquent rejoinders. The only answer to African creators, we think, is that they should trust themselves wholly and, as far as they are able, make the work they want to make and deal with the consequences, questions, and critiques of that work as they come.

Our final reflection about the digital realm is an honest reflection by a collective of members who, on average, were born before mass digital access and came of age as the wonders of the internet were becoming globalized. To engage with work, we enlist the screen as both medium and interpreter, in a sense keeping and maintaining distance. Is this always a good thing? When creators can be almost frantically working to meet insatiable visual hungers, with virality imagined as a sole metric for success, and with fear of being forgotten in every moment of silence, are we allowing artistic output to become labeled as just more content, alongside endless videos of dancing kittens and stir fry recipes? What does that imply for the always shifting, always changing province of the artist?

These questions can be useful thought journeys and experiments; it is not necessary to have answers to them. We, the wild kids in a wilder city, will always make what we can, how we can, as will other artists. Audiences will always be free to decide whether they will care. We will thus always be humbled and privileged for them to choose to look, as well as to stay and engage, whether the work is digital, physically present, or both.



NOT AFR ICAN ENOUG GH

A
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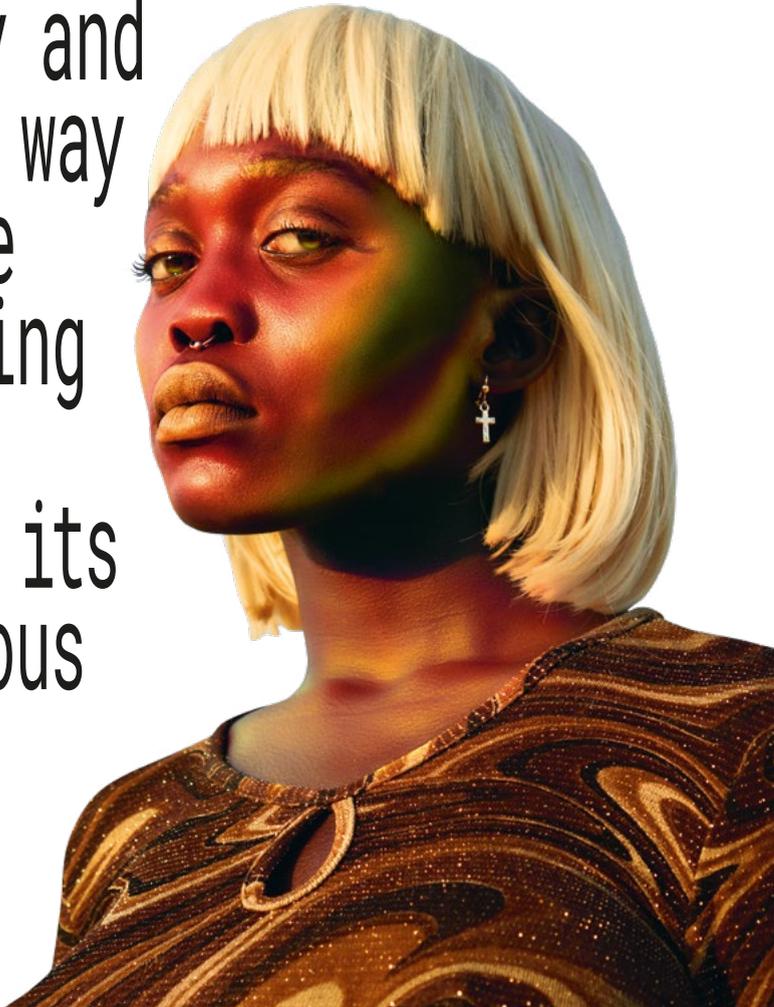
Sunny Dolat, The Nest Collective (eds.),
Not African Enough—A Fashion Book, 2017. Cover.

Data

Everything about these dumps conveys menace, exhaustion, depletion, and death. But we have to learn to live with this broken reality and find a way to make something better out of its poisonous dust.

3.0

Mines



In 2018, alarming news reports claimed that Johannesburg, South Africa, was faced with imminent catastrophe. According to municipal officials, illegal miners (often called *zama zamas*) had reached perilously close to subterranean gas lines as they went about their clandestine search for gold in the abandoned mineshafts and tunnels that snake under the city. Were they to accidentally breach the lines, the effects would be nightmarish. Newspapers recounted images of the city being incinerated, with the M3 highway and the vast Soccer City stadium disintegrating into fire and ash.

An investigation by journalist Fatima Moosa questioned these claims, suggesting that instead of a real public safety threat, Jo'burg's xenophobic mayor Herman Mashaba was trying to whip up a moral panic against desperate foreign miners operating without permits.

Nevertheless, the mental image of Soccer City stadium, which was built expressly for the media spectacle of the 2010 FIFA World Cup, suddenly imploding and collapsing within a fireball of devastation offers a potent metaphor. Johannesburg is a city built off the back of extractive industries. While this has brought vast wealth for some, and created a modern city, it has come at the cost of enormous human and environmental suffering. What founded and sustained the city also threatens to destroy it. This thread connects the earliest days of raw frontier mining to the digital capitalism of the present.

This contradiction is visible in the uncanny ring of mine dumps and pits that surround the urban sprawl of Gauteng, looming like the cyclopean ruins left by vastly hideous Lovecraftian beings. As Moosa describes the landscape, "Capable of seating 94,700 spectators, Soccer City is nevertheless dwarfed by nearby slag piles left over from decades-long mining operations. The slag heaps hold massive dumps of crushed rock discarded after gold extraction."^[1] Even Johannesburg's greatest, most confident architecture is outmatched by the grim shadow of the dumps.

The discovery of gold in 1886 was like a big bang, completely reshaping South African society and the political economy. This explosion of commerce has left behind a toxic legacy. Unattended mine dumps seep metal particles into the soil and contaminate water through acid mine drainage. Plumes of uranium, cyanide, and lead blow off into poisonous dust clouds. While this affects everyone in range, it is most destructive for the often-impoverished communities living closest to the dumps. They are constantly subjected to the severe risk of cancer, respiratory disease, neurological damage, and many



Jamal Nxedlana, *Late Leisure: Datamines 3.0*,
2019. Photograph (detail).



other health problems. Some parts of Gauteng have been so devastated by the effects of mining, like the Wonderfontein spruit water system, that they have been declared ecological disaster areas. The spatial logic of capitalism creates these despoiled areas and destroys communities for the profit motive. It also creates a ticking time bomb for future generations, with some referring to mine waste as South Africa's "Chernobyl."

In the postapartheid city, the mine dumps have taken on complex but often hidden associations. If you scroll through the music videos, films, TV shows, and photography made in the city since the advent of democracy in 1994, you will always see flashes of these hulking structures. But they are more a background texture than the main focus, used primarily to give a general sense of place. Yet, as Bettina Malcomess and Matthew Wilhelm-Solomon write in a study of religion in Jo'burg, the mine dumps are dynamic "territories of liminality, toxicity and uncertainty."^[2] As dangerous as these areas remain, they are still sites of human life and activity, from religious groups holding their most sacred rituals on these blighted edge lands to the scavengers eking out a living off the lucrative waste hidden in the piles of mutated sand.

The dumps are a physical representation of how capitalism constructs landscapes. But does this physical space pierce our psyches? Does this clawing logic of extraction seep into not just the soil but the human soul?

The Witwatersrand is the site of the largest gold deposits ever discovered. Or, to put it another way, half the gold ever mined in human history has come from here. For a short while, Johannesburg was like the Silicon Valley of its day, attracting the most ruthless and revolutionary capitalists to make fortunes in the new frontier of extraction. The city was built on an ethos of cowboy capitalism, of getting the gold by any means necessary. This ruthless logic saw the Randlords, Steve Jobses, and Mark Zuckerbergs of their times become fabulously wealthy through daring, cunning, and unrelenting sociopathy. This rapacity was institutionalized into law by colonial and apartheid rulers, ensuring that a steady stream of labor would be fed into the gaping maw of the mines.

As the struggle against apartheid escalated and democracy beckoned, new possibilities tempted. But as writer Bongani Madondo observes, "I look at it this way: from the very day Mandela walked into the Union Buildings as the head of our collective leadership, the wolves descended. White big business, comrades, black thugs currying favor, everyone descended, drawn by the lure of gold."^[3]

Such a kill or be killed frontier ethos defines us still. Johannesburg breeds a hustler logic, in which the individual starts to see themselves as a business, with the only goal that really counts being profit. Some people choose to fully embrace this antisocial logic at its most brazen, aggressively asserting their wealth and status with bulletproof luxury vehicles, steroid usage, and high-caliber firearms. Like its film noir spiritual double, Los Angeles, Jo'burg blurs the lines between wild west capitalism, outright criminality, and cultural production. It is at once a dream factory and a shooting gallery.

At the dawn of the early nineties, the soundtrack for the new freedoms of democracy were house and kwaito music, hosted in frenetic clubs and orgiastic raves. The drugs that helped fuel this creative boom, and the party spaces they were ingested in, were controlled by a notoriously violent bouncer mafia centered around the former boxer and occasional actor/model Mikey Schultz, along with his main henchmen Nigel McGurk and Faizal "Kappie" Smith. Linked to a string of murders, they and their crimes were paid homage in a bizarre 2002 novelty song by former Big Brother contestant "Bad" Brad Wood. A one-time police officer, Wood publicly bragged about his apparent connections to the bouncer crew. He is no stranger to violence, including being involved in a fatal shootout with zama zamas at a mine owned by former president Jacob Zuma's nephew.

But Schultz was to rapidly exceed Bad Brad in notoriety. He and his crew were hired to do dirty work for local mining tycoon Brett Kebble. Kebble was cosmopolitan and urbane, connected to top politicians, and a huge collector of South African fine art. He was a genuine lover of culture, even sponsoring a lucrative prize in his name. But he was also an arch criminal, involved in a nether world of fraud and bribery. Kebble ultimately orchestrated his own murder, hiring Schultz and the boys to do the killing. The aftermath of the shooting ultimately landed former Interpol chief Jackie Selebi in jail, while the killers received full immunity in exchange for evidence. This meant that in 2014, they were able to reenact the murders they had committed in the film *204: Getting Away with Murder*.

According to investigative journalist Mandy Wiener, the Kebble murder left a power vacuum in the Johannesburg underworld.^[4] Into this breach stepped charismatic and murderous Czech fugitive Radovan Krejčíř, a man so infamous in his home country that two feature films have been made based on his life. From a cocaine white Michael Mann-style mansion perched atop a hill in the upmarket Bedfordview



Jamal Nxedlana, *Rainbow World Inertia*:
Datamines 3.0, 2019. Photograph (detail).



suburb, he schemed to take over the criminal world through bribery and bullets. After a long saga involving car bombs, assassinations in broad daylight, political scandals, torture, drug busts, and “whack houses,” Krejčíř was eventually arrested in 2013, but his reputation and legal dramas persist. His life in Johannesburg was recycled into the poorly received comedy-drama *Bedford Wives*—a light entertainment series that missed darker social resonances.

Money is a passport to the highest echelons of Jo’burg society. The origin of the fortune is less important, engendering a dangerous attitude of might makes right. This is the logic of extraction taken into the self—the individual is a company, relentlessly devouring from society until the law or death stops them. The emergence of digital technology intensifies this cultural logic, embedding the distorted self in the wilderness of mirrors that is Facebook and Instagram. These platforms create the pressure to stunt publicly by creating an illusory perfect life to display to followers. For many, these pressures can lead to a vicious cycle of living off credit. A common refrain you hear in the city is of people who blow all their money on a sports car, leaving them struggling to pay rent. They post pictures of their loot on Facebook, while behind the scenes they are living in a dump. The postapartheid, networked neoliberal self finds transcendent meaning in relentless consumption—with shopping malls and boutique stores as its cathedrals. The same rapacious ideology is at the center of the environmental crisis that will define the parameters of Jo’burg’s future.

All the current science points to an apocalyptic worsening of climate change, global warming, and resource scarcity in the coming decades. As harrowing as this reality is, its effects will be felt differently based on wealth and class. Already evidenced in the aftermath of war and disaster, poor and black people will bear the brunt of climate catastrophe. The rich and powerful might embrace a logic of sacrifice zones, where they use their money and resources to keep business as usual going for themselves, while building walls and fortresses to protect themselves from the chaos outside. Rather than a bright landscape of consumerism for all, the near future may be a patchwork of high-tech enclaves set against generalized suffering outside.

In contemporary Johannesburg, politicians, the media, and capital are besotted with the idea of a “fourth industrial revolution.” They claim that society will soon become a digital playground of seamless access, automation, and clean

technology. But this image of a streamlined future omits how digital technology is itself imbricated in the dirty circuits of an extractive industry. Along with the waste in mine dumps, the city is struggling with e-waste, the often toxic refuse left from cellphones and computers. As a report in the *Johannesburg Mail and Guardian* revealed, containments from e-waste are sinking into groundwater and causing chronic illnesses.^[5] The traditional industrial poisons from mining have been joined by their twenty-first-century counterpart.

The mine dump could be a snapshot from this worst-case scenario future, a poisonous *Mad Max* desert of rust, thirst, and heat death. Off in the distance, the lights of the cyberfeudal towers of the elite mockingly flicker. This blighted world is the end game of centuries of mineral extraction, colonialism, and class war from above.

But we can also see the mine dumps as a challenge. We can give into the power of their evil architecture and accept a gradually dying world. Or we can strive to grow something new out of the ruins, to rehabilitate and regenerate these spaces, to fight to replace the toxicity with life and nourishment. The mine dumps remind us that our current economic order poisons both people and the living planet around them. Everything about these dumps conveys menace, exhaustion, depletion, and death. But we have to learn to live with this broken reality and find a way to make something better out of its poisonous dust.

[1] Fatima Moosa, "Claim that Zama Zamas Pose Threat to JHB is Xenophobic," *Daily Vox (Johannesburg)*, December 3, 2018, <https://www.thedailyvox.co.za/claim-that-zama-zamas-pose-threat-to-jhb-is-xenophobic-foundation-fatima-moosa/>.

[2] Betina Malcomess and Matthew Wilhelm-Solomon, "Valleys of Salt in the House of God: Religious Re-territorialisation and Urban Space," in *Routes and Rites to the City: Mobility, Diversity and Religious Space in Johannesburg*, ed. Matthew Wilhelm-Solomon, Lorena Núñez, Peter Kankonde Bukasa, and Bettina Malcomess (London: Palgrave, 2017), 31–60.

[3] Rofhiwa Maneta, "This Is How We Lost Him: Bongani Madondo and Rofhiwa Maneta Remember K. Sello Duiker," *Johannesburg Review of Books*, April 1, 2019.

[4] Mandy Wiener, *Ministry of Crime: An Underworld Exposed* (Johannesburg: MacMillan, 2018).

[5] Thulebona Mhlanga, "South Africans Are Drowning in E-waste," *Mail and Guardian (Johannesburg)*, March 16, 2018.

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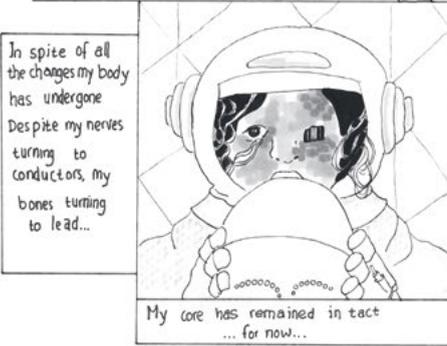
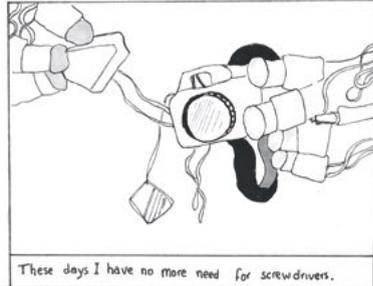
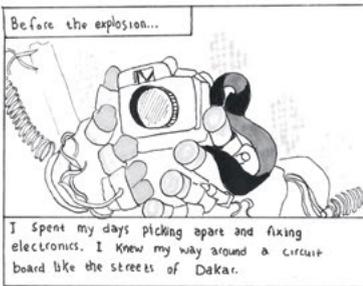
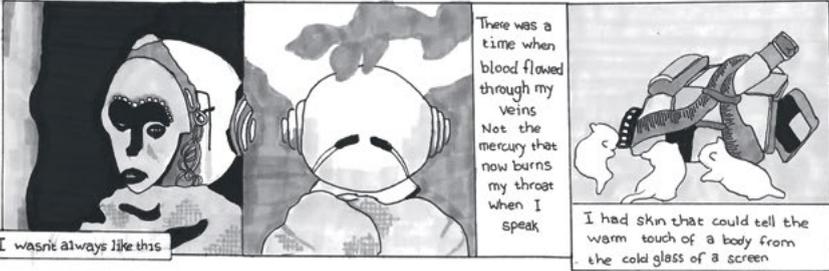
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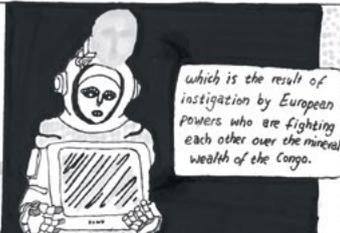
Core



dwng



Many have also turned their thinking over to machines in the hope that this would set them free



which is the result of instigation by European powers who are fighting each other over the mineral wealth of the Congo.

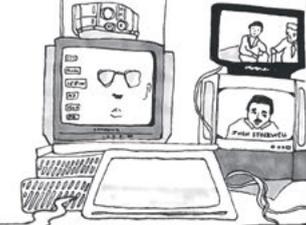
But that only permitted those who control the machines to enslave them



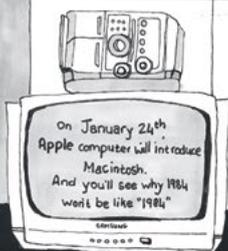
Dance before this aid! what humiliation!



You can buy your very own mechanical minion. You don't have to life a finger with these little guys doing all of your dirty work. That is, until they all rise up and destroy their human masters once and for all...



You're being watched and recorded. And the storage capability of these systems increases every year.



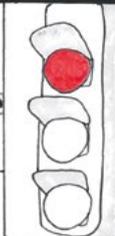
On January 24th Apple computer will introduce Macintosh. And you'll see why IBM won't be like "1984"



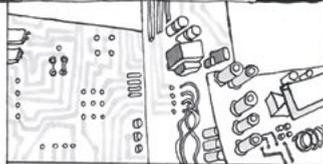
There is a sense that we are being controlled by the computers



Where others give themselves over slowly, unwittingly, bit by bit. I have done so conscious of what I have lost, and conscious of what I gain in return.



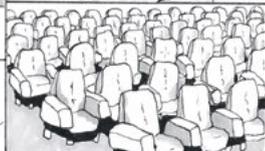
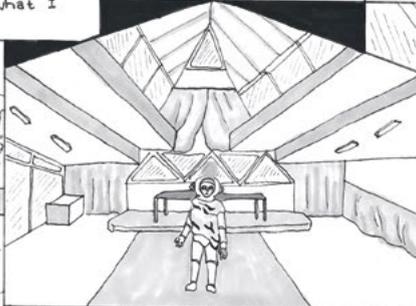
Red light. One has always to stop, to go, to lie down. It's a prison, that's where it is, This modern life



The memories that fade are replaced by projections embedded in the circuitry of my new form.



Our hope is that the summit will come up with solutions for the problems of the 3rd world

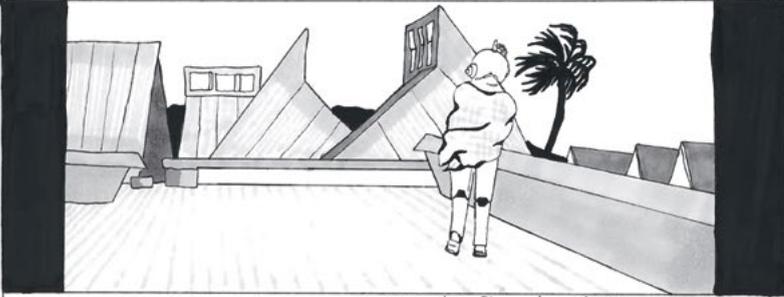


Senghor... an instrument of development and progress, which is why it is up to us to encourage opportunities with industrialized nations to the largest extent possible. Certainly it would be to imagine that declarations of intent and solemn proclamations would be enough to restore balance... to the detriment of poor countries



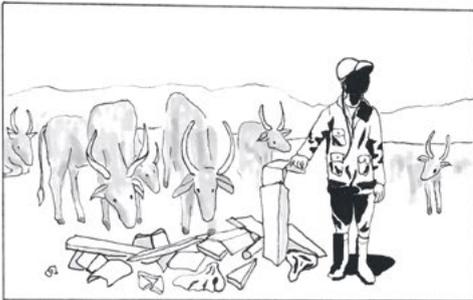
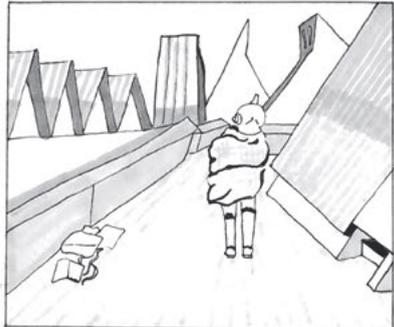
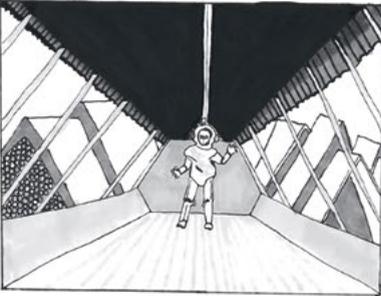


Binary surges through my subconscious like a thousand whispers at once



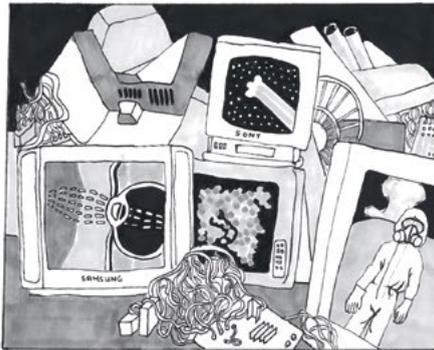
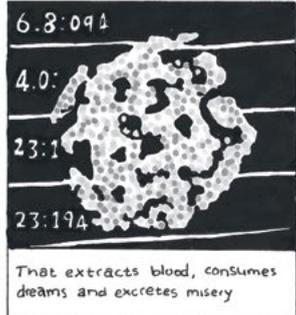
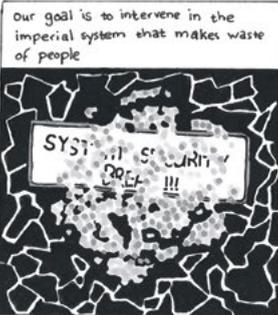
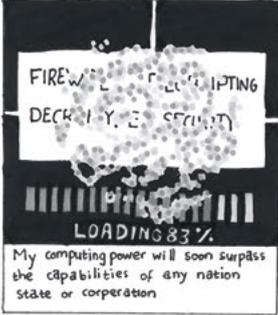
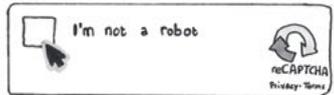
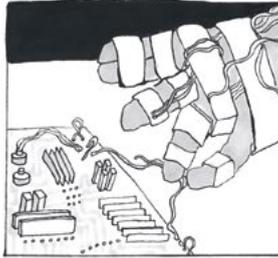
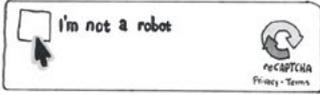
When processed they conjure images and voices that flow through me as if I am channeling the ancestors of my flesh...

Like resurrecting ghosts in the machine



They are me now. I have become no one, and everyone all at once

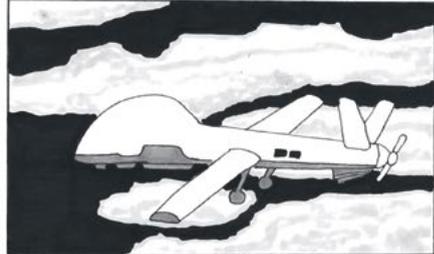
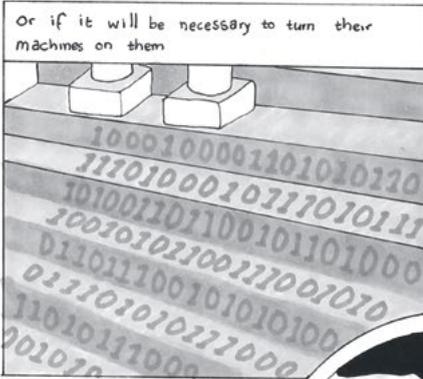




We must take what is ours
 what is our right
 We must control
 our industry,
 our commerce,
 our culture



Core Dump



Bringing about a cleansing more swift
and meticulous than anything
this world has ever seen



I suspect the latter



African culture alone has preserved the
mystic warmth of life that could still revive
the world that has died of machines and cannons



The world will be invited to share
in its warmth

or perish in its flames

The visual essay *Core Dump* is a collaboration between Francois Knoetze and Lara Evans. It is based on the first episode of the multi-part video work *Core Dump*, which Knoetze realized in May 2018 as part of the Afropixel #6 Festival in Dakar.

Fashioning

Digital

Munkishi is a Luba term that means a spirit, either good or bad, at the service of diviners called bilumbu. As bilumbu perform rituals, using the internet is a daily ritual for many people. Relatedly, I see the body drawn into the virtual world of the internet daily.



Resistance

Fashioning Digital Resistance

My *Techno Dandy* sculpture merges concerns with African fashion and contemporary computer technologies as sites of encryption and resistance.^[1] Here, I explore some of the resonances between Congolese fashion and computer technologies that the work embodies. As part of this, I revisit the history of the black dandy, to whom the work pays tribute. I also consider my Luba origins, comparing the symbolic and aesthetic aspects of long-standing African customs of hairdressing, the wearing of accessories, and even body modification, with today's societal trends, in which "personal media" are important signifiers of urban status.

Fashion in the Congos

The black dandy character originates from the eighteenth century, when a "conspicuous consumption" prevailed, especially in England, where slaves were extravagantly dressed by their masters to fit their luxurious surroundings. Later, "prestige slaves" as well as minstrels and free Africans redesigned their image with dress styles, gestures, and wit as forms of self-determination and resistance to their imposed status. Modern dandyism in both the DRC and the Republic of Congo is thought to have developed during the 1920s and 1930s, inspired by a political figure, André Matsoua, who served in the French army and lived in Paris. In 1922 he returned to Congo-Brazzaville with a wardrobe of expensive French suits, where he experienced oppression and incarceration for his human rights and freedom-fighting activities.^[2]

In the late 1950s, a youth subculture called "Le Billisme," inspired by Western movies, emerged in Léopoldville, capital of the Belgian Congo. Theaters were located in the black neighborhoods of a city that was still experiencing severe racial discrimination. Buffalo Bill (from which the expression Le Billisme was derived) was an American actor who became the idol of many young Congolese and set the rules for male fashion especially—although young Congolese women could also be seen in the street showing off jeans, a scarf around the neck, and sometimes even a lasso.^[3]

Subsequently, La SAPE movement arose, the acronym standing for Société des Ambianceurs et des Personnes Élégantes—a contemporary equivalent of the Mod movement in both Congos. Later, the acronym represented the Society of Artists and Persons of Elegance. It also matches the French slang word *sape*, which means to dress elegantly.

Although it began in Congo-Brazzaville, La SAPE made its mark on Kinshasa in the 1970s through the iconic Papa Wemba, a musician who enjoyed the title *Le Roi de La SAPE* (King of SAPE) because of his international popularity and taste in haute couture.^[4] The movement was magnified by other popular musicians and Kinshasa elite, who shopped abroad and knew their *griffes* (designer labels) very well.

Certain Sapeurs' outfits are exaggerated, which could indicate the reinvention of foreign culture in an autonomous form. They combine multiple identities into one and transcend cultural boundaries in their performance of race and gender binarisms. Such multiplicity is presented as a sign of modernism.

In parallel to the above is the global growth of digital media; owning a smartphone is a prestigious mark of distinction between the elite and the ones on the periphery in Africa, and in the DRC particularly. Luxury often prevails over necessity as the ultimate language of self-expression.

Yet Sapeurs' conceptualization of transculturalism is also a form of defense of both men's and women's rights, as well as resistance against a dictatorial Congolese regime—a "liberating challenge to patriarchy," as Monica Miller puts it.^[5]

Apart from devoting considerable energy to survival, men and women spend a lot making their bodies instruments of beauty and perfection by constantly and obsessively embellishing them with ornaments, wigs, and lightening cosmetics as a critical aesthetic deployment. And then they walk the streets to see—but especially to be seen.

To paraphrase Filip De Boeck, Kinshasa, above all, is a corporeal city; where stone and concrete are missing or falling apart, the city turns to another material, that of the human body. This "human machine" gives some order to Kinshasa's chaos. People's activities as part of a gradual urban development place the body in a new setting, and what was rather more intimate becomes a theater for all. So, Kinshasa is "a city of *flâneurs*, sensual and very proud" people who form a language of protest and hope from the body.^[6]

Hence, Sapeurs are not just exhibiting an unconventional aesthetic, or a frustrated wish to be white, or *evolué*. Fashion is a mission, and they will succeed in it. As Monica Miller says: "The aesthetic matters to black folk not as an escapist dream, but as a weapon."^[7] It is these aspects of fashion, resistance, transformation of the body, and reinvention that interest me. The dynamic and aesthetic qualities of contemporary technology worn close to the body or otherwise monitoring and broadcasting the body become indistinguishable from



Maurice Mbikayi, *Bilele* (Dressing up for the occasion), 2016 / Photograph (detail).



Maurice Mbikayi, *Untitled 1*, 2015. Woven computer cables and wood, 120 × 60 cm.

Fashioning Digital Resistance

fashion as a social trend, taking into account its consumerist nature and impacts. *Techno Dandy* refers to the sartorial “self-re-creation” of black dandies (particularly in the DRC) and their addiction to haute couture and its contemporary techno manifestations.

Circulating Materials

Computer technologies and fashion both are driven by a desire to stay up to date, which can be understood as an addiction, an addiction fed by global circulations—circulations of products that are dominated by Western companies, employed in the context of African self-determination, and often dumped in African sites when discarded. The African continent, and the DRC especially, is an important source for coltan (short for columbite-tantalite), a mineral widely used in technology industries, yet little of the generated wealth remains within the country. Minerals such as coltan return to Africa in the form of products, creating new services, desires, and consumers. In the process of upgrading to higher levels of technology, the developed world often uses Africa as a dumping zone for electronic waste (e-waste) with no regard for the environmental and human impact. For instance, the UN Environment Programme’s 2012 report on waste electrical and electronic equipment (WEEE) legislation showed that 30 percent of the allegedly secondhand products imported to Ghana were useless. Similar arguments can be made for the export of secondhand clothing. Regarding the questions of mining resources and the collection of e-waste in Africa leading to slave labor, I view the subjugation of the “black” African body by consumer culture as “both productive of, and receptive to, the powers of society”—a nonpassive “location on which the technological designs, political and informational elites are imprinted.”^[8] The black dandy, imprinted and imprinting, embodies and defies this analysis. The *Techno Dandy* can be seen as a warrior, inspired by nineteenth-century French and English redingotes (a corruption of “riding coats”) and medieval armor. Covered with black computer keys, the redingote forms a second skin and is accompanied by a top hat, also studded with keys, and a modified walking stick. The shoes are comical and worn with socks woven from colored cables and bandages. The idea of identity reinvention within both physical and virtual spaces also draws from the notion of race—me as a black African man relating to technological and environmental problems, as well as transcending current



Maurice Mbikayi, E-Munkishi, 2015. Computer parts, fiberglass, resin, and fabric, 681 x 200 x 115 cm.

Fashioning Digital Resistance

socioeconomic, political, and racial boundaries. In comparison to fashion, cybertechnology provides more common ground, where identity, gender, and race can be reinvented—or remain unspecified. My performance *Techno Dandy* (2015) expresses this concept of rebirth, linking the past, present, and future.

Modern Computing and Luba Rituals



Luba, *Lukasa* memory board, late 19th or early 20th century. Wood, metal, beads, 25 × 14.6 × 5.7 cm. Place of production: Democratic Republic of the Congo, Brooklyn Museum, gift of Marcia and John Friede.

Luba heritage, art making, and their connection to social effectiveness and human agency is an inspiration to my work on modern computing. According to Luba culture, the outward formal iconography of objects is directly connected to their effectiveness. Both past and contemporary arts are arts of action (as are most traditional African arts). For example, the Luba memory boards called *lukasa* help to maintain and transmit historical knowledge. One can also draw analogies between them and modern-day digital devices and computer motherboards, in terms of their aesthetic value in relation to their social effectiveness. A memory board may be appreciated for its appearance, but it is definitely a communication artefact. “Through *lukasa*, one may learn almost everything that can be known about Luba royalty [...] and in particular, its many expectations.”^[9]

Providing a mathematical map, the *bana balute* (men of memory) run their fingertips across the surface of a *lukasa* or point to its features while reciting genealogies. Beads

compose the inside part of the device and show fractal scaling. They are the actual elements associated with memory, which is partly based on digital coding and color. Reading them is a performance reminiscent of a modern digital device or computer keyboard.

My work *E-Munkishi* (2015) is a large cloak made of fabric, resin, fiberglass, and computer parts. The interior is hollow. The left “hand” holds a scepter, while the right is filled with cables hanging down to the floor. *Munkishi* is a Luba term that means a spirit, either good or bad, at the service of diviners called *bilumbu*. As *bilumbu* perform rituals, using the internet is a daily ritual for many people. Relatedly, I see the body drawn into the virtual world of the internet daily, “a netizen” in a ritual deployed by the power of the computer, TV, smartphone, or tablet screen. The connection I draw between Luba arts and contemporary computing addresses the mutual agency of humans and objects. Human agency refers to people who govern (or resist) the power structure in which they live, as well as objects used as prosthetics, or the elements of power invested in them conventionally but also spiritually, such as scepters, *lukasa*, honorary hats, and pieces of cloth, which define one’s status.^[10]

Mary Nooter Roberts and Allen F. Roberts argue that “if humans determine the meanings, uses, abilities and contexts of objects, then they may also be or become in control of their own destinies. Objects can then be used as forms of resistance, contestation and shifting identity in an ever-changing world.” They conclude, “Luba create and use objects, but in some senses even as they do so, they themselves are created and used by objects.”^[11] This could also be interpreted as the human body being the center of manipulation by devices and virtual community, an understanding of body possessive of and possessed by objects that speaks to the powers of contemporary computing.^[12]

Cyberspace reinforces relations of dominance and subordination between the so-called developed and developing worlds, as well as *within* the latter. We “inhabit conversations as embodied phenomena in the everyday world,” affecting our spoken languages, gaze, and posture.^[13] The body-subject becomes a node within cyberspace—“recipient of collective symbolism”—a space of illusion, metaphor, distance, and change. This proceeds to futuristic notions of human machines, cyborgs that convey the transcendence of the physical body as a matter of reimagination. In borrowing the logic of dress codes and the symbolism of African fractals, as well as the

notion of “mobile blackness,” I reimagine an African digital identity to explore a “futuristic” rebirth in a digital Africa that has transcended social and racial boundaries—a kind of virtual anthropology, related to the electronic personality: a nonliteral expression of style, rhythm, and movement in a space of (trans) formation and bodily reinvention—tactics to visually, bodily, and materially subvert a capitalistic and predatory technology.

[1] This contribution developed out of my MFA project 2015, which consisted of sculptural installations, videos, and images that refer to developments in fashion and access to IT in my home country, the Democratic Republic of the Congo (DRC), with a focus on Kinshasa.

[2] Martial Sinda, *André Matsoua: Fondateur du mouvement de libération du Congo* (Dakar: NEA, 1977).

[3] Filip De Boeck, *Spectral Kinshasa: Building the City through an Architecture of Words*, *Urban Theory beyond the West* (London: Routledge, 2012);

Filip De Boeck, “La ville de Kinshasa, une architecture du verbe,” *Esprit* 12 (2006): 79–105, <http://www.paperblog.fr/4103758/la-ville-de-kinshasa-une-architecture-du-verbe/>; and Filip De Boeck and Marie-Françoises Plissart, *Kinshasa: Tales of the Invisible City* (Ghent: Ludion, 2005).

[4] Michela Wrong, *In the Footsteps of Mr. Kurtz* (London: Fourth Estate, 2000).

[5] Monica Miller, *Slaves to Fashion: Black Dandyism and the Styling of Black Diasporic Identity* (Durham, NC: Duke University Press, 2009), 179.

[6] De Boeck, *Spectral Kinshasa*.

[7] Miller, *Slaves to Fashion*, 147.

[8] Drykton 1996, cited in Chris Shilling, *The Body in Culture, Technology and Society* (London: Sage, 2005), 185; and “African WEEE Report by the UN Environment Programme,” *Waste Management World*, February 20, 2012, <https://waste-management-world.com/a/african-weee-report-by-the-un-environment-programme>.

[9] Mary Nooter Roberts and Allen F. Roberts, *Luba* (Milan: 5 Continents, 2007), 27.

[10] Gell 1998, cited in *ibid.*, 10.

[11] *Ibid.*, 10–11.

[12] Paul Dourish, *Where the Action Is: The Foundations of Embodied Interaction* (Cambridge, MA: MIT Press, 2007), 99–100.

[13] *Ibid.*, 102.

Techno-Dandy:

It would be a mistake to view African enactments of digital entrepreneurship purely as mimicry or façade, for the amalgamation of Western imaginary and local context still produces singular enactments.

Entrepreneur

Figuration of an

African Digital



Techno Dandy

Maurice Mbikayi's sculpture, *Techno Dandy*, solicits a reflection on African digital entrepreneurs. In light of my research interests, *Techno Dandy* evokes for me the interaction of local and global digital capitalisms and the fabrications that emerge. Fabrication here refers to "making," "making up" and "making do." At the global scale both digitization and capitalism are envisioned as part and parcel of a seamless system of technology production that is desirable and replicable in every locale. Zoom into the microscale and you find attempts to syncretize the globalizing model into local modes of existence. In this process, it is remade. Mbikayi has stated that the *Techno Dandy* represents resistance:

Because Africa is changing, the way I use e-waste in my work can be seen as a proposal of [futuristic ideas of blackness]. The Techno Dandy is a concept that expresses rebirth, linking the past, present and future: from a techno trash man, exposed to e-waste dangers, to a techno dandy—from waste to style. It draws from diverse ideologies to represent similar personas, and to subtly insert a mark of resistance against race, technology and capitalism's existential crisis in Africa. My work draws on various ideologies related to African-style, technology and fashion to represent similar personalities.^[1]

Indeed, processes of syncretism have often reflected resistance. Like the dandies of the *sape* sub-culture in Congo historically sought to indicate that they too fit in local colonial aristocracy.^[2] Perhaps what Mbikayi is also getting at is a resistance against depictions of Africa as "other" or lagging behind—that Africans can be modern, and futuristic too. This is a resistance that is constrained to re-writing a received imaginary of modernity. I interpret the sculpture as mirroring Africa's engagement with the archetype of the digital entrepreneur. An archetype that emerges out of a popular and influential imaginary of digital entrepreneurship forged (primarily) in the particular context of Silicon Valley. The *Techno Dandy* is a man, in Western garb. It is suggestive of the attributes one must "put on" in order to be successful at commercializing digital innovation. The character also signifies the mobility of the imaginaries of Western modernity. It is indicative of persistent hegemony that means EuroAmerica continues to imprint its visions and values onto other locales most readily.^[3] Norms and imaginaries diffuse through various mediums. They do so even subliminally and overtly through expectations around behavioral norms,

formal education and the media. These mechanisms of diffusion, which now include digital technologies and platforms, have led us to understand the predominant imaginary of innovation as one of techno-rational solutionism led by disruptive cowboy capitalists. That Mbikayi produces a sculptural costume that is not only Western but consists of attire that signifies elite class—a top hat, loafers, and a suit—is fitting given that digital entrepreneurship is an arena that is most easily accessed by elites, who have been exposed through birth, education and/or travel to networks of capital.

Technological disruptions are characterized as being perpetrated by tenacious entrepreneurs and captains of industry. Through their “creative destruction,” they accelerate economic growth.^[4] Silicon Valley, USA, the place where this meta-narrative is from, is taken for granted not only as a metaphor but also as the standard model. This means that digital entrepreneurs outside Silicon Valley are evaluated and evaluate themselves according to criteria developed over there, thus, entrepreneurs seek to convey through their practices, language, narratives and materialities that they can relate to the archetype and wear it well. Even though their experiences and local contexts differ.

It is one of those things that, when I think about it, maybe what this continent need[s] is some breakthrough technology to happen so that people can be like, “You mean there can actually be a billion dollar business that can come from [Africa]?” Just the way it happens in Silicon Valley, where it’s like, “A bunch of young guys came together [...] na na na,” you know, the way they tell the stories. It’s so funny, I am reading this book on Jeff Bezos of Amazon and literally, what they were going through in terms of tech in the nineties [...] there’s no difference. [...] We’re in 2015, and that’s our story.^[5]

The *Techno Dandy* is a material embodiment of the analogy that actors in Nairobi, Kenya, sought to evoke when they christened the local digital economy arena as Silicon Savannah; same as those in Buea, Cameroon, who call theirs Silicon Mountain. Digital entrepreneurs in Africa differ considerably in their recognition and awareness of how they are shaped by these taken-for-granted expectations. Those who are most aware can articulate how they play strategic games with archetypes and imaginaries in order to attract backing. Entrepreneurs are rewarded financially and through media

coverage for appearing to enact the archetype successfully and by doing so, legitimating the Silicon Valley meta-narrative. It is a modality of mutual legitimation. To maintain its validity, the meta-narrative requires firms to explain their enactments using its terms. Mbikayi's donning of the sculpture, then, can be evocative of strategic performances that digital entrepreneurs engage in to convey legitimacy and draw resources and support from those who expect that digital entrepreneurship will be enacted in a way that is informed by the global capitalist discourse.[6] This includes foreign investors and local policymakers. In this form, it is a disguise. Even though the figure of the Euro-American tech entrepreneur is all pervasive, operating in Africa also grants innovators some autonomy and opportunity for self-determination.[7]

I will also say, there's nowhere else in the world that anyone can literally, our age specifically, have an idea, say we are going to do it, and just do it, even if it is a struggle. There's not any other place in the world where young people of chocolate color can come this far. If we were in Silicon Valley this would not be happening. We would have to work for all these shitty companies for twenty, thirty years, build up a name, then people will give you money, if you have an idea.[8]

While incentivized to adopt the globalized imaginary, local adopters often have to modify it to make it apt in their environment—what Toluwalogo Odumosu calls “constitutive appropriation” and applies to the use of digital technologies, I apply to the adoption of digital imaginaries.[9] Though a model for digital entrepreneurship wrought particularly in Silicon Valley has captured the global imagination, in practice it produces heterogeneous practices and use cases.[10] Thus, while the *Techno Dandy* can be understood as a donning of the archetype of the digital entrepreneur, it also represents a strategic local appropriation and differentiated enactment. It would be a mistake to view African enactments of digital entrepreneurship purely as mimicry or façade, for the amalgamation of Western imaginary and local context still produces singular enactments. Odumosu analyzes a process of constitutive appropriation where mobile phone users develop practices around the use of digital technologies that are specific to their localized context.[11] Similarly, “users” of the Silicon Valley imaginary also develop contextually relevant practices and values. From a distance, the *Techno Dandy* sculpture can appear as constructed from a singular material, even though it is a



Maurice Mbikayi, *Self-portrait 3*, 2015. Photograph (detail).



collage. Similarly, the imaginary of digital entrepreneurship can seem coherent and homogenous, when upon closer inspection it represents multiplicity.

Embedded in globally circulating ideas about what counts as ideal enactments of modernity is a misunderstanding of non-Western knowledges and ways of being as non-modern. Much of the discourse on establishing sociomaterial environments (or in the policy parlance, innovation ecosystems) for digital entrepreneurship specifies mindsets and aspirations that associate digital enterprise with high-value, global technology companies. Entrepreneurs in this fledgling industry need role models and mentors and they will take them from where they can get them. In this case, it means looking outside their proximal context for inspiration:

Yes. I'd say we don't necessarily have any significant background in this industry for these guys to look up to, do you know what I mean? We don't have, in a sense, people who have a professional education. [Aside to software developer, employee]: I don't know, Peter, is there anyone, in terms of tech, is there anyone in the country that you can look up to and be like, "you know this guy for the last fifty years..."? [Back to me]: This is an industry that is so new. There is very little professionalism or even just in a sense a background for guys to be able to look at and say, look at this technological company, and because of this professionalism and principles, they've built an industry that guys can aspire to and take lessons from, you know what I mean. Like the first crop, like the godfathers.[12]

The form of the *Techno Dandy's* aspiration reflects the limited options when it comes to role models. There are no alternative designs for success, or so it seems. In fact there is much that African practitioners can contribute to knowledge about the practice of digital entrepreneurship.[13] Entrepreneurial competency is best developed in context[14] and the dominance of Silicon Valley over imaginations stifles the development of locally appropriate approaches. This is exemplified by the words of an "elder" who offered his wisdom at a gathering of young(er) entrepreneurs in Nairobi. A tech-entrepreneur expressed his perspective that ruthlessness is required for modern business. The elder, not a "techie" but a banker, contradicted this view, instead highlighting the importance of relationships. He also spoke of wrestling with the tension between the sociocultural values that he was taught "at home" versus the

values communicated through formal education, particularly when he studied abroad: “At home I was taught that I owe the society. I battled with these ideas of how does one make money? Why should one make money? I had a folksy way of doing things. If you are not aware that people look at life differently, you may misunderstand intentions. Appreciate that we have different cultures.”^[15] Does the *Techno Dandy*, hold the weight of similar tensions? Mbikayi’s comment on how the “Africanness” of the *Techno Dandy* “subtly inserts a mark of resistance against racism, technological realities and the existential crisis of capitalism in Africa” suggests that it does. The banker went on to explain that from his perspective, “only unsuccessful capitalism has the characteristics of brutality. It is not a recipe of a successful society. [...] Part of the legacy of colonialism is that you never saw proper capitalism. You saw imperialism.”^[16] It’s worth noting that the prevailing sentiment in many critical social science discourses is that capitalism and imperialism are linked.^[17] Can imbuing these systems with “Africanness” redeem them? Clapperton Chakanetsa Mavhunga offers that digital enterprise at least, is already African. The startup—and certain aspects of its meta-narrative, like bootstrapping, making do and reliance on shared resources—are attributes often characterized as African modality.^[18] Belief in the correlation between the Silicon Valley imaginary and the startup overlooks that in this specific way digital enterprise is a good fit for supposedly “folksy” African locales. The figuration of the digital entrepreneur as a Euro-American inspired capitalist might be fashionable, but it is increasingly revealed as often alienating to technology users, workers, and the many kinds of digital entrepreneurs who are not included in the imaginary of mass consumption and global market domination. Digital workers of the “gig” economy in particular are beginning to question their fate in the supposedly liberating platform economy, which, rather than connecting customers and workers more directly, is opening a portal to a past of unprotected working classes. One could also analyze the *Techno Dandy*’s construction from e-waste materials as hinting at these extractive and consumptive patterns in global technology production. The initial reaction to the adoption of digital technologies was one of great, technodeterministic optimism, but how old patterns of global and local exploitation and domination are replicated in the digital economy is becoming more apparent. There are many ways to read the *Techno Dandy*. Cues from the artist invite us to imagine an “Africanness” that can withstand the worst

effects of racial capitalism. On the other hand, it can also be apprehended as the condition of “double consciousness” described and theorized variously by DuBois and Fanon, where marginalized actors express two different personas; one of which is learned from the powerholders.[19] From my chosen lens, the *Techno Dandy* signifies persistent hegemony of Western norms and yet is a reminder that there is no singular figuration of the digital entrepreneur. It represents the ability of Africa’s digital entrepreneurs to adapt “universal models” to local modalities. The *Techno Dandy* is a collage—a collage that represents the multiplicities and amalgams that already exist in the performance of digital entrepreneurship in Africa.

[1] Maurice Mbikayi, *Mupia–Mupia*, Fondation Friedrich Naumann, Dakar, Senegal, May 3–June 2, 2018, <https://www.contemporaryand.com/exhibition/maurice-mbikayimupia-mupia/>.

[2] Ch. Didier Gondola, “Dream and Drama: The Search for Elegance among Congolese Youth,” *African studies review*, 42, no.1 (1999): 23–48.

[3] Doreen Massey, “Power Geometry and a Progressive Sense of Place,” in *Mapping the Futures: Local Cultures, Global Change*, ed. J. Bird, B. Curtis, T. Putnam, and L. Tickner (London: Routledge, 1993).

[4] M. E. Porter, “Clusters and the New Economics of Competition,” *Harvard Business Review* 76, no. 6 (1998): 77–90; J. A. Schumpeter, *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process* (New York: McGraw-Hill, 1939).

[5] Entrepreneur in Nairobi, interview by the author, 2015–16.

[6] S. Katila, P.-M. Laine, and P. Parkkari, “Sociomateriality and Affect in Institutional Work: Constructing the Identity of Start-Up Entrepreneurs,” *Journal of Management Inquiry* 28, no. 3 (2019): 381–94.

[7] Nicholas Friederici, Michel Wahome, and MarkGraham, eds., *Digital Entrepreneurship in Africa: How a Continent Is Escaping Silicon Valley’s Long Shadow* (Cambridge: MA, MIT Press, 2020).

[8] Entrepreneur in Nairobi, interview by the author, 2015–2016.

[9] Mark Graham, “Contradictory Connectivity: Spatial Imaginaries and Technomediated Positionalities in Kenya’s Outsourcing Sector,” *Environment and Planning A*, 47, no. 4 (2015): 867–83.

[10] Michel Wahome and Mark Graham (2020) Spatially shaped imaginaries of the digital economy, *Information, Communication & Society*, 23:8, 1123–38. The following explanations are based on my studies on digital entrepreneurs in six African cities and in particular a year-long ethnography, which I conducted in the years 2015–2016 to prepare my doctoral thesis on the topic of arenas of development.

[11] Toluwalogo B. Odumosu, “Interrogating Mobiles: A Story of Nigerian Appropriation of the Mobile Phone” (PhD diss., Rensselaer Polytechnic Institute, 2009). Odumosu, “Interrogating Mobiles”; Toluwalogo B. Odumosu, “Making Mobiles African,” in *What Do Science, Technology, and Innovation Mean from Africa?*, ed. Clapperton Chakanetsa Mavhunga (Cambridge, MA: MIT Press, 2017), 137–50.

- [12] Entrepreneur in Nairobi interview.
- [13] Lucy Suchman, "Anthropological Relocations and the Limits of Design," *Annual Review of Anthropology* 40 (2011): 1–18
- [14] Michael Zisuh Ngoasong, "Digital Entrepreneurship in a Resource-Scarce Context," *Journal of Small Business and Enterprise Development* 25 (2018): 483–500. Friederike Welter, "Contextualizing Entrepreneurship—Conceptual Challenges and Ways Forward," *Entrepreneurship Theory and Practice* 35 (2011): 165–84.
- [15] Investment executive at national bank, community meeting, 2015–2016.
- [16] Ibid.
- [17] Mbikayi, *Mupia–Mupia*.
- [18] Clapperton Chakanetsa Mavhunga, ed., *What Do Science, Technology, and Innovation Mean from Africa?* (Cambridge, MA: MIT Press, 2017).
- [19] W. E. B. Du Bois, *The Souls of Black Folk*, (1903). Frantz Fanon and C. L. Markman, *Black Skin, White Masks* (1967).

Fragmentation

Internet- und Mobiltelefonn Internet and mobile phone

	Mobilfunkabonnements pro 100 Einwohner/ Mobile phone subscrip per 100 inhabitants
Welt / World	101
Deutschland / Germany	115
Afrika / Africa	75
Senegal	99
Südafrika / South Africa	142
Togo	75
Ghana	140
Kenia / Kenya	81
Simbabwe / Zimbabwe	83
Nigeria	82
Gambia / Zambia	75
Demokratische Republik Kongo / Democratic Republic of the Congo	40
Gabun / Gabon	144
Marokko / Morocco	120
Mosambik / Mozambique	



Connection

Connection



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Fragmentation

Marokko/Morocco

144

120

Digitalizing

If communities do not shape their digital practices with intent to foster the positive rather than the negative, these practices can intensify divisions that exist offline and undermine trust in critical institutions.

Election in the World

Trust? Lessons from the

Most Expensive

Digitalizing Trust?

Kenya's 2017 election was supposed to showcase the digitalization of the country's electoral system. This process was part of the political settlement to end the cycle of election violence that had plagued the country since 1992, culminating in the brutal aftermath of the 2007 election. It was not the same organic process that had led to the development of e-government systems, for example, but was rooted firmly in Kenya's history of violent elections and was the apogee of a decade-long effort of trying to develop a better, less violent system of choosing political leaders. Specifically, the goal of organizing a digital election can be traced to the Kriegler Commission, a Kenyan institution that was tasked to point ways out of election violence. The commission's championing of digitalization was in part based on the idea that computers could make the elections more transparent and standardized, which would make it easier for political opponents to accept results and in turn less likely to instigate violence.

The Kenya Integrated Election Management System (KIEMS) was the core of this process of digitalizing the 2017 election. It was supposed to help solve a deep crisis of trust. These high hopes were based on the idea that computing can somehow substitute institutional trust. Technology, the promise goes, can establish supposedly unbiased, immediate relations between voters, votes, and counts so that one no longer has to trust in the democratic institutions that are conventionally tasked to ensure that elections are fair and transparent. In hindsight, digitalization of the election clearly failed to resolve the crisis of trust. KIEMS did not deliver unquestionable results, and the computerization of the election further undermined Kenya's democracy. In fact, the digital opened up Kenya's election to unprecedented attempts at interference, including digital manipulation of political opinions by foreign companies. In the end, Kenya's 2017 election taught the world one key lesson: you cannot use technology as a short cut for creating public trust.

Killing Trust

On Friday, July 28, 2017, Chris Msando, the acting head of Information and Communications Technology at the Independent Electoral and Boundaries Commission (IEBC, the independent agency that oversees elections in Kenya), gave a demonstration of KIEMS. It wasn't the first time Msando had appeared on television to talk about his hope that technology he had helped design and roll out would shape this pivotal vote. But it was an important appearance because he was forced to explain some

major changes to the infrastructure, including what would happen after a court ruled that the National Tallying Centre (NTC) was not allowed to alter electoral results.

Msando's family said that because it was a Friday, they didn't think much of his radio silence after the studio appearance. His brother Peter told a journalist they thought he was probably "blowing off steam" after another intense day of election preparation.^[1] On Saturday morning, however, the official Twitter handle of the IEBC tweeted "One of our ICT Managers has gone missing. The Commission is working with Police and family to establish his whereabouts."^[2] Still, Msando's family did not worry. Nightclubs in Kenya frequently remain open until daybreak so that patrons don't have to drive home in the dark. Many have "lodgings" attached to them—bare bones rooms where a drunk patron can sleep off the alcohol and, yes, maybe even pay for sex. Regardless, it is not unusual for a person who was at a club on Friday night not to show up until Saturday afternoon. Still, the IEBC tweet sent Kenya into a tailspin of speculation given that the election was just around the corner.

At 1 a.m. on July 31, Peter received a message on WhatsApp with a picture of his brother's car parked on the side of a highway that snaked away from the central business district. It wasn't a road that led to their home—it led in the opposite direction. Peter quickly forwarded the information to the Directorate of Criminal Investigations, who sent officers to the area to investigate further, but he already knew what they would find. The portly, bespectacled techie in charge of delivering Kenya's first fully integrated digital election was dead.

The full impact of Chris Msando's murder was lost in the maelstrom of Kenya's chaotic 2017 election, but it was a potent symbol of how the system had failed to deliver the promise of heightened trust. A preliminary autopsy revealed that Msando had deep scratches in his hands and on his back. Wafula Chebukati, chair of the electoral commission, said in a press conference on August 1, after helping identify the body, that there was no doubt that Msando was tortured and murdered. Investigations into the killing may take years and never fully reveal the exact details, but the murder speaks to the toxic environment in which the highly contested election happened, underscoring that the ICT infrastructure was also affected by political realities. Msando was not a security expert. He was not a police officer or a soldier. He was a bureaucrat who was overseeing a technical aspect of elections. Bureaucrats being murdered in the course of their work is a sign that something has gone terribly wrong.

A Crisis of Trust

Trust is a key part of a functional democratic system. When it comes to elections, people vote because they trust that the people running the election will respect their decisions and deliver the leaders that they have chosen. But Kenya has a history of manipulated elections so insidious and pervasive that they have especially eroded the trust that political players have in the system. The actual voting process in Kenya is almost always peaceful, even under the highly contentious *mlolongo* (queuing) system. Problems always arise after the vote: in maintaining peace around the election in the 1992, 1997, and 2013 elections; and in protecting the integrity of the tallying system in 2007 and 2017. In many ways, these last two elections bookend the decade, because the same issues that threw uncertainty in 2007 recurred in 2017: How do we count votes in a way that survives both public scrutiny and the politicians?

Every five years, without fail, voters are expected to trust fully a public institution that willingly forfeits its own credibility by announcing dramatic changes to procedure with hours left to go to a crucial vote. The opposition feels helpless and panicked because they—generally rightly—suspect that the commission is working in tandem with the ruling party. And the ruling party papers over genuine concerns because the confusion ultimately works in its favor.

It's also worth noting, however, that the opposition also made undercutting public trust in the IEBC's system a cornerstone of their campaigning. Often times, the IEBC gave them ammunition. For example, the process through which the biometric voter registration (BVR) and electronic voter identification (EVID) kits were procured was not up to standard. By law, the IEBC is supposed to invite competitive bids for the procurement of such services. But according to local media reports, the French company OT-Safran Morpho was awarded the contract after a single-sourced bid, meaning no other companies were allowed to tender.^[3] Further investigation revealed a multiyear contract that runs until 2020. The firm made a copy of the Kenya voter register as part of its work and retains it as proprietary material.^[4] The Kenyan auditor general also raised concerns about the financial details of the transactions when they were first entered into in 2013. Yet, despite these questions and despite the repeated failure of the kits, OT-Safran Morpho retained its contract.

Sticking to the technological standards required by law would have gone a long way toward making the 2017 election



Officials from the Independent Electoral and Boundaries Commission (IEBC) records finger prints of a man as they collect data from the electorate during the launch of the 2017 general elections voter registration exercise within Kibera slums in Kenya's capital Nairobi, January 16, 2017.



more credible than previous ones. Instead the IEBC chose to push on long after it had become clear that far from providing solutions, the digitalization of the voting procedure had introduced new procedural and operational issues.

This was particularly aggravating considering the total cost of the election. Even though in 2017, Kenya had only 19.2 million voters, compared with the United States' 126 million or India's 214 million, at \$28 per capita, Kenya's election was more expensive than those in both countries. On top of these expenses, both major political parties invested heavily in hiring IT experts and consultants.

Contrast Kenya's multimillion-dollar fiasco with the Gambian election in 2016, in which the authoritarian ruler of twenty-two years, Yahya Jammeh, was voted out through a system that used marbles.^[5] The trust doesn't come from the form of the technology but in its transparency, scrutability, and verifiability. Technology cannot purchase public trust—it has to be earned.

In Kenya in 2017, the opposite took place. In parallel with KIEMS's failure to establish trustworthy procedures, digital tools were employed to deliberately aggravate ethnic and political tensions by microtargeting the electorate online with divisive content. Such strategies of targeting voter sentiments to actively undermining trust and compartmentalize truth for political gains are now a well-established part of politics. Kenya's 2017 election was one of the early "laboratories" where those tactics were first trialed and tested.

Undermining Trust

Much of the discussion around Kenya's election violence has centered on ethnicity, and the idea of the ethnic group as the main spoiler toward achieving "real" democracy. But these analyses miss the reality of how ethnicity works. In fact, what ethnicity does is provide alternative conduits for creating and reinforcing social trust: conduits that inherently challenge the stability of the central state. Belonging to an ethnic group demands similar forms of loyalty and allegiance to those demanded by the centralized Westphalian state, and this contestation challenges the process of remaking countries like Kenya in the image of the Westphalian state.

At the same time, ethnic identities are highly influenced by elections and other major political events in a mutually reinforcing cycle. In moments of instability and uncertainty, when state institutions fail to inspire trust, and corruption is rampant, many Kenyans will turn to people from the same

Digitalizing Trust?

ethnic background for a social safety net, as a guarantee of unquestioned loyalty. Moreover, rather than appealing to unity, election campaigns on all sides try to exploit and aggravate these divisions for political gains—to pivot the loyalty of the voter away from the central state and toward the smaller and much more easily influenced ethnic group.

These practices are increasingly influenced by developments in the digital space. Microtargeted spin campaigns on social media played an important part in the 2017 election, reinforcing ethnic identities and hardening ethnic sentiments in Kenya. These campaigns are built on the backbone of the targeted advertising that social media enables, where instead of blanket advertising and marketing campaigns that run on traditional media, users' preferences are harvested and they are sent advertising content that uniquely responds to their interests and background. In the political space this means that users are receiving political information that does not situate them in the broader political space, messages that target a person's unique identity and public profile.

In fact, the unresolved crisis of trust in Kenya's political and election system arguably created the ground for a digitally mediated politics of ethnic division. Ethnic identities are not fixed, and this malleability, not some form of rootedness, makes them potent material for divisive spin, propelled by the speed, stratification, and immediacy of social media. Microtargeting, particularly of political information, is the logical next step following institutional failure to restore trust: the systematic erosion of a central political narrative after its custodians have failed to protect it. And as a result, technology alone cannot fix it. Attempts to shift political accountability into the digital realm simply failed, backfired, or were exploited to incite ethnic division and hatred.

The Other Side of the Equation

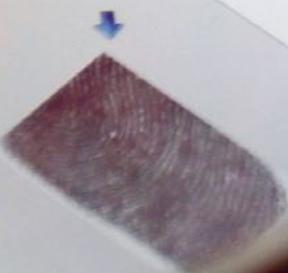
The good news from Kenya is that digital spaces can help as much as they hurt, particularly when it comes to the place of ethnicity in politics. First, given the right circumstances, these spaces allow individuals to publicly surmount differences to create communities of collaboration independent of ethnicity around various issues, such as the women's rights movement or fundraising for various causes, which in turn undercuts the apparent immutability of supposedly conflicting identities. Social networks are allowing people who want to operate



An official from the Independent Electoral and Boundaries Commission (IEBC) uses an electronic voter identification machine to check a voters' status at a polling station during a presidential election re-run in Nairobi, Kenya October 26, 2017.



Identification Failed!
please retry!



outside the arbitrary lines that ethnicity draws in society to find each other and build new ways of belonging.

Second, in countries where the physical public sphere is strongly controlled by the state, the digital public sphere takes on monumental importance, especially in coordinating public action. In Kenya, where the press is strongly controlled and influenced by the state, activists have used social media to mobilize for protest, even when traditional media refused to cover stories. For example, the hashtag #StopExtrajudicialKillings was used to mobilize national protests in the first week of July 2016 against the kidnapping and murder of three individuals by administration policemen.^[6]

Such visible instances of interethnic collaboration are critical to deconstructing and reconstructing ethnicity, because they allow individuals to see that alternatives ways of organizing public life are possible. This public performance of new ways of being and belonging also enables people to see that they have a significant amount of agency in deciding how they would like public life in their country to be organized. It allows the outliers to find each other and coalesce into a recognizable force.

Individuals, for example, routinely disprove claims that ethnic group X has vastly profited from having one of their own in power and substantiate it with evidence in the form of video recordings, articles, or at least anecdote. Many go as far as directly confronting elected leaders—tagging them in posts that undercut their arguments—to show that blind allegiance to the ethnic group is not the blanket protection that political leaders promise. Digital platforms thus allow people to experience trust across ethnic groups, reducing the need to collapse back into the ethnic group as the catch-all political safety net. Digital spaces can bridge ethnic divisions and demonstrate that building trust around shared issues, frustrations, and dreams is possible, but the question remains how sustainable this is when institutions fail to provide stability.

Building or Undermining Trust Online?

While the government at times actively undermines progressive politics online, it is careful not to damage Kenya's reputation as a technological mecca. As long as the government wants to celebrate m-Pesa and Ushahidi as successes of Africa's silicon savannah, the state will need to maintain a healthy share of digital freedom. This gives activists and organizers in Kenya more latitude than their compatriots in many other

Digitalizing Trust?

developing countries. Still, state institutions are far from supporting the emergence of collaborative spaces online and have arguably done much to undermine them. The Kenyan legislature, for example, has used real concerns over managing hate speech to create legislation designed to punish those who criticize the state. The Misuse of a Telecommunications Device Law was passed ostensibly to help manage harassment and threats online. In the end, it was declared unconstitutional in 2016 because in its short life span it had been used primarily to punish people who dared criticize the government or its representatives.

It is also instructive that the regulatory agency made social media the prime target of its regulation efforts around the 2017 election, even though traditional media still have a far wider reach outside urban centers and remained the main channel for frequent hate speech. Local language radio stations, for example, have been used to mobilize ethnic chauvinism and to incite violence against people seen to be “outsiders” in certain areas. A 2017 report from the Election Observation Group Media Monitoring Project found that Kameme FM, a radio station owned by President Uhuru Kenyatta through his MediaMax company, had the highest rate of hate speech in the lead-up to the 2017 election.^[7] While social media have been targeted by often counterproductive regulation efforts, to date, no punitive action had been taken against radio stations such as Kameme FM.

Infrastructures of Nonaccountability

Besides the failure of state institutions to support progressive conversations online, there is also the question of how sustainable such spaces are, given that they run on infrastructure largely owned by foreign multinationals. Cambridge Analytica’s interference in the Kenyan elections, and the ability of the French company OT-Safran Morpho to effectively privatize Kenya’s voter register, show the extent to which foreign-registered corporations have meddled in the Kenyan election. Ultimately, these corporations are not accountable to Kenyan voters, or even Kenyan shareholders. Kenya’s Cambridge Analytica election scandal, for example, prompted full-page apologies in newspapers in Europe and North America but not in Africa. The most powerful social media are US-listed companies directly answerable to the legislature and electorate there. Of the three biggest, only Google has a long-standing presence in Africa—Facebook opened its

Johannesburg office in 2015, and Twitter runs its Africa operations from London.[8]

Brenda Nyandika Sanya's feminist critique of technology is instructive here. She insists that we "move away from universalizing representations of social change and [center] localised agendas," but how do we do that when localized agendas rely on asymmetric global infrastructures?[9] What should the millions of people around the world do, those who rely on these platforms to organize political protests, challenge dominant political narratives, or simply find new ways of being and existing within their societies? Where can they go and file their grievances? Who will speak up for them if the corporations don't even care enough to apologize for potential harms? And how can they protect their digital presence online from insufficiently regulated and largely unaccountable foreign political and commercial interests?

Kenya's much-vaunted multimillion-dollar digital election flopped and tragically failed to renew much-needed trust in the nation's democratic institutions. This puts into question a key digital imaginary: that the digital can substitute institutions by introducing seemingly direct peer-to-peer connections between people, or in this case, voters and their votes. Kenya's digital election showed how vulnerable the digital remains as a space when it is primarily dominated by corporate interest. If communities do not shape their digital practices with intent to foster the positive rather than the negative, these practices can intensify divisions that exist offline and undermine trust in critical institutions.

This is the key lesson of Kenya's first digital election. The digital cannot create what doesn't exist in the analog: it cannot build trust from thin air, particularly where there is a concerted attempt to undermine it, and it cannot transform an imaginary independently of the intent of the people who exist within it.

This text is an adapted version of chapter 9 of Nanjala Nyabola's book *Digital Democracy, Analogue Politics: How the Internet Era Is Transforming Politics in Kenya* (London: Zed Books, 2018). Reprinted with kind permission of Zed Books Unlimited.

[1] Tamerra Griffin, "Who Killed Chris Msando?" *Buzzfeed News*, October 5, 2017, https://www.buzzfeed.com/tamerragriffin/kenya-chris-msando-murder?utm_term=.tbeXxB7Ew#.krl3QRVel.

[2] IEBC (@IEBCKenya), "One of our ICT Managers has gone missing. The Commission is working with Police and family to establish his whereabouts," *Twitter*, July 30, 2017, 5:48 a.m., <https://twitter.com/IEBCKenya/status/891611472048115712>.

[3] See John Kamau, "Puzzle of French Hand in Electoral Body's Deals," *Daily Nation*, April 1, 2017, <http://www.nation.co.ke/news/puzzle-of-french-hand-in-iebc-deals/1056-3873860-h82288z/index.html>.

[4] Informal interview, Nairobi, August 2017.

[5] See AFP, "Gambia Vote a Roll of the Marbles," *Telegraph*, November 29, 2016, <https://www.telegraph.co.uk/news/2016/11/29/gambia-vote-roll-marbles/>.

[6] See Lily Kuo, "Kenya Police Are Routinely Executing Citizens and the Public Is Finally Saying Stop," *QZ*, July 4, 2016, <https://qz.com/723039/kenyan-police-are-routinely-executing-citizens-and-the-public-is-finally-saying-stop/>; and Elizabeth Shoo, "Kenyans Protest to #StopExtrajudicialKillings," *Deutsche Welle*, July 5, 2016, <http://www.dw.com/en/dwnews-kenyans-protest-to-stopextrajudicialkillings/av-19377983>.

[7] See Ramadhan Rajab, "Kameme FM Leads in Hate Speech, Media Survey Shows," *Star (Kenya)*, July 7, 2017, https://www.the-star.co.ke/news/2017/07/07/kameme-fm-leads-in-hate-speech-media-survey-shows_c1591993.

[8] See "Facebook Opens Its First Africa Office in Johannesburg," *BBC News*, June 29, 2015, <http://www.bbc.com/news/world-africa-33310739>.

[9] Brenda Nyandika Sanya, "Disrupting Patriarchy: An Examination of the Role of e-Technologies in Rural Kenya," *Feminist Africa* 18 (2013): 12–24, here 16.

What Makes a Revolution “Real”? A Discussion on Social Media and Al-Thawra

تورة I've been watching the thawra [...] through Facebook, along with news and a few phone calls. Differently from the uprisings of 2011–2013 when I was in Sudan, this time my newsfeed was just a kaleidoscope of patterns that I couldn't fully make sense of.

● Revolution “Real”? A Discussion on Social Media and Al-Thawra

In December 2018, protests against the Sudanese government rose in waves, spreading throughout the nation. They took off in smaller towns, east and west of Khartoum, and grew from a patchwork of neighborhood demonstrations to fill central thoroughfares downtown. The protests reached a peak on April 6, 2019—the anniversary of the April 1985 uprising—when they turned into a sit-in in front of the military headquarters in Khartoum, *al-qiyāda al-āma* القيادة العامة. Throughout, protesters faced armed men atop Toyota pickup trucks, chasing them with sticks, guns, and teargas; at the sit-in, they faced snipers randomly shooting at them and threats by military forces to disband. Learning from past Sudanese revolutions, and afraid their movement would be hijacked as the Arab Spring movements had been, the protestors determined to stay until their goals were fully achieved.

The sit-in was instrumental in toppling President Omar al-Bashir on April 11, 2019. Members of the Transitional Military Council (TMC) that succeeded him also stepped down in response to the pressure. The Forces of Freedom and Change (FFC), a coalition of parties, armed groups, and organizations opposing the old regime, entered into negotiations with the TMC. The TMC vowed not to fire a single bullet at protesters and to acknowledge the role of the FFC, including the Sudanese Professionals Association (SPA), a union of unions, which had grown into a central organizational platform for the protest movement, next to a network of resistance committees and other civil initiatives. On June 3, however, a deadly crackdown brought the sit-in to a tragic end. The protestors mourned, picked themselves up again, and kept chanting “peaceful, peaceful,” as they buried their loved ones. Alas, the horrendous massacre was nothing but a new brand of the same violent tactics that the old regime had used to establish a deeply entrenched security state and subdue its opponents. But the FFC, the resistance committees, and other protesters maintained their focus. A new surge of protests on June 30 and a campaign of civil disobedience, along with international pressure, led to an uneasy compromise. On August 17, the TMC and the FFC signed an interim constitutional document, agreeing to the principles of a transitional government that would lead the transition to democracy over three years.

The editors of this volume on digital imaginaries came across a blog post by Amal Hassan Fadlalla, a Sudanese American professor in the United States who has written on media campaigns and diaspora. This prompted them to encourage a conversation between Amal and two other

anthropologists, Enrico Ille, a non-Sudanese observer on the ground living in Sudan for many years, and Siri Lamoureaux, an American in Europe who has written previously on social media in Sudan, and who took the lead in this email exchange. Timm Sureau, a European researcher on Sudan working on digital border surveillance in Europe, also joined the conversation at a later stage. The authors don't seek to finalize any debate or argue extensively for one point. Rather, through an email conversation over several months, they discuss various practices of engaging in this revolution, orbiting around its physical expressions, digital representations, symbols, patterns, online and offline manifestations, and questions of security and surveillance. The revolution is ongoing, and so is the conversation.

From: Siri
To: Enrico; Amal
Subject: Silence and voice

Dear Enrico, Dear Amal,

It's been awhile!

First of all, Enrico, are you safe?? Please send news if you have internet access! I can barely believe what I'm seeing. I thought "it" was really happening but then that massacre!

Amal, I've seen your blogs on the protests and the role of the diaspora. Since Enrico is in Sudan and Amal is in the US, I'm wondering if you both can help me understand what is going on from your respective locations.

I've been watching the *thawra* ثورة 'revolution' through Facebook, along with news and a few phone calls. Differently from the uprisings of 2011-2013 when I was in Sudan, this time my newsfeed was just a kaleidoscope of patterns that I couldn't fully make sense of. It was flooded with so many attempts by activists to symbolize the mass protests, seek recognition and support and debate or denounce aspects and strands of the movement.

For example, I saw a number of Facebook comments about the courage of those who attended the sit-in, and those who stayed home, perhaps merely changing their profile picture to blue in solidarity #BlueforSudan, the favorite color of a martyr, a young protestor killed in the sit-in. Another post from a Sudanese friend in New York City read, 'My body is here and my heart is there, and I'm casting between this and that'. I saw a posted picture of a family of four Europeans at the sit-in. The comments mocked them, said they were typical

What Makes a Revolution “Real”?

khawajāt ‘whites’, coming down to take pictures, and ‘turn everything into a picnic’. Images of the sit-in looked like Woodstock, with peace signs, *Tasquṭ bass* #تسقط_بَس ‘just fall’ slogans, singing and dancing, a scene of harmony and unity. But then I also saw ‘friends’ being ‘outed’ on Facebook, along with warnings, ‘Don’t tell that guy anything, he’s been working for security’ to the horror of others who had welcomed the suspect into their circle of confidence in the early days. I’ve been wondering about all these debates over authenticity, about motive and trust, who’s there, and who’s allowed to be there and what might be the heart and soul of this revolution, especially when the sit-in was attacked and dispersed on June 3rd?

Take care!

Siri

From: Enrico

Re: Silence and voice

Dear Siri,

Thanks for your email. I am fine, thankfully nobody was killed or hurt around me but it was quite a bumpy ride. Now that some time has passed and things look hopeful, I guess I can try to make some sense out of what happened. From my perspective, *silmiyya* سلمية ‘the principle of non-violence’ was a defining feature of how this protest took physical shape. For example, burning tires was, next to marching or standing human bodies, the only physical demarcation of protests. After a rather explosive start when an NCP [National Congress Party] office burnt down in Atbara—now rebuilt as a hospital—violence was contained, and non-destructive forms of protest established a presence in public space. So, the sit-in was actually the climax of a slow, successive conquest of public space that had been going on since December. In the first months, only a few walls were used for slogans or calls to demonstrate or strike, but they showed their force as steady messengers when mass mobilization took off in March and April. While some old, beautiful façades suffered in the process, new façades were created in the sit-in area in front of *al-qiyāda al-‘āma*, a sprawling forum of political, social and artistic expression. Several of the walls were painted white by the same military forces who claimed, inconsistently, that the massacre had been a faux pas by the unauthorized few. Since the political settlement was reached, artists have reoccupied them with wall paintings again, now with remembrances of how they had been removed.

Best wishes,
Enrico

From: Siri

Re: Re: Silence and voice

So, if I understand you, the sit-in was the pivotal point of the movement? It's certainly not possible to imagine the perseverance of the protests in whatever form without that visual and physical epicenter as a sort of public testimony and tribunal holding the government accountable in its very presence, not to mention those murals! What a change from the Sudan that I knew, where an unexpected splash of color or idiosyncratic expression wasn't appreciated in a public space of muted colors, sounds, movements—with few exceptions of course, for example linked to Sufism, or art events with guest lists and security, behind closed doors. This time there was singing, dancing, rhythm and visible joy, which were all only ambiguously tolerated during the al-Bashir time.



Murals, Khartoum (SD), May 4, 2019.

From: Enrico

Re: Re: Re: Silence and voice

This uprising is something that goes far beyond the sit-in. The insistence on the right to make oneself publicly visible and heard was one of the core battlegrounds of the revolution. In the beginning, it was easy for security forces to contain the challenge, and disperse people. Even after it had become a mass movement, thinning crowds and remaining individuals were violently attacked once the goon squads felt secure. In fact, the crucial moments after the massive April 6th demonstrations were when a few people remained at the army headquarters, running and crawling from showering bullets every night. Family members spent those nights in tense anticipation, awaiting new messages, tweets or posts, and only when a knock came at the door could we hope that loved ones had safely returned.

The distance between the event and the tweet, between hearing the sound of the knock at the door and actually being there, is emotionally stressful because of the distance to real events that remains, even with SMS, tweets or *livāt* 'live podcasts' [in Arabicized English] as tools of approximation. This distance leaves unclear what is going on, whether to

What Makes a Revolution “Real”?

prepare oneself . . . or to find relief knowing that loved ones are well. This appears to me, from very personal experience, the core of uprisings’ painful uncertainty: the presence of masses or individuals remains an urgent but ultimately unattainable need, for those who want the movement to grow, as much as for those who aim to suppress it—everybody needs to know where somebody is, whether security forces trying to predict gatherings, demonstrators trying to gather, or friends and family trying to get ahold of each other—to gain this information there are always limits, of technology, of resources, of mobility, in short, there remains, unavoidably, a political economy of access.

Best,
Enrico

From: Siri
Re (4): Silence and voice

Amal, we saw your two pieces on *livāt*. We would like to have your input. Do you want to chime in here? See below. Again, hoping you’re well. . . ?

From: Amal
Re (5): Silence and voice

Hi Siri and Enrico, . . . Yes, it’s a very stressful time! I followed the protests by watching daily *livāt* broadcast from the sit-in. One podcast showed a young protestor called Salah, recording while being trapped in a tent. Salah spoke about the loud gunshots he was hearing and how he could not get out. He bravely stated, “If I die, keep an eye on this country.” These young men and women were acting as savvy global citizens and citizen journalists, using the power of social media to document their own struggles. Social media enabled them to send their voice out when international media was not fully engaged, and when Sudan’s pro-government media was biased. So, social media has been critical, for the diaspora especially.

All the best,
Amal

From: Siri
Re (6): Silence and voice

I imagine that was terrifying, waiting for people you know to get in touch, or send their next podcast. Indeed, the silence is just as powerful as the voice. So, what happened to Salah, the protester in the tent?

From: Amal
Re (7): Silence and voice

We don't know if Salah lived or died. What I find important is that he recorded what he saw and he sent it out for people to witness. After the massacre and cutting of internet services, the TMC sent militia and police into the streets of the capital to further silence activists. *Livāt* and other social media exchanges did the work of erasing physical distance and making the revolution more visible, which may have contributed to the TMC decision to cut internet service. Without the power of social media, the international community might have engaged even later.

I think this violent experience taught protesters, first, that the sit-in was just one card among many that protesters used to sway the military to their side. Second, the protest had to continue or the revolution would die. So, despite continuous crackdowns, deaths, and detention, protesters vowed to commemorate the symbolic site of their protest by turning the whole country into sites of peaceful protests. In previous revolutions, the capital Khartoum was the epicenter of protests, although some parts of the country were also involved. This time the protests emerged from all cities, towns, and rural areas. But social media, in particular, opened the revolution to the whole world and made mainstream media listen. And importantly social media connected Sudanese protesters at home with Sudanese in the diaspora. The diaspora, in turn, played an important role in making the voices of protesters heard globally. Although the main protest site has been cleared, *livāt* and other social media showed the continued mobilization of protesters in Khartoum and in other towns, that reinforced their demands for a peaceful transfer to a civilian-led government. So, it was a multi-sited protest.

From: Siri
To: Amal; Enrico
Subject: Symbols and patterns

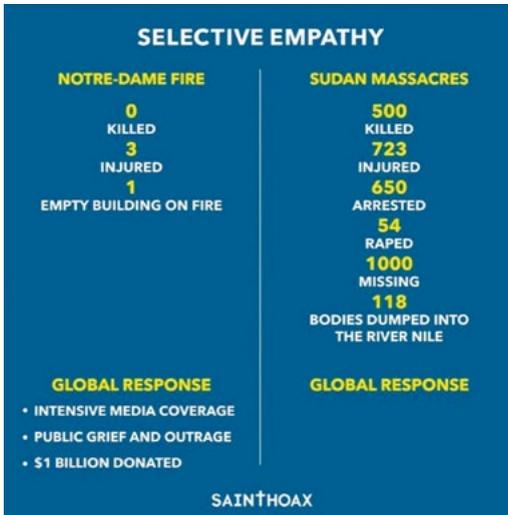
Dear Enrico, Dear Amal,

So, just picking up where we left off a month ago. . .
. As you know well, the revolution didn't end and people continued to organize through neighborhood committees during that month when there was no internet at all. This leads to another related question that I wanted to discuss—what one can gather from images and hashtags

What Makes a Revolution “Real”?

versus dodging bullets in the streets. I only ran from tear gas once in my life, never a bullet, but still my experience was somewhere in between anger, euphoria and fear. In watching these events through Facebook, I couldn't possibly relate on so many levels. The online imagery takes on a life of its own, and moves at times with and at times against actions on the ground. For me, outside Sudan, the turning point was when I saw those masses of people on the very road I used to walk down to the University of Khartoum every day. I could make sense of that physicality, that sensation, smell of car exhaust and roasting coffee. We connect with what we know.

Since I live in Paris, one post in particular caught my attention. It followed the June 3rd attack on the sit-in. It compared the global concern for the burning of the Notre Dame Cathedral with that of the massacre in Khartoum, when over 100 people were killed and raped, and bodies were dumped in the Nile. The post read:



Saint Hoax, *Selective Empathy*, tweet, June, 13, 2019.

While nobody would disagree that humanity outranks empty buildings, it's hard to know how to digest these appeals, how factual are they? Can such things even be compared? I wasn't sure if this was a 'forward' or an eyeroll. Social media isn't only about citizen journalism, it is about competing claims for truth and attention, especially, as we all know, given the problem of authenticating or fabricating stories or images, and the inherent bias in them.

Certainly, the media is biased towards western concerns, and there is no question that Africa is portrayed as inherently backwards and violent. As a friend reminded me, 'I stopped having gut reactions to such statistics since al-Bashir, in the 2000s, denied genocide in Darfur

by saying that 'just' 10,000 people died, and some people I knew (students and acquaintances) in Khartoum took up this argument and accepted it as reasonable'. And indeed, the TMC claimed that only 60 people had died in the sit-in. But, like so many others in this social media kaleidoscope of a revolution, I have to situate and gauge and contrast this plea with, perhaps, better ones, more reasonable, more informed ones. Even when the mainstream media picked up on the story, their reports were pithy and inconsistent. What might be your thoughts on this?

Best wishes,
Siri

From: Enrico
Re: Symbols and patterns

Dear Siri,

I agree that it is not only an issue of *whether* there is attention and connection but also *how*. Only when the movement had coalesced at the sit-in, did the events in Sudan gain some currency in the global economy of attention. This had an important implication: the aesthetics and iconography of mass movements in global media need imagery of the masses to impress the world. This imagery started to converge into its own focal reference points that were not necessarily congruent with what was driving the movement. The obvious case was the young university student in a white *töb*, wearing golden earrings, labelled the *Kandaka* 'Nubian Queen', the title of female rulers in ancient Nubian kingdoms. Her one moment of chanting with the crowds was captured in a striking shot by private photographer Lana Haroun, who was rarely acknowledged as source, even less than the depicted woman, Alaa Salah. This image was hyped as *the* icon in social and global news media, enhanced by misguided surprise about a woman's presence in front of a crowd. In fact, the initial image was reproduced in murals, memes and media endlessly, and *Kandaka* became widely used as synonym for strong women among protesters in the streets as well but it was not *the* only reference point.

Best,
Enrico



Alaa Salah at a demonstration in Khartoum (SD), April 2019.

From: Amal

Re: Re: Symbols and patterns

Dear Siri and Enrico,

but as with all revolutions and forms of protest, such symbols are critical in maintaining morale and a sense of common purpose. I think the publication and circulation of this image also drew media attention and interest to Sudan. I've previously talked about similar images of Sudanese women in my work, in the context of previous activism on South Sudan and Darfur. While widely circulated images and stories of Sudanese women such as Halima Bashir and Lubna Alhusein, who've spoken out against abuse, inspired activism for Sudan that was driven by a heavy focus on ethnic divisions and identity politics, the image of the Kandaka brings the focus on Sudan's history of women's agency and social movements back to the fore. The current revolution also confirms that dealing with questions of equal citizenship rights in the Sudan need not split the nation further along gender, ethnic, and racial lines, although the image is still limited in the way it encompasses diversity in the

Sudan. However, since the beginning of the current revolution in December 2018, protesters in Sudan and their allies in the diaspora have consistently expressed this vision of national unity.

Amal

From: Enrico

Re: Re: Re: Symbols and patterns

Well for my part, it is not only that there were countless female protesters whose actions—rather than appearance—were inspirational and who were admired within the movement. It is also that women as political actors were nothing ‘surprising’, after months of being the majority in demonstrations and after decades, arguably centuries, of strong female presence in political action, on all ‘sides’ of the battle.

From: Siri

Re (4): Symbols and patterns

I confess that I was at first inspired by this image of the *Kandāka*, and I reposted it. Its adoption in the protests is strategic in that it recalls a pre-Arab symbol—*Kandakāt* Nubian Queens, the female monarchs of Meroe in the Kingdom of Kush (320 BC-AD 260) in today’s Upper Egypt/northern Sudan, who at times ruled independently and led armies. Nubia is often appealed to by even Arab-identifying Sudanese to assert the glory of their ‘civilized’ African past, a history that long predated the arrival of Arabs and Islam in the 7th century. So *Kandakāt* have become a rallying cry against those who used political Islam to justify oppressive policies. Alaa is chanting a Sudanese poem: “They imprisoned us in the name of Islam, they burned us in the name of Islam, killed us in the name of Islam”. But with more reflection, I was also frustrated. While the image was clearly stunning, I wondered about the representation of this woman, in a white *tōb*, the dress of stateswomen, teachers and civil servants, somewhat asexual in their ‘metaphorical marriage’ to the state and complicity with it. Is this image not playing into the decades-old gendered structuring of both the colonial and postcolonial state?

And, of course, what about all the other forms of women’s activism? I had asked my research assistant about the Nuba Christian women who were activists and leaders in their own communities, if they were involved at all in the protests. She said, some of them are supporting it, but most are saying that this is an ‘Arab’ problem. So already, the images of popular ‘unity’ were linked with a specific

What Makes a Revolution “Real”?

lineage, and a specific type of woman in this image. Clearly unity wasn't all that simple, even though they're all fighting the same oppressors. There will always be this problem—the importance of having symbols to bring people together, but the impossibility of necessarily abstract symbols—to satisfy the diversity and complexity of people's values, interests and histories.

From: Amal

Re (5): Symbols and patterns

I think you are both right in pinning down the significance and limitation of images and their manipulation by various media. Also, protesters themselves were aware of the politics these images embody. Social media itself worked to provide counter responses to the singularity and limitations of these images. There were accounts by women activists who felt uncomfortable with the term *Kandaka*. Although they acknowledged that it referenced an imagined glorious past of their foremothers, it overshadowed women's past and present struggles. This is especially true in the post-colonial moment, where the past does not necessarily provide answers for present struggles nor does it provide clear answers for the future aspirations of diverse groups of women. Some suggested that the term *Kandaka* put women on a pedestal in order to manipulate, silence, and distract them from their demands for equality and full participation in politics. We saw that clearly during the negotiations between the civilian and military factions for power sharing, there was only one woman at the table, and often, none at all.

The singularity of images overshadowed a variety of other expressions and issues. Consider this for example. During a demonstration in London in December 2018, two Sudanese women came up with a powerful chant that became a call for the protestors all over Sudan and in the diaspora. The chant, *Tasquṭ bass*, which can be translated as 'Enough, the regime must go, that is all' became very popular. Though chanting from London, these activists brought the intimacy of language to connect the Sudan and the diaspora, making distance and physical borders disappear. But again, as with Lana Haroun's image, however powerful it became, the authorship faded into the background.

From: Enrico

Re (6): Symbols and patterns

Tasquṭ bass 'just fall, that's all' was certainly powerful, it has punch as a pithy hashtag and a

rhythm that easily lends itself to drum-like street chants. It is three syllables with stress on the last—that everyone knows from the Queen song ‘We will rock you’ [stomp, stomp, clap]. It was reproduced in children’s games, honking convoys, occupied railways and bridges etc. but its force was more complex than that. Discursively, *bass*, like *Period!* or the Italian *Basta!* signals an absolute standpoint, a political message aimed at years of false promises by NCP cronies to engage in dialogue and reform. *Tasqut* takes its strength not just from imagery of crumbling walls of castles or here, prisons, the initial letter [t] can either mean ‘you’ or ‘she’, taking the focus from the ‘you’ President, to the whole government ‘she’ (and thereby style of governance), which is in Arabic, the feminine noun *hakūma*. A later slogan developed this ambiguity further, namely the staccato *saqatat mā saqatat, sabinā* [. . . _ _ .] ‘if the government falls or not, we shall stay’, where the last word means literally to pour the cement for the foundation, and the suffix *-nā*, ‘we’, stresses the cementation of new forms of agency, against the mere shifting of figureheads. At the same time, ‘or’ denoted the uncertainty of whether the old regime had been defeated or not, and it was the existence of a central physical space in front of the center of military power, *al-qiyāda*, which inspired hope that more than a fleeting change of the political landscape could be achieved.



Hashtag cloud of the most used hashtags on Twitter in Arabic and English with reference to the revolution in Sudan, 2019.

Hashtags share the initial uncertainty of political movements: will they gain magnetic force or not? Many soon die off; others are made for a single day; a few succeed in attracting masses.

What Makes a Revolution “Real”?

But what enabled the latter in this revolution was the balance between visibility and camouflage. The routes for demonstrations, posted on Facebook pages, are a good example of that: Those posting the routes were members of the Sudanese Professionals Association. But the same posts, necessarily public, also mapped out for security forces where they would be. Many successful demonstrations found a way to make use of the gathering force of the posts by partially masking information e.g. doing the protest on the announced day but not at the specified time, or doing the protest march towards the announced destination but using another route etc. This tinkering with the translation of online communication into offline action was one of the ways a technologically superior military force was confronted on the streets.

What is relevant here is that the lifeline of the movement was supplied through many small, decentralized initiatives. Political change was fought for, and challenged, through seemingly trivial matters, for example, the discovery of the closure of main valves in neighborhoods’ water supply by security staff and NCP sympathizers. News about such events—and their creative translation in hashtags, images, caricatures and memes—spread through the channels of online connections and allowed others to see a pattern, namely that supporters of the old regime manipulated public infrastructure all over town. In a fight that went beyond public protests, breaking the pattern became a common goal, one that emerged not from a single story but from a flood of similar stories and images.

From: Siri
To: Enrico; Amal
cc: Timm
Subject: Real or fake?

Hi all,

The last few weeks I’ve been meditating on Enrico’s observation about the delicate line between visibility and camouflage, as a kind of recipe for the effective use of social media in revolution. All this productivity, all this debate, all the imagery, made possible by smartphones, faster internet, better graphic designers, Twitter, Facebook and WhatsApp in hyper-coordination—all the more vivid and all the more obscure, than the last time Sudanese youth mobilized social media in the ripples of the Arab Spring, from 2011 to 2013. I recently picked up an article that Timm Sureau (cc-ed here) and I wrote about that period, which ultimately

failed as a revolution, but was successful in posing a viable threat to the government's claimed monopoly over information, networking and community mobilization. It had more to do with representations of legitimacy than actual control. We concluded that the spy game ended in a stalemate, with the NISS [Sudan's National Information and Security Service] and the 'cyber-jihad' unit on one side and the hackers and activists on the other—that social media figured into a game of cat and mouse, of teasing, bluffing and near captures.

Where there wasn't enough 'real' in the Arab Spring phase, if I can call it that, there clearly was now. By 'Arab Spring' I am referring specifically to the way the protests in 2011–2013 embraced social media as a key tool both for organizing and even, a bit, for outright defiance. We were building on all the debates about the 'digital revolution'. We took a step back from all the enthusiasm about democracy and social media, and argued that the 'real' use of new technologies to mobilize people, such as in the case of the community relief effort, Nafeer *نفير*, in the 2013 flooding of Khartoum, was rather in the 'tedious practical work' of dealing with data sheets and organizing relief packages. But in this uprising, it is clearly different. Timm do you want to comment on this?

From: Timm

Re: Real or fake?

Hi everyone, thank you for bringing me in. Yes, we also found that many Nafeer activists at the time decided to go offline and not exclusively depend on online means of communication, which hints at developments in the current uprising. While services were blocked, people got around this with VPNs or changed mobile networks. In June, when Sudan's mobile internet was completely shut down, shows the potential of offline communication: neighborhood committees, where the revolution started anyways, but also the networks of the Sudanese Professionals Association, and face to face conversations among friends, kin and colleagues and phone calls. Social media had no role in organizing the biggest demonstrations throughout the whole country on June 30th. This of course puts into perspective the discussions about the relevance of social media from the start, and it shows the limits of digital governance in Sudan. Also, the very start of the uprising was food related, and not social media related. Even though everyone *I know* had VPNs, this is clearly a specific limited population. Social media played an important role in providing different narratives, different from censored media, to the Sudanese themselves, and thus contributed to more people joining the protests, but I think that it was neither the start, nor critical for the continuation of it. I am also doubtful whether

What Makes a Revolution “Real”?

international attention, which came late and wasn't powerful contributed a lot to al-Bashir's downfall. A friend and member of a political party said in 2012: 'We can only prepare to be ready to support a revolution when it starts, but we cannot start it' and I think it is the same for social media; it could support it, but not carry it.

Best, Timm.

From: Amal

Re: Re: Real or fake?

I totally agree, but I also think that social media was able to breathe life and truth into moments that would have been impossible to document before. Consider the example of the live podcasts, this was exactly the case when the government spun incriminating stories to damage the reputation of the protesters. In contrast to the protesters' determination, hopes, and dreams, pro-government media planted nefarious narratives about the identities of the protesters. Random assaults by snipers had killed several protesters in the days leading to the massacre. These snipers, the TMC stated, belonged to unruly militias and criminals who were infiltrating the protest site. They blamed a hangout area—adjacent to the protest site—as a threat to security and to the safety of protesters. The fake TMC narrative justified the violence that took place before the massacre and legitimated the aggressive crackdown on the sit-in site.

But, the *livāt* showed no such infiltration by criminals. Throughout the protests no crimes of any kind, including sexual assault, had been highlighted. Contrary to the TMC narrative that criminalized protesters, the *livāt* documented stories of resilience and struggle. Salah, the young protester hiding in the tent that I mentioned earlier; he was not dealing drugs when he was recording the live podcast. He, like other protesters and martyrs, was dealing dreams of a non-violent future for his generation in Sudan. Despite the isolation of Khartoum during the internet cut, *livāt* continued to circulate, comforting people and giving hope that violence, fear, and threat are not the way out of Sudan's problems.

Best regards, Amal

From: Enrico

Re: Re: Re: Real or fake?

Dear all,

The question of motive has always been there, and social media is just another way of creating doubt

or resolving it. When demonstrations started in December 2018, the precarious game of taking sides ensued, as it had during previous waves of protests: in 2015 it was linked to elections, in 2013 it concerned inflation, in 2011 it was linked to the commotions that were later labelled the Arab Spring. One can go further back. In fact, there was never a period when people just sat on their hands. But whenever they raised them, they always invited varied claims of why they did so—out of their own free will or driven by an external agenda (wherever the line between in- and outside might be drawn). To get cheaper fuel and bread or to challenge who rules them or how they are ruled? And each time, especially following 2011, the hyped-up question was asked: Is this it? Is this the long-awaited uprising? Below this level, groups, parties, classes, regions were suspected of being 'behind' whatever it was, making it a 'real' (i.e. 'the people's') or a 'fake' (i.e. partisan) movement. This was an almost automatic response of the regime to any challenges, it always went: these grievances are just held by a few people backed by an outside agenda.

Best,
Enrico

From: Siri
Re (4): Real or fake?

Some have referred to this ambiguity as the difference between *real* existential needs and a *real* ideological shift, downplaying the value of the youth and idealism in activism, not unlike the government-initiated rumor—that the “hangout area” was a place for drug-dealers and miscreants. Social media, in the hands of youth is indexical of fantastical youth ambitions, clearly, while bread is considered an offline issue, a working class problem. Of course, online activism is a class issue, since only, what, about a third or so of Sudanese have internet? So, what happened when VPNs couldn't be used during the blackout? What's interesting to me is how people 'hack' or 'weave' these tropes, mixing online-offline expectations and possibilities. Where did the so-called 'bread' people and the social media people converge?

From: Enrico
Re (5): Real or fake?

VPNs (Hotspot, for instance) were widely used, under the previous regime, whenever Facebook etc. was blocked, but this means a specific part of society, as everything we say here about social media. Smartphones and internet are certainly more

What Makes a Revolution “Real”?

distributed, though in less than half the population, I would guess, and of those only a part is actually using social media for political rather than private and religious communication.

Another way was for those (again privileged) few who had a SIM card from the international companies, Zain or MTN, especially those who were or had been labour migrants to the Gulf countries; they still had access as the TMC had no influence on those companies abroad.

What interests me, too, is how the ambiguity of ‘real’ and ‘fake’—presently a beloved trope of political (in)sincerity and distorted mainstreaming of post-modern, or maybe post-truth, epistemology—has been carried into the minutiae of revolt and reaction, both online and offline. As you said earlier, Siri, one of NISS’ responses to the opposition’s expressions and mobilization on Facebook, for instance, was the creation of a unit of technologically advanced spoilers, euphemistically called *al-jihād al-iliktrōnī* الجهاد الإلكتروني ‘cyber-jihad’ brought down to earth by its common moniker *al-jidād al-iliktrōnī* الجداد الإلكتروني ‘cyber-chicken’. This cohort penned rumours and false information across social media, trying to discredit accounts by posting pornography. Online profiles’ use of pretence and mimicry provided only limited clues for unmasking this game, just as the ‘cyber-jihad’ unit’s office posed as a private technology firm to disguise what it was. Online self-identification is notoriously malleable and opening accounts is easy. For organizational purposes, the only way to distinguish ‘real’ and ‘fake’ was based on content, not form. So, claimed changes of routes for protest marches had to be analysed by protestors for their exposure to security forces, the existence of escape routes and so on, similar to those provocateurs mixing with the crowds, trying to lead them towards militant forces or at least to incite some violence.

From: Siri

Re (6): Real or fake?

I’ve also been following several Facebook groups, some of which seem to be quite a formidable (in) visible army of citizen journalists. Didn’t *munbarishat* ‘Minbar Chat’, for example, jump from a few thousand members to 150,000 or so? *Munbarishat* meaning ‘crushes’ was originally a group where young women could suss out the reputation of their suitors and chat about other handsome men, possibly finding out that said suitor was advancing on other girls, or perhaps

even already married. And when the revolution started, it was strategically co-opted into a tool of opposition, of uncovering the activities and locations of so-called 'secret' agents, security officers or others that were molesting, harassing or raping women, especially those protesting. Military and security were then threatened by this, covering their faces to phones and cameras. I also heard that *Munbarishat* was infiltrated at one point by NISS, using a fake profile, but was then exposed, showing the power of this medium for countering official narratives.

From: Enrico
Re (7): Real or fake?

From what I saw, there emerged a system of counter-intelligence that gave face to the masked killers roaming the streets with pick-up trucks and guns: visual analysis identified security and militia personnel from their selfies and investigative groups posted personal profiles of NISS staff. There was a BBC feature on these squads.

But what drove these 'annoying' revelations was offline information. NISS was, differently from many private militias of NCP politicians, accustomed to bragging about its presence, and its entangled webs of informers—far from being a single, well-organized body—it was crawling with 'secret' agents flashing their small laminated badges to show off. This turned against them, when agents' houses were identified by graffiti and exposing them as collaborators of the regime, and thus in the context of the uprising, enemies of the people.

From: Siri
To: Enrico; Amal; Timm
Subject: Digital activism—digital security

Dear all,

I just want to pick your brains a bit more on the issue of digital security and surveillance technologies. I remember well, that one of the characteristics of Sudan's political climate was the constant feeling of being observed and screened all the time, from anyone or everyone at all: the strange man sitting in my lecture hall among a crowd of nineteen-year-olds, the rickshaw driver repairing his vehicle all day long at the corner, the neighbor or colleague clandestinely reporting one's conversations. I remember these hairbrained maneuvers to outsmart security, removing or repeatedly switching SIM cards to have conversations, that NISS was listening in, even if the phone was not

What Makes a Revolution “Real”?

in use, the idea that Skype was safe and could not be monitored. How does this longstanding pattern fit into the current activism?

From: Enrico

Re: Digital activism—digital security

Indeed, obscure surveillance technologies gave rise to wild theories: Are there cameras installed all over Khartoum with a zoom lens capable of reaching inside houses? Is an echo in the telephone conversation a sign of being monitored? Or the slash sign / at the end of the International Mobile Equipment Identity [IMEI] number. There was a rumor circulating online, a misunderstanding of the letters SV, which were added to the IMEI in some models, but had nothing to do with whether that phone was being tracked or not. But it shows the ambiguous nature of such rumors, because the IMEI as identifier of individual mobile phones is in fact used to track people, once a relation between a device and its owner is established. For example, throughout the protests, security arrested thousands. They would come to specific buildings, to arrest someone but not know which apartment or office they were in, indicating that this kind of tracking was used indeed during the protests. The IMEI can be used to know a bird’s eye view of location, a point on the map, but not on which floor somebody is.

An almost obsessive focus on all kinds of executive forces with mobile phones—rather than systematic and sophisticated interrogation and intelligence—indicates further how much power was read into these little mischiefs.

From: Siri

Re: Re: Digital activism—digital security

And when technology becomes unavailable, other resources are used. When the internet was shut down, I still had Facebook posts from people in Sudan, saying they were using the VPN or the Wifi at an office down the street. So how was this possible? Was it only mobile internet?

From: Timm

Re: Re: Re: Digital activism—digital security

The VPN on the one side, and Wifi at an office, on the other, are quite different measures taken by the government. When blocking particular sites, VPNs can be used to avoid the blockage. When access to Facebook and WhatsApp was blocked on December 21st, people switched to Telegram, which acquired an image of higher security and was blocked shortly after, as NetBlocks showed very well in their charts. This was

likely done with ProxySG-servers from the company Blue Coat that NISS had acquired from the United States. As a reaction, VPN became mainstream even among unsavvy users and several friends surprised me with their newly acquired knowledge. They continued to share videos and pictures of the horrors and brutalities the regime committed in response to the uprising/revolution. There were so many bloody pictures and videos of mutilated and killed victims, uncensored by Twitter. And I was surprised that this time this stirred up and incited people instead of the paralysing effect on people which I had seen during prior demonstrations. The associated stories and the visual representations brought the people (back) to the streets; in that sense I think you are right Amal! This time the victims/martyrs, so the logic goes, should not have suffered and died in vain. Social media and messengers brought people together on the streets. I rather doubt the importance of the international involvement, although the knowledge of not being left alone in the world certainly helps during protests. In the end, offline communication was powerful as was apparent during the almost complete shutdown, when all digital mobile communication was off, and only the provider of landlines Sudatel, rarely used by private citizens, was still online. Here, over the Wifi at an office down the street online communication was still working but only to communicate with other Wifis at an office, and the outside world.

From: Enrico

Re (4): Digital activism—digital security

The offline/online hide-and-peek also continued when technologies were blocked. Disappearing digital messages began to resemble the passing of fleeting oral information in backstreet alleys. Deleting and creating 'data' were important defensive tools to escape surveillance: how to reset one's mobile phone became routine knowledge, and once arrested, protestors soon learned to reboot and evoke background stories that gave innocent explanations for their presence at the protest site, after all, these sites were often huge public spaces. Some did it a dozen times. Unprepared investigators were soon overwhelmed, not necessarily by each story and not necessarily failing to inspire fear by physical, social and psychological terror. But they were too unprepared and disorganized to deal with the high number of arrests the security apparatus itself generated. It was, after all, a competition for maintaining, or achieving, critical mass.

Ultimately, this revolution, whether it continues to evolve and resolve or not, has been paid for by

What Makes a Revolution “Real”?

blood. One can—and will—endlessly debate the merit of its different elements, the moral pressure from non-violent resistance, the conducive political-economic and not too unconducive geopolitical context, the serendipity of coalescence, the organizational experiences from decades of underground work etc. In any case, the multiplied flow of information, over Facebook, Twitter, WhatsApp, Telegram and whatsoever, interlinked with them and amplified political alertness, fearful and hopeful rumors, biography and iconography. In other words, it provided a personal, individual link to a mass movement that can, and has to, find its way to the streets where it will be tried, and fail to be muzzled.

From: Siri
To: Enrico, Amal, Timm
Subject: Let's revisit the issue in a year's time

Dear all,

Thanks very much for all your insights! It's been a productive debate. Let's give the issue a break for now and revisit it in a year's time?

All the best,
Siri

Pan-Sonic

Surveillance becomes more subtle and more intense, spreading from physical space to cyberspace.



The mechanisms of control withdraw from the physical plane and coalesce into an arena that is fundamentally fluid, social, volatile, and hard to map.

Soundscapes



Surveillance, and its rapid digitization, is understood almost entirely in visual terms. Reducing surveillance to visibility makes us deaf to religious and civic sonic deployments and the sonic modulations of psychological, physiological, and architectural states. Younes Baba-Ali's contributions to the *Digital Imaginaries* project deployed sonic and digital frequencies to demarcate territory within the urban soundscape of downtown Johannesburg and the ZKM | Karlsruhe. The interweaving of sound and digital surveillance strategies resonates with the weaponization of sound, sonic warfare, and control in an age of global amplification.[1]

In *Call for Prayer—Morse*, Younes Baba-Ali employs mechanisms directed towards the internalization of power in the realm of religion. In the installation, a megaphone broadcasts the *adhan*, the Islamic call to prayer, digitized into binary Morse code. Installed in downtown Johannesburg outside the Wits Art Museum, the megaphone crackled into life five times a day, at the precise times when the *adhan* reverberates through its streets. The verbal verses are overwritten by a universal language of emergency, signaling the dangers of proselytizing and demagoguery. The chants have been reduced to standardized binary sequences, to a series of mere dots and dashes and are thus transformed into the encoded, digital language of global information streams.

The sound piece *Call for Prayer* condenses complex questions surrounding religious education, loss of spirituality, dominance of public urban space, and intensified collectivization into a minimal sonic pulse, subtly uncovering religious practices as uncompromising strongholds of control and surveillance. Under the guise of pious discourses, they risk descending into authoritarian populism that subjects its followers to control and observation by and among themselves. According to Michel Foucault, their conditioned state obviates all necessity for physical markers of control: "There is no need for arms, physical violence, material constraints. Just a gaze. An inspecting gaze, a gaze which each individual under its weight will end by interiorising to the point that he is his own overseer, each individual thus exercising this surveillance over, and against, himself. A superb formula: power exercised continuously and for what turns out to be a minimal cost." [2]

Here, God becomes the guard in the panoptic, or rather pan-sonic, tower; intangible but demanding moral discipline from those who choose to believe he is there, watching and tracking their every move. Sound becomes the watchdog, reverberating universal binary codes through



Younes Baba-Ali, *Everything Is a Border*, 2018.
Installation view, ZKM | Karlsruhe (DE), 2018.

the quintessential tool for mass control and information:
the megaphone.

Everything Is a Border connects the intensely securitized urban landscape of downtown Johannesburg, where Younes Baba-Ali spent a residency to work on the *Digital Imaginaries* project, to the seemingly open exhibition space of the ZKM where his second contribution was shown. The installation consists of a simple, yet meticulous setup. A video-monitored space—almost cage-like—reinforced with electrified barbed wire, occupies the space allotted to the artist in the ZKM's white gallery space. The whirring and clicking sounds emanating from the megaphone and the fence pulsating with electricity convey a sonorous aesthetic of security and surveillance.

The fenced-off territory is hypervisible, forcing visitors to walk around it while remaining totally inaccessible—both to visitors and museum staff. It acts as a satirical pastiche of the wires and cordons separating visitors from sacralized art objects. The installation, however, is not contained by the museum; it is monitored, and an intervention is triggered when visitors behave contrary to a set of rules and conditions. A foreign voice intervenes and reprimands the wayward public. The voice is that of a South African security guard, who is located about 13,000 kilometers away, and who is monitoring the public's every move. The remotely operated surveillance cameras and speaker digitally display and extend the panoptic technology of power. Museum visitors under surveillance are seen but never know when or by whom; under control but without physical intervention. Watching may be “sporadic,” but “the threat of being watched never ceases.”^[3] Here, the perceptible gaze is complemented and made present by the only constant in the empty space—the buzzing sound of electric fences. By inviting a South African security company to supervise the institutionalized, fenced-off exhibition space, *Everything Is a Border* adds a ruthless digital voiceover to the old barbed wire, walls, and fences—a sonic deterrent that eludes visual representation.

The sonic interventions evoke colonial practices of sonic surveillance that emerged when direct violence proved insufficient for enforcing colonial regimes.^[4] In her book *Dark Matters: On the Surveillance of Blackness*,^[5] Simone Browne accounts for methods of evading or repositioning surveillance, clustered under the idiom “dark sousveillance.” Dark sousveillance denotes “the tactics employed to render one's self out of sight, and strategies used in the flight to freedom from slavery

as necessarily ones of oversight [...] Dark sousveillance is a site of critique, as it speaks to black epistemologies of contending with antiblack surveillance.”^[6] The installation and its implied reversal create a tension: Can it contribute to strategies of black sousveillance, does it demonstrate the persistence of power structures, or does it actually blur this binary? Operating within the carefully curated space of an art institution, the installation magnifies and inverts the methods used to monitor and control populations, while hinting at the fact that control is never pure or unidirectional. It objectifies the observer. It literally turns the gaze—albeit without disrupting the institutional power of the museum that ultimately commissioned the South African security company. Can this inversion offer tools for navigating structures of monitoring and control? Can the visual-sonic apparatuses, the cameras and megaphones, which scrutinize the oppressed, shift towards the oppressor? How might this look when most people carry easily deployed and hackable recording devices with them at all times? How is this further complicated by the fact that the vast majority of South African security guards are poorly paid black workers? Can the tables really be turned, the gaze be inverted, in an era of unidirectional digital traffic, in which one can interfere effortlessly and immediately from the other side of the world?

Beyond surveillance, the fenced-off space is a metaphor for the imposing architectural structures that constitute borders. Its physicality stands in contrast to the audio-visual potential of the digital to create borders without having to impose them physically. Borders that are revealed as effects of the psyche, entities that inhabit our thinking and shape cultures. The separation lives in the space between our ears, as conveyed by the German phrase *Mauer im Kopf* (“wall in the head”). Surveillance becomes more subtle and more intense, spreading from physical space to cyberspace. The mechanisms of control withdraw from the physical plane and coalesce into an arena that is fundamentally fluid, social, volatile, and hard to map. At the same time, digital technologies strongly support and enforce border regimes, which are far from immaterial or inherently supporting freedom of movement. Calling current digital border-making practices to mind dislocates imaginaries of the digital as a borderless, free, planetary space. It invites a definition of borders, asserted by Marie Ouvrard-Servanton, Lucile Salesses, and Hammadi Squalli, “as something that situates itself solely between two actions or something that materializes or again symbolizes

a relation, and thus a border, whether this be real or imaginary.”^[7] *Call for Prayer* and *Everything Is a Border* invite us to be attentive to the digital and sonic making of borders as an instant categorization, and thus draw our attention to the pan-sonic soundscapes of power.

[1] Emphasizing the sonic aspect of surveillance also reminds us of Louis Althusser’s original observation that the most basic form of subject formation as subjugation relates to interpellation, to be hailed by authority: “Hey, you there!” See his essay “Ideology and Ideological State Apparatuses,” in Louis Althusser, *Lenin and Philosophy and Other Essays* (New York: Monthly Review Press, 1971), 174.

[2] Michel Foucault, “The Eye of Power,” in *Power/Knowledge: Selected Interviews and Other Writings 1972–1977* by Michel Foucault, ed. Colin Gordon (Hassocks, Sussex: Harvester Press, 1980), 155.

[3] Matt Hannah, “Imperfect Panopticism: Envisioning the Construction of Normal Lives,” in *Space and Social Theory: Interpreting Modernity and Postmodernity*, eds. Georges Benko and Ulf Stohmayer (Oxford: Blackwell, 1997), 347.

[4] Yael Berda, “Managing Dangerous Populations: Colonial Legacies of Security and Surveillance,” *Sociological Forum* 28 (3).

[5] In *Dark Matters*, Simone Browne pinpoints the conditions of blackness as a key site through which surveillance is both rehearsed and resisted, revealing its roots in the mechanisms for policing black bodies under slavery.

[6] Simone Browne, *Dark Matters: On the Surveillance of Blackness* (Durham, NC: Duke University Press, 2015), 21.

[7] Marie Ouvrard-Servanton, Lucile Salesses, and Hammadi Squalli, “Re-thinking Borders in the Digital Space,” *Applied Science and Innovative Research* 2, no. 1 (2018): 5.

The Difficult

At a time when pan-Africanism is finding new relays, both intellectually and in civil society, [...] the African continent has a specific card to play.

This involves decolonizing the imaginary but also decentering the history of video games and computer science in general.

Emergence

Video Games

of African



The Difficult Emergence of African Video Games

According to Newzoo[1], the global video game industry reached an estimated turnover of \$152 billion in 2019. In comparison, the film industry's sales were \$96.8 billion in 2018, and those of the television industry exceeded \$400 billion in 2017.[2] It is quickly forgotten, however, that in 1977, in constant dollar terms, the video game industry reached a turnover of \$272 billion and was already a global industry.[3] What has specifically changed today is the social perception of video games: they appear no longer as the guilty pastime of a small number of geeks but as a creative industry and a powerful vector of imagination. In this economy dominated by Western and Japanese multinationals, such as Electronic Arts, Ubisoft, and Sony, one suspects that the emergence of a truly independent sector, particularly in the countries of the Global South, is subject to very precise conditions. These include quality higher education that involves market-oriented professional training (art or game development schools), access to recent computer equipment and a high-performance digital infrastructure, the existence of a middle and upper class able to finance lengthy studies for its children, a country's economic integration into the global capitalist system, and public policies to support creation and distribution. These conditions are difficult to meet in Africa.

In most countries of the world, the independent video game scene is divided between small studios or developers whose ambition is primarily artistic and companies of greater or lesser size that target a larger market. The latter may act as subcontractors for larger companies or aim to produce an international "hit." Today, however, most of the video game market is concentrated in Western countries and Asia. South America represents only 4 percent of the world market, and the African continent barely reaches 1 percent.[4] In other words, the place of African video games is insignificant from an economic point of view. This economic weakness certainly has a direct impact on the continent's cultural influence on the creative level. For Dominique Gawlowski, who organizes the Playtopia festival in Cape Town, South Africa, the continent's market is not set up to allow the development of AAA games.[5] He is convinced, however, that there is a place for independent games: they are cheap to produce, are easy to distribute, and do not require large development teams. In fact, most African video game production is destined for the mobile market. This market is still modest, though, and studios find it difficult to monetize their productions. Placing their products on platforms such as Google Play or Apple Store therefore offers the hope

that this African market will gain in visibility and attract, if not a new audience, then at least international investors.

Among the keynote speakers at the 2018 Playtopia were Sithe Ncube, who leads the Ubongo Game Lab collective, and Anita Sarkeesian, the famous blogger and activist who found herself at the heart of the GamerGate controversy in 2014.^[6] This female presence underscored, by way of contrast, male overrepresentation in the sector—one area, at least, where Africa does not stand out from the rest of the world. In Sithe Ncube's talk, she spoke about the work she has been doing to enhance the role of women in the industry through the Games Plus Girls workshop, established in Zambia in 2015. In 2019 Google finally opened its Indie Games Accelerator initiative (located in Singapore) to a handful of developers on the continent, limiting it, however, to Egypt, Kenya, Nigeria, South Africa, and Tunisia. Indeed, in the absence of public policies on professional training, the industry channels all the talent, which presents a long-term threat to the vitality of independent creation.

African video games are also starting to become visible in international events and other trade shows. The *Insomnia Egypt Gaming* event is one of the biggest conventions on the continent.^[7] It is coordinated by the Egyptian chapter of the International Game Developers Association. In November 2019, the third Festival of Electronics and Video Games in Abidjan was held. The festival was created by Sidick Bakayoko, who is also the founder of Paradise Games studio. At the Paris Games Week in November 2019, fourteen African studios from nine countries were represented—at once very few and yet, for anyone who knows the difficulties of travelling abroad (visas, cost, etc.), a good many. In South Africa, the *A-Maze/Johannesburg* festival was directed by Ben Myres for a time. On his Twitter account, Myres presents himself as an “African game evangelist.” He has undeniably helped to give visibility to African video gaming as a creative industry. Many independent developers insist on the need to favor inter-African links, as the continent is at significant risk of being turned into a subcontracting zone for the global industry.

On the African independent scene, two visions could be said to exist: one is to exploit the commercial potential of Africanness; the other is more concerned with cultural and political issues—though does not escape market logic for all that. One example of this latter vision is a game called *Aurion: Legacy of the Kori-Odan* (Kiro'o Games, cofounded in 2015 in Cameroon by Dominique Yakan Brand), whose universe is based on a reinterpretation of traditional West African legends and

The Difficult Emergence of African Video Games



mythologies, and which also integrates mechanisms specific to the JRPG.[8] The studio has adopted a transmedia

strategy, worked on a comic book adaptation of the game, and made (unsuccessful) approaches to Hollywood.[9] Does the result facilitate the building of a visual and narrative pan-Africanness, as marketing for the game claims? Or does the product work more to level cultural differences and exoticize Africa in a game specifically adapted to the international market?

African video gaming culture is certainly globalized. Players



play the same mainstream games as in the West. For example, in 2007, *Adventures of Nyangi*, produced by the Kenyan Wesley Kiriniya, became the first African 3D game but



was inspired by the character of Lara Croft, the only difference being that its heroine is African. *Kingdom of No One* (INSTEAD, Tunisia, 2019) presents interesting gameplay and game design choices, but reuses the classic framework of medieval-fantasy European worlds. Several games, however, try to stand out from this globalized imagination. *Mzito* (Weza Interactive) features characters (called mzito) that spirits have created to save lions from the deep sleep into which they have been plunged.[10] *Les héros du Sahel* (MOGMedia, Niger,

2016) is inspired by the comic strip *Shamsou, the Sun Warrior*, centered on a Nigerian hero who draws his energy from the sun. Its creator, Houssayni Issa Mahaman Sani, wants to turn it into a film-length animation.

The case of *Kissoro Tribal Game* illustrates the fragility, economic dependence, and postcolonial implications of most initiatives. The game was created by Teddy Kossoko in 2018. Kossoko had left the war-torn Central African Republic to pursue



his computer science degree in Toulouse, France. He founded Masseka Game Studio (based in France) with the intention of producing

African games. *Kissoro Tribal Game* is a variation on the principle of *Awalé* (a strategy game that goes by different names in more than ten African countries). The playable character, Elikiya, is on a mission to win a Kissoro tournament and thereby prevent two kingdoms from engaging in a deadly conflict. On the game's promotional website, one reads such phrases as "Africa does not have to resort to weapons to resolve conflicts."^[11] The young creator insists on the political dimension of his work, yet that work appears timid and consensual regarding the stakes.

In the studio's next game, *The Adventures of Inspector Guimonwara*, you can play an alcoholic inspector who, thanks to the intervention of a marabout, acquires the power to travel through time. Investigating the murder of his sister, he finds himself in the middle of the Songhai Empire in the fifteenth century. As Kossoko explains, he collaborated with historians to produce the game, which perhaps presents an opportunity to highlight sections of history that are little known to Africans themselves and to revitalize oral traditions that have been undermined by modernity. Indeed, the reappropriation and reinterpretation of precolonial history, or simply traditional narratives, appears to be a common issue in many games. A case in point is *Africa's Legends* (2016) and *Africa's Legends: Reawakening* produced by Leti Arts. *Africa's Legends*—a combat game—invites the player to play a hero of their choice inspired by African mythologies: Ananse (masculine/Ghana), Wuzu (masculine/Kenya), Ruddy (feminine/Nigeria), Shizo (masculine/Ghana), Bobo (masculine/Somalia), or Sundi

The Difficult Emergence of African Video Games

(masculine/Niger). The gameplay closely resembles that of *Candy Crush* (2012). It has a turn-based combat system in



which you have to combine colored gems for an attack, to shield you from a hit, or for a special hit. According to the studio's

statement of intent, *Africa's Legends: Reawakening* aims to extend and improve many aspects of the original work but above all to free itself from the Western codes that inspired it.

On examination, however, a rather striking contradiction emerges: though Eyram Tawia evokes the significant amount of historical research that went into bringing together the folklore of several different countries, the game's most obvious inspiration is Marvel's *The Avengers* (2012), in its graphics and in the idea of a "community group" based on collaboration and mutual aid through which the player travels across several countries. In addition, the characters are stereotypical, especially in terms of gender, and reproduce the prevailing codes of contemporary US comics.

Other studios have had some success with unpretentious casual games. We see this with Maliyo Games (Nigeria), for example. Its *Mosquito Smasher* is a mobile game in which the player is represented by a thumb, and the aim is to kill mosquitoes. Oddly enough, even for casual games, where it seems difficult to detect a political message, most game creators claim, whether in interviews, in the marketing for their products, or in the setup of their studios, that they want to contribute to improving the representation of African cultures, to situate their games in an African context, and to draw on specific stories, contexts, and cultural traditions. The developers from Maliyo Games thus make a point of their national rootedness and use of specific cultural codes and references. The claim is unconvincing, however, as an analysis of these codes shows that the references in question remain superficial.

Another studio, Lomay (Madagascar), has developed a game called *Dahalo*, which is aimed at the international market. Its visuals already prove to be high quality, a cut above the continent's usual output. But the central place given in the game to the beauty of southern Madagascar's landscapes (rather than to everyday environments) is ambivalent: for a

non-Malagasy international audience, this aestheticism inevitably feeds an exotic vision of Africa. How this works in practice in the game remains to be seen. The game's story



is inspired by the Dahalo tribe, zebu thieves who terrorized the villages in the south of the island. In the game's first chapter, the

player is invited to play Rohy, a young medical student who joins farmers in defending their village. In the following chapters, the player is supposed to play as two other characters.

Dahalo is also meant to incorporate an anthropological dimension to provide a coherent cultural background. By seeking to meet international standards, the game (released on PC) runs the risk of cutting itself off from a large part of the Malagasy and African public, which has clearly been shown to favor mobile gaming. Matthieu Rabehaja, the project leader, is the first to acknowledge this.^[12]

Ubisoft's strategy of creating off-shore and subcontracting zones led to the establishment of a presence in Casablanca, Morocco, in 1998.^[13] In reality, this type of investment is of little interest to the host country. Despite being active in the country for eighteen years (the subsidiary closed in 2016), Ubisoft Casablanca did not lead to the emergence of a local ecosystem. Indeed, its activity aimed mostly to subcontract the firm's successful games (such as *Rayman*). While most Moroccan developers did go through Ubisoft, they have ended up going abroad. Those who remain have to had reinvent almost everything. Thus, most members of Morocco's Altplay Studio started out at Ubisoft. In Altplay's *Nutopia* (2019), we play an artificial intelligence in charge of rebuilding a futuristic city with a cyberpunk design, against a backdrop of more or less social and ecological themes. Any project of this sort certainly involves a great deal of work. Yet *Nutopia* looks just like any mainstream game of the genre, but for the poorer quality of its gameplay. The lack of originality or strong artistic choices also prevents it from standing out as an indie game.

In 2017 another Moroccan studio, Funsoft, launched *Rangi*, a 3D puzzle game that is also the first African game in virtual reality. In it, one plays Guruki, who is on a mission to return the ancestral music that dark forces have confiscated, so that the

The Difficult Emergence of African Video Games

country of Ota can have its harmony restored. The imaginary Africa depicted in the game consists essentially of a desert environment strewn with ruins and set against a background of “tribal” music. From my point of view and despite the game’s qualities, the exoticizing instrumentalization of Africanness



remains a major pitfall in this type of project. Perhaps contemporary Moroccan culture, which has assuredly not escaped

postcolonial hybridization, is itself partly caught in the trap of orientalizing reconstructions that have been a factor in forging the country’s tourist success.

South Africa, home of the continent’s first independent studio (Celestial Games in 1994), has an estimated 11 million players. The market is booming, but—as in the rest of the continent—the focus is on mobile gaming and e-sport.^[14] It is impossible not to notice the country’s history, especially the legacy of apartheid. For example, most people working in video games in South Africa are white (90 percent of them!), and this is even more pronounced in positions of authority. The team of Falling Up Studios from the KwaZulu-Natal region has produced a game called *Precious Cargo*, whereby it sets out to denounce the trafficking of pangolins. In the game, you play a small pangolin called Jua, who tries to cross a hostile jungle (inspired, in the words of the designers, by Central African geography). The popularity of this form of animal and environmental consciousness is to be welcomed. Nonetheless, it is impossible not to see that it is used above all as a way of avoiding more sensitive political issues. Without neglecting the animal cause, aren’t there other emergencies that need addressing in South Africa? Moreover, the choice of giving Swahili names to animal protagonists may be perceived by a certain Western audience as a strong gesture of cultural recognition, or a marker of Africanness. Conversely, since Swahili is not spoken by the pangolins, this choice can also be considered as essentially colonial and indicative of the inability of certain creators to confront the reality of their society.

The co-founder of the Nyamakop studio (located in Johannesburg), Ben Myres, has created with Cukia Kimani a

video game called *Semblance* (2018). Unlike *Aurion*, *Semblance* is promoted mainly as an “independent African game” and with an emphasis on its original gameplay, more than on some Africanness present simply in “harmless” signs (musical sounds, the plant forms in the game environment, etc.). The game happens to be quite enjoyable and has been rather successful.



For all this, it could have been made anywhere and is in keeping with the framework of the dominant representations. As in *Precious*

Cargo, we find in *Semblance* a colonial vision of Africa, at best as an edenic utopia, and at worst as a primitive land.

As Sithe Ncube has remarked, the “void” of the African market can also be seen as an opportunity: according to her, work that is even slightly ambitious has prospects of getting noticed and reaching its public, for another limitation of the current array of games is precisely the lack of ambitious games that tackle contemporary issues head on. Despite some African developers expressing the recurring concern to provide a powerful and effective alternative to the dominant representations conveyed by AAA games from countries of the center, the project is far from being an easy one. It raises the question of how to decolonize the imaginary and the ambiguous relationship with the West. From this point of view, Africa is still in its first faltering steps, and obstacles abound.

Nonetheless, in the context of a globalized world defined by Western hegemony, every *different* cultural expression tends to be integrated, digested, and assimilated, without changing the structure of power relations. In other words, cultural diversity is also an asset for the global video game market. In this respect, there is every chance that African video games will come to find a place in the global video gaming economy. The question that remains unanswered, however, is indeed a political one: it is hard to imagine that the video game, a powerful vector of the imagination and a social object integrated into our daily practices, will remain external to the currents that are trying to change the nature of power relations in the world.

As Western hegemony is based on a discourse articulating sociocultural and technological progress, the history of computer and video games has been related by countries from

The Difficult Emergence of African Video Games

the center as an internal event that then disseminated to the rest of the world via the channels of the capitalist economy. We see here how this narrative can be used to replay a high-tech variant of the civilizing mission from the colonial era. There is certainly no denying the decisive role played by Western countries in the mastery of computer technology, which created an environment favorable to the emergence of video games. Similarly, there can be no denying the emergence of video games in the United States in the 1960s. Nevertheless, this story, which describes the birth of video games in the United States, and then in Japan, leaves many gray areas. Indeed, South Africa, for example, had its first computing machines as early as the 1920s. In the 1950s, computers were introduced in British colonies such as Kenya. More generally, in Africa in the 1970s and 1980s, we saw the dissemination of the consumer video game (starting with the famous *Pong* game in 1972), notably via the phenomenon of arcade terminals. In the early 1980s, the privileged elites also had access to products such as Nintendo's Game & Watch (a portable console for children). Yet Ghana determined a different course: from the time of its independence in 1957, the new president Nkrumah adopted the discourse of technological innovation as a pledge of the country's political autonomy and encouraged the development of information technology in administration and in the business world.

The list of examples of the long-standing presence of information technologies in African societies can easily be extended. Thus, decentralizing the history of video games does not mean substituting one origin for another. On the contrary, it is a question of showing that, from the earliest years, there is a specific history of video games and computers outside the United States. We don't know whether, like the engineers at MIT, other engineers elsewhere in the world have invented (or not) computer games to pass the time. We haven't tried to find out. But let's not forget that, as early as the 1950s, independent India had an ambitious computer program. From a cultural point of view, this also means that video games have been present in African societies as a cultural practice for decades. What kinds of African audiences consumed video games prior to the Internet revolution in the 2000s? As with countries of the center, it is likely that video games initially concerned only small audiences with sufficient financial means to access expensive products. By decentralizing the global history of video games, we can show how these practices have *simultaneously* developed in the West and in Africa since

the 1960s and 1970s. Decentralizing the history of the video game allows us to counter the view of Africa as devoid of technological culture prior to the 1990s and 2000s, to highlight the many years of existence and diversity of cultural practices among African audiences, and also to document the colonial dimension of computer technology—and therefore of the technology that supports the video game.

Ultimately, the fact that so much remains to be done also means there is a great opportunity to build new imaginaries. At a time when pan-Africanism is finding new relays, both intellectually and in civil society, at a time when artists from various horizons are returning to decolonial movements to rethink their creative practices, the African continent has a specific card to play. This involves decolonizing the imaginary but also decentering the history of video games and computer science in general.

Translated from the French by Steven Corcoran.

[1] Newzoo.com is the leading provider of market intelligence covering the global games, esports, and mobile markets.

[2] Motion Picture Association website, March 21, 2019, <https://www.motionpictures.org/press/new-report-global-theatrical-and-home-entertainment-market-reached-96-8-billion-in-2018/>.

[3] William Audureau, *Pong et la mondialisation. L'histoire économique des consoles, de 1976 à 1980* (Toulouse: Pix'n Love, 2014), 14.

[4] The data are taken from the *Global Games Market Report* (Amsterdam: Newzoo, 2019).

[5] AAA designs large budget games, the video gaming equivalent of Hollywood blockbusters.

[6] Ubongo Game Lab website, accessed February 13, 2020, www.ubongogamelab.com.

[7] *Insomnia Egypt Gaming Festival 2019*, Cairo, October 31 to November 2, 2019, www.insomniagamingegypt.com.

[8] A Japanese version of role-playing video games, the most famous example of which is the *Final Fantasy* series.

[9] The game's universe integrates elements of fantasy and science fiction, in the vein of many recent Afrofuturist productions. On the planet Auriona, Prince Enzo Kori-Odan is the victim of a coup d'état. The royal couple is exiled and travels the six continents of the planet (each of which corresponds to a people). The game emphasizes the initiatory dimension of the characters' quest and features a mysterious energy, the Aurion, which can be used for both warlike and artisanal purposes.

[10] *Mzito: Awaken the Sleeping Lions* home page, last updated May 4, 2018, <https://mzitodevblog.wordpress.com>.

[11] *Kissoro Tribal Game* website, accessed February 13, 2020, <http://kissoro-tribal-game.com/>.

[12] Les Nouvelles, "Jeu vidéo: 'Dahalo,' le prochain projet de Lomay," interview with Matthieu Rabehaja, *Newsmada*, November 8, 2017, <https://www.newsmada.com/2017/11/08/jeu-video-dahalo-le-prochain-projet-de-lomay/>.

The Difficult Emergence of African Video Games

[13] Ubisoft is a French multinational headquartered in Montreuil, in the French department of Seine-Saint-Denis, in the Île-de-France region.

[14] “How South Africa Can Grow Its Gaming Industry,” *Conversation*, April 2, 2019, <http://theconversation.com/how-south-africa-can-grow-its-gaming-industry-114440>.

Dystopia



Utopia

Utopia



Dystopia

Non-Aligned

Fictions!

In the wake of the Non-Aligned Movement, how does one organize the fight against the colonisation of the internet [...]?

Live New Technological

Utopias: Leave Postcolonial



Imperialism,

Non-Aligned Utopias

The entry of Africa into the digital revolution in the mid-1990s led to emergence of the term the “digital divide.” Contrary to any promises of breaking away from the “old world,” the digital technologies perpetuate the idea that the African continent must catch up on its technological backlog. International organizations, multinational telecommunication companies, as well as the nation states and their citizens themselves will not stop demanding a massive and fast upgrading with digital technologies to prove that Africa has done a good job at integrating the cycles of their distribution, utilization, and even production. For several years, however, artists, scientists, and activists have questioned whether the African continent really should take over the information and communication technologies in the same way they have been established and developed in the West. In their statements, they refuse to take over the neoliberal technoscientific model of Silicon Valley, analyze the contribution of African mathematics to computer science, criticize the alleged advantages of the global introduction of electronic tools and the occupation economy of this branch of industry. They denounce a new type of colonialism—electronic colonialism.

The positions of these critics are reminiscent of the Non-Aligned Movement, whose principles were drawn up in April 1955 in Bandung, Indonesia, and which currently has a forum of 120 countries from Africa, Asia, South America, and the Caribbean. This movement, which opposes all forms of colonialism, imperialism, and foreign domination, and supports cooperation and national control of resources, is today an inspiration for the fight against electronic colonialism.

The first part of the *Digital Imaginaries* project, which took place in Dakar during the Afropixel #6 Festival hosted by the Laboratory for Digital Arts and Social Innovation Kër Thiossane, centered on the question as to what new non-aligned utopias could there be in the sphere of the digital.

The Digital Divide of the 1990s

In the mid-1990s, the first public internet connections appeared in many African countries. At the end of the 1980s, South African universities went online, and in 1992, the first commercial offers of internet access came on the market. In 1995, Ghana became the second African country to offer commercial internet access. During March 1996, Senegal’s national telecommunications company, Sonatel, set up a permanent internet connection.^[1] By the year 2000 almost

all African countries had access to the internet; however, the term “digital divide” soon dominated public and media debates about the continent’s entry into the digital era.

For scientist Thomas Guignard, who researched the history of the internet in Africa taking the example of Senegal, this is no coincidence, because the term “digital divide” is connected with telecommunication issues and the concept of development.^[2] As a matter of fact, in development policy thesis that began circulating in the 1950s, Western media were seen as vectors of “modern behavior,” and the fact that the developed countries are to this day the countries where communication technology is concentrated led to the idea that the developing countries need these technological advances to extricate themselves from underdevelopment.

The term “digital divide,” keeps the idea of technological dependence alive, and will lead to continued prioritizing of equipment and thus legitimation of Western interventionism.

In 1985, the International Telecommunication Union (ITU), a United Nations agency specializing in and responsible for all matters related to information and communication technologies, published a report titled *The Missing Link*. This report contains the findings of the commission led by Sir Donald Maitland, which was tasked with finding out what obstacles there are to developing telecommunication infrastructures and suggesting solutions in order to promote their global spread. The report also directed the attention of the international community to the “imbalance” between industrialized and developing countries with regard to their access to telecommunication services. A few years later, the ITU established itself as the key agency to contact for digital questions in Africa, so it is therefore only logical that digital technology continues to be connected to the idea of an “imbalance” between North and South that needs to be overcome.

Participation in the digital revolution requires an infrastructure for connecting to international communication systems, such as submarine cables and satellites, and making use of the services of multinational companies for electronics, telecommunication, and computers, which are almost exclusively located in the countries of the North.

Such expensive infrastructures are all the harder to access for countries in the middle of a phase of structural adaptation. In the 1980s, many African countries were confronting a financial crisis, which was connected to the drying up of international liquidity, falling prices for raw materials, and the

Non-Aligned Utopias

effects of the policies that had been pursued since their independence, which had proved inadequate. In the mid-1990s, around forty African countries were following structural adjustment programs provided by the International Monetary Fund and the World Bank. Thus, the domestic policies of these states were controlled by these international financial institutions, who in return for installment loans demanded strict budgetary discipline, tax reforms, the reorientation of public spending toward areas with a high rate of return on investments, and the liberalization of foreign trade.

Thus, the race for infrastructures and equipment was set in motion by liberal policies and privately owned, mostly Western companies.



Highway near Dakar (GH), 2018. Photograph first published in Afropixel #6 brochure, Kër Thioossane, Dakar (SN), 2018.

Furthermore, at the beginning of the new millennium, decades of seriously deficient public policies had bled the states and their citizens dry. The governments, the media, and public policy wanted to see in the digital revolution a palliative revolution for Africa's evils, which politics and the international institutions had been unable to eradicate.

The Mobile Communications “Wonder” of the 2000s

In her article “La téléphonie mobile dans les villes africaines. Une adaptation réussie au contexte local” [Mobile Communications in African Cities: A Successful Adaptation to the Local Context],

scientist Annie Chéneau-Loquay calls to mind that “information and communication technologies are part of a given sociocultural environment, which corresponds to its creation or use.”[3] The digital divide on the African continent is bridged by the introduction of mobile communication, for it has become evident that this technology is best suited to reacting to local and economic specificities. The “boom” in mobile communications has to do with various factors. The manufacturers and access providers adapted their services to the characteristics of the African market by selling cheap telephones for less than 20 U.S. Dollars, offering the option of using two SIM cards, expediting the development of prepaid cards, and offering the possibility of doing money transfers via SMS. The market for second-hand cell phones has developed very dynamically, too. Landline telephony is still reserved for an elite, and since it was installed by the former colonial government has suffered from structural malfunctioning. These problems will partly justify doing away with it. Unlike the landline system, mobile telephony is able to react to the disparity of the infrastructures, which structurally persists between the well-equipped cities and the ill-equipped rural areas. Eventually, from the 2000s, an entire ecosystem developed that brought forth a new shadow economy: telecenters, repair workshops, and consumer electronics retailers sprang up and created a network that facilitated the fast and massive development of the use of cell phones. In 2003, there were 51.4 million mobile subscribers in Sub-Saharan Africa. According to the GSMA (Global System for Mobile Communications Association) website, at the end of 2018, this figure had risen to 456 million. Hence, in future the majority of Africans will have access to the internet via cell phones. In December 2000, 4,515,400 people had access to the internet, and by February 2021 this number had increased to 634,863,323 people, which amounts to an increase of 13,963 percent in 20 years.[4]

The Enterprise Model of Silicon Valley in the 2010s

With the companies of Silicon Valley as the reference and often also as partners, a digital culture became established, which paved the way for the rise of small start-ups that develop apps in the fields of education, agriculture, health, and videogames. M-Pesa, the electronic wallet, which in 2008 revolutionized financial transactions in Kenya after the political crisis, has inspired both Africa and the global financial world.

Non-Aligned Utopias

Silicon Valley is represented in all fields—internet access, funding of start-ups, offers of training places—and expands its presence continually. In October 2015, Mark Zuckerberg announced that he was going to wire up Africa via space with the aid of the AMOS-6 satellite. The satellite would provide a dozen African countries—particularly those south of the Sahara—with wireless internet access. Through the Express Wi-Fi project high bandwidth would be provided and the Internet.org Initiative supported, which offers free internet but only to a limited number of websites that can be consulted via the Free Basics app. During a visit to Nairobi and Lagos a few months later, the Facebook CEO explained that one of the reasons for his visit is because a large proportion of the



Scrapyard in Agbogbloshie district, Accra (GH), 2018. Photograph first published in *Afropixel #6* brochure, Kër Thioossane, Dakar (SN), 2018.

future will be built in Africa. In 2017, Google pledged themselves to train ten million people in Africa in online skills, and 100,000 software developers. Google's program Launchpad Accelerator Africa includes funding of over three million dollars over a period of three years for around 60 technology start-ups located in Africa. The technoscience, capitalist model, however, is also being pursued by Chinese companies, which have launched an offensive in the sectors of hardware and glass fiber optics. For example, the Chinese holding company Transsion, which has overtaken Nokia, Samsung, and even the Chinese company Huawei, now plays a leading role in the production of smartphones for the African market, and has opened a factory for smartphones in Ethiopia.

The Leapfrogging Discourse

The media's attention is focused on the figure of the "start-upper" as well as on an African business model that works according to principles that benefit the neoliberal economy like thrift, flexibility, or the ability to be innovative under challenging conditions and location shifting. The media celebrate Africa's "technological leapfrogging" and head off in search of the next African "unicorns."^[5] The metaphor of leapfrogging is used in development theory to describe how countries in a state of industrial and technological underdevelopment nevertheless possess the potential and have the historic chance to achieve a state of advanced industrial and technological development within a relatively short time. Mobile telephony is seen as an example of leapfrogging because it has enabled developing countries to bypass the landline technology of the twentieth century and jump straight to the mobile communication technology of the twenty-first century. Already the concept of leapfrogging suggests that the problem of the access to digital technologies is part of a race to catch up.

This digital revolution is taking place in parallel to positive economic growth rates, spectacular prognoses with regard to demographic growth, and the emergence of scientific initiatives on the entire continent, which are closely observed by the media. These include the Next Einstein Forum (NEF), which supports the sciences on the continent, and the space program, of which the most ambitious example is the announcement in 2016 by Nigeria that by 2030 the country aims to be capable of launching a satellite into space. The greatest optimists celebrate new perspectives, a regained pride, and the ability to write their own independent history. All these elements flow into the discourses that make Africa the continent of the future, contrary to Europe, the United States, or China, where collapsology and transhumanism fight over the appropriate answer to the question of which processes will lead most probably to the disappearance of humankind. In the first case, our disappearance would be the result of the inexorable destruction of the environment by humans, that they make life impossible for themselves; in the second case we would be enhanced and augmented by machines to such an extent that our humanity, which is characterized by imperfection, would be swallowed up.

Electronic Colonialism

The enthusiasm about Africa's mission to be the next technological center must be dampened by far less optimistic news. The average rate of internet growth of 39.8 percent in the year 2019 obscures the grave inner-African differences and shows indirectly that 60 percent of Africans have no access to the world wide web. The most sought-after minerals needed for electronics—cassiterite, coltan, wolframite, and gold—which are used in the production of laptops, gaming consoles, and most products of the electronics industry, are today above all sources of conflict, and the areas where the materials are mined are mostly warzones that convulse Africa. Alaba in



E-waste in Agbogbloshie district, Accra (GH), 2018. Photograph first published in Afropixel #6 brochure, Kér Thiossane, Dakar (SN), 2018.

Nigeria and Agbogbloshie in Ghana are two of the largest open-air disposal sites for electronic waste in the world. More than 600 million Africans have no electricity. According to Tavnet Suri, a scientist at the Massachusetts Institute of Technology, M-Pesa only managed to liberate 2 percent of Kenyan households from extreme poverty.^[6] When one considers what is at stake in the fight against poverty, this is a very small number. Thus it is a legitimate question whether certain experiments conducted on the African continent, like the Droneport project conducted by the Norman Foster Foundation in collaboration with the Afrotech Center of the Swiss Institute for Technology in Lausanne and the U.S. company Zipline, can replace permanent infrastructure such

as roads and hospitals, or whether they are using the continent more as a kind of laboratory for private experiments.

Referring to these limitations, in their analyses and critical statements social scientists, philosophers, and artists from the African continent criticize these discourses that declare Africa to be the last frontier of the liberal technoscientific economy and the information society. They uncover the existence of a new imperialism and call to mind the fact that a small number of multinational enterprises control the architecture and the way the network functions, the domain names, the search engines, and data acquisition and usage. Africa is therefore caught in the nets of a digital culture that perpetuates the *dispositifs* of colonialism.

Operating from the continent of Africa, how does one organize the decolonization of the internet, organize “cyber-resistance” as advocated by the artist Tabita Rezaire? Is it possible to conceive and develop digital technologies and practices that are not aligned to hegemonic and neocolonialist models?

Digital Imaginaries, Dakar, Non-Aligned Utopias

At a time in which the ideals are collapsing that established the internet as a utopia, as a space that abolished all differences regarding age, skin color, sex, social, and geographic borders, it appears urgently necessary to take a step back and analyze other constellations in order to make room for new narratives. This was the reason why the first part of the *Digital Imaginaries* project, which took place in Dakar during the Afropixel #6 Festival, hosted by the laboratory for digital arts and social innovation Kër Thiossane, was designed with the ambitious goal of conceiving new utopias. We gave the festival the title *Utopies Non-alignées* (Non-Aligned Utopias), because it has appeared to be relevant to remind that the non-aligned movement was developed at the same time as the modern computer research. The principles of this movement were announced in April 1955 in Bandung. At this conference, 29 African and Asian states declared their refusal to participate in the Cold War, declared their independence vis-à-vis the United States and the Soviet Union, and voiced the desire of strengthening relationships with both great powers. At the height of this movement, 120 countries from Asia, Africa, the Middle East, Latin America, and the Caribbean belonged to it. Conscious of the fact that they represented half of humankind, they wanted to occupy a place on the international stage and

Non-Aligned Utopias

lay the foundations for their own models of society. What we want to adopt from this movement is its symbolic power, its ability to unite on a transcontinental level, as well as some of its collective principles, such as the fight for independence, the strong desire to develop independent models of emancipation, condemnation of all forms of imperialism, and the intelligence and solidarity of the margins.

The festival program was developed from the work of artist-activists who are the breeding ground for a thoroughly networked and critical counterculture, and are part of a pan-African perspective. These artists destabilize the limits of representation, call for a cultural revolution, plead for a decolonization of the arts and knowledge through an inventory



Construction site of the toll highway between Dakar and the Aéroport International Blaise Diagne (AIBD), 2018. Photograph first published in Afropixel #6 brochure, Kër Thioissane, Dakar (SN), 2018.

of local technological knowledge and the archaeology of the ancestors' scientific knowledge, to develop in this way new representations, new narratives and utopias, and reappropriate the future.

The artists Tabita Rezaire, Francois Knoetze, and the collective of architects DK Osseo-Asare and Yasmine Abbas, who were invited for a residence at Kër Thioissane, developed projects based on a critical approach, which emphasizes the various prejudices against digital technologies and focuses on the production of alternatives. French-Guianese-Danish artist Tabita Rezaire in her works explores ways out of electronic colonialism and the various options for reappropriating the terminology of science and technology. Her research is also

about the possibilities of reestablishing harmony between the living and the cosmos, the body and technology. In Dakar, Tabita Rezaire addressed contemporary problems in space research with regard to popular knowledge as well as religious and spiritual beliefs. And she began her investigation of the circular megalithic gravesites, which are found throughout Senegal and the Gambia.

South African artist Francois Knoetze developed the first chapter of a series of four movies titled *Core Dump*, in which he attempts to show that the libertarian technoscientific utopia of Silicon Valley is a myth about extractivism, the disposal of electronic waste, and the digital proletarianization of the African continent.

And DK Osseo-Asare and Yasmine Abbas, with the aim of creating the practical requirements for technological knowledge that is adjusted to local circumstances and needs, conceived and supported the construction of the *Spacecraft_KT*, a 100 percent local R & D module which resulted from their work on the Agbogbloshie Makerspace Platform (AMP).

Conclusion

Is it possible to reappropriate the vocabulary of science and technology that has been hijacked by the neoliberal ideology of Silicon Valley so that its meaning and possibilities can be explored in a new way? Are digital technologies exclusively products of Western culture? What do the laboratories of alternative practices look like? Are other versions of the future possible and worth striving for? Can we even continue to think about utopias if we, like the sociologist Joseph Tonda who also participated in the Afropixel #6 meetings, assume that we are dominated by screens that exert a fascination on us that leads to petrification? The sheer size of the internet and the primacy of the neoliberal technoscientific model are so alarming that one wonders whether digital technology is the greatest dystopia of the 21st century. The revelations by whistleblowers have shown how urgently necessary it is to analyze the ties between technologies and their possibilities to control: data surveillance, anticipatory analyses and data mining, body recognition software, the digitization of our everyday lives for commercial interests. All over the world, it has become evident how important the idea is to find alternatives. These can only result from an approach that is polycentric and multifaceted. On the African continent, the potential contained in the notion of a non-aligned utopia

Non-Aligned Utopias

ensues from the special circumstance of the continent's long history of fighting against imperialism and colonialism, as well as from local digital practices and usage patterns. To take these into account means to recognize the decisive and possibly even the most significant contribution by Africa to these efforts.

Translated from the German by Isaac Custance.

[1] “At the Third African–African American Summit in May 1995 convened in Dakar the first permanent connection to the internet was set up on a trial basis via VSAT terminal with a speed of 64 kbit/s. [...] In March 1996 Sonatel installed a permanent connection to the internet via a 64 kbit/s connection to the Intelsat 635 satellite of the U.S. company MCI.” Olivier Sagna, “De la domination politique à la domination économique: Une histoire des télécommunications au Sénégal,” *tic&société* 5, 2–3 (2011/2012), doi: 10.4000/ticetsociete.1030. Translated from the French.

[2] Thomas Guignard, “Réduction de la ‘Fracture numérique’ et développement en Afrique: une vision ethnocentrique et industrielle,” https://www.academia.edu/34888566/R%C3%A9duction_de_la_fracture_num%C3%A9rique_et_d%C3%A9veloppement_en_Afrique_-_une_vision_ethnocentrique_et_industrielle.

[3] Annie Chéneau-Loquay, “La téléphonie mobile dans les villes africaines: Une adaptation réussie au contexte local,” *L'Espace géographique* 41, 1 (2012): 82–93. Translated from the French.

[4] Internet World Stats, *Internet Users Statistics for Africa. Africa Internet Usage, 2020 Population Stats and Facebook Subscribers*, 2020, <https://www.internetworldstats.com/stats1.htm>.

[5] The word “unicorn” is used to denote a startup company, particularly in Silicon Valley, that is worth more than a billion U.S. dollars. “Unicorn” was first used in this sense in 2013 by Aileen Lee.

[6] Sabine Cessou, “Fièvre numérique au Kenya,” *Le Monde diplomatique*, December 2018, <https://www.monde-diplomatique.fr/2018/12/CESSOU/59333>.

Utopias

or

“Development is there,
but invisible,” because
it is in the night.
It is the space
of ill-discipline,
revolutions,
battles for
the control
of the
day.



Afrodystopia?

Utopias or Afrodystopia?

We are possessions, we are colonies, objects and therefore fetishes, and these fetishes are fetishes that belong to the digital world. It is this screen-mediated colonisation that I call postcolonial colonisation or imperialism.
(Joseph Tonda, Dakar, May 2018)

In his latest work, *L'impérialisme postcolonial. Critique de la société des éblouissements* (2015) (*Post-Colonial Imperialism: A Critique of the Society of Amazements*), the sociologist Joseph Tonda highlights the very particularity of the moment we are living through: insidiously, we have entered the era of postcolonial imperialism, in which the African continent, like the rest of the world, is subject to the same liberal techno-capitalist economic regime. It is an imperialism that exercises its domination invisibly, colonizing our unconscious and feeding off our desire for power, for the enjoyment of material goods, and for sexual pleasures. This complex model has resulted from the mutation of capitalism and the advent of screen technologies, which at once “fascinate, seduce, amaze, possess, obsess, oppress, haunt, and ultimately colonize the imaginary and unconscious of groups.”^[1]

As part of the Afropixel #6 Festival, *Digital Imaginaries* invited Joseph Tonda to discuss the potential of utopia. He brought our attention to the notion of Afrodystopia as “the realisation of Western utopia thanks to the slave trade, colonisation, and the current postcolonial or neo-colonial era.”

The festival also brought Joseph Tonda into conversation with the South African artist in residence at Kër Thiossane, Francois Knoetze. Their discussion on the persistence of the unconscious of colonization and screen based neoliberal neocolonialism was the starting point for the second part of *Core Dump*, which explores how raw materials extracted from the Democratic Republic of the Congo are transported around the world to serve the digital technology industry before returning to the continent as electronic waste.

Here is an excerpt from Tonda's presentation at the Point Sud seminar in the context of *Digital Imaginaries* in May 2018 in Dakar.

To project oneself into the time of the future, one must tear oneself away from the time of the present. How can this be done when the future is situated in a metaphorical space considered real; a space that strongly interferes with so-called real space and that, moreover, presents all the characteristics of Western capitalism? This is the question raised by the "incredible" story I heard in Libreville as part of my investigations into Afrodystopia. It is the story of three child queens of an invisible kingdom, thus a kingdom of nowhere. Even so, the queens are brought to justice after members of a village community issue a collective complaint against them. The queens are accused of killing and eating in invisibility the people living in this community, some of whom were members of their families. For these young queens, who are under seventeen years of age, the future is lived in the present, in a metaphorical space that is the invisible space of the night, the space of a dream that projects them into the Euro-American world. Albeit residing in their homes, they live elsewhere. They have supersonic aeroplanes that their king makes them from the pages of school notebooks. This king, who does not answer the judges' questions, is the grandfather of one of the girls, the one whose status is that of the queen of queens. In Gabonese traditions, granddaughters are symbolic wives of their grandfathers, just as grandsons are symbolic husbands of their grandmothers. It is this anthropological scheme that is updated here through the story of this old king whose granddaughter is his queen.

The judges take this case very seriously, which they situate in the invisible but real world, while Western-trained researchers see it as an imaginary delineation of a dystopian world. Indeed, these young girls, who say they live in Gabon and simultaneously claim to live in invisibility in Europe and America—which leads to their crossing borders and territories that others may in reality be unable to cross—are authors of utopian accounts of journeys that others, who set out from Senegal, Cameroon, Congo, or elsewhere, endure in a state of pain while traversing desert in Libya or being in the "belly of the Atlantic." Both stories are tales of the desire to escape what Donald Trump called their "shithole countries."^[1] While the king of the invisible kingdom goes to prison in the Gabonese town where this story takes place, many of the sub-Saharan Africans who set out in pursuit of their European utopia have to endure the prisons of slavery in Libya. On the one hand, there is a collective dream of a utopian nocturnal life that leads to courts and prison; on the other, there is another dream that leads to the prisons of slavery in Libya—both dreams are Afrodystopian. For in Afrodystopia, as these two stories attest, the real and the unreal are indistinguishable.

Utopias or Afro dystopia?

In the West, literary or practical utopias are expressions of exasperation at capitalist society. They are unconscious expressions of a *Parousia*—of Christ's return to Earth. In Africa and for Africans in the diaspora, the future, however sophisticated, always takes the logic of the visionary message of William Wadé Harris, a prophet who gave his name to a religion, the Harris Church. His message states that tomorrow the whites will be the blacks and the blacks will be the whites. It therefore announces a chromatic mutation that may be either symbolic or real—at this level there is no difference. Other variants of it exist, however. For example, in Gabon, Prince Birinda argued in the 1950s that Gabon is to Africa what Tibet is to Asia, that is to say, a spiritual center of religious initiation. This initiation is allegedly carried out by black magi, heirs of Balthazar, who teach the mysteries of existence and nonexistence. What is important here is that these mysteries are contained in a book named by its author *The Secret Bible of the Blacks*.^[2] In this Bible, the Gabonese religion of the Bwiti is described as a "science practised secretly in ancient temples."^[3] Its knowledge is supposed to enable mortals to become demigods and demigods to become immortal gods, in accordance with the grade of initiation. This teaching has it that this science was practiced not only in Ethiopia, but also in the temples of Thebes, Memphis, Alexandria, and Delphi.

The prophecy of Monsignor Zoaka Zoaka, which I study in my book *La guérison divine en Afrique centrale (Divine Healing in Central Asia)* (2002), mentions a book that a white man in charge of a gold mining site, René Marion, is alleged to have misappropriated; this book is one that a person named Jean-Baptiste had intended for Monsignor Zoaka Zoaka so that he could fight against witchcraft wherever he went in the world. In 1994 I met Zoaka Zoaka in Mekambo, in the north-east of Gabon, and he told me that this misappropriation of his "book of geography" had sent him crazy. Concerning Marion, he prophesied thus: "Today, we blacks take care of your pots and pans; tomorrow, it is you who will take care of ours."^[4]

As we see in all these stories, at issue is a mere reversal of domination, and the world in which this new domination will come about is one in which the secrets of the book, the secrets of science, will divide people into those who are dominant and those who are dominated. Even in African art, tomorrow's cities are, be they ill-disciplined or disciplined in relation to the canons of Western art, postcolonial cities, refractions of the cities of Western science fiction, or its utopias. The future underscored in art finds its principle in displacement, including in the uses of computer science or cybernetic space invented in the West. Albeit residing at home, Africans will be living elsewhere, that is,

in their imagination. This is a characteristic of the special structuring of time around the visible and the invisible operative in Black Africa. What is visible is already there. It is already realized in the invisible; "development is there, but invisible," because it is in the night. It is the space of ill-discipline, revolutions, battles for the control of the day. At the same time, the future that is in the night lies in darkness, in death, in sex, and in madness. In Europe, Christian messianism aims to bring an end to death through Christ's resurrection. In Africa, we return to the night to reconnect with history, which was stopped but which continues in the night, and do so in order to build the future: the history brought to a standstill by the transatlantic slave trade, imperialism, and colonialism. The future is in the past, and the past, like the future, is in the night; both lie in the same structure, that which makes body and mind inseparable. To project oneself into the future, then, one must plunge into the dark depths of the night, and thus into the depths of the body as inseparable from the mind, of the day as inseparable from the night. Dreams, trance, and madness are all means of access to the future that is already there. If it were not already there, how could it be accessed through the motionless journey of the spirit that unfolds in the visions of Bwiti initiates,[5] in those of Pentecostal pastors, or even in those of artists or writers. The difference, however, between Euro-American and African visionaries is that what the former see and construct is an expression of exasperation at the state of today's world, while the latter construct an expression of exasperation at the state of the world that the scientific and technological imagination of the former has shaped. Albeit minimal, the difference is profound. It shows that Afrodystopia is the utopia of salvation gained through a plunge into the night; it is a world of witchcraft, a world of the imaginary, reviving inventions and past scientific conquests.

Translated from the French by Steven Corcoran.

[1] "Why are we having all these people from shithole countries come here?" The Washington Post reports that the statement was made by the U.S. President on January 11, 2018, in the context of a meeting in the Oval Office with lawmakers who suggested protecting immigrants from several African nations, El Salvador, and Haiti. Josh Dawsey, *Washington Post*, January 12, 2018, www.washingtonpost.com/politics/trump-attacks-protections-for-immigrants-from-shithole-countries-in-oval-office-meeting/2018/01/11/bfc0725c-f711-11e7-91af-31ac729add94_story.html.

[2] Prince Mathieu Birinda, *La Bible secrète des noirs selon le bouity: Doctrine initiatique de l'Afrique équatoriale*, illustrations by the Countess S. de Villermont and R. Kempf according to the author. Commentary by Jean-René Legrand (Paris: l'Omnium littéraire, 1952).

Utopias or Afrodystopia?

[3] Birinda, *La Bible secrète des noirs selon le bouity*, 28.

[4] This is a quote from an interview I conducted in 1994 with Monsignor Pascal in Mekambo, north-eastern Gabon.

[5] Bwiti is a syncretistic religious community that, organized in a decentralized manner, is practiced in Gabon in Central Africa as well as in regions in neighboring countries. The Bwiti cult in its present form emerged in the mid-nineteenth century and mixes the influences of various traditional African religions with the teachings of Christianity.

Futures of

Whether operating on bodies, nerves, material, blood, cellular tissues, the brain, or energy, the aim is the same—the conversion of all substances into quantities, of organic and vital ends into technical means. Everything must be subjected to quantification and abstraction.

Reason

Digital Age

in the

What follows is a set of urgent, fragmentary, and unfinished reflections on our global present and the durability of our planet. Underlying them is a political, aesthetic, artistic, and almost existential preoccupation with the question of how to inhabit a planet that is in such dire need of repair; how to share it among all its inhabitants (refugees, migrants, and prisoners included), and how to remember it, that is, to put back together its many different parts (the ethics of mutuality).

Attending to these preoccupations obliges us to refocus our attention on three megaprocesses that overwhelmingly bear on these questions of inhabitation, durability, and circulation—all of which will be at the center of any debate on the future of the arts and the future of life in this century.

1.

The first megaprocess is the unprecedented consolidation of power (political, financial, and technological) in the hands of private corporate entities whose sphere of action is the globe, and whose key aspirations are to secede from while exercising surveillance on everybody else, to be exempt from taxes, to be free from accountability—in short, to enjoy the kind of immunity and state of exception we used to bestow only on truly sovereign powers.

This is what Shoshana Zuboff calls, in a recent book, “surveillance capitalism.”^[1] She argues that a global architecture of behavior modification is under way. Driven by powerful states, high-tech corporations, and military apparatuses, it threatens “human nature” in the twenty-first century, just as industrial capitalism disfigured the natural world in the twentieth. Vast wealth is accumulated in what she terms new “behavioral futures markets,”^[2] that is, markets in which predictions about our behavior are bought and sold, and the production of goods and services is subordinated to new means of behavioral modification.

Early twenty-first-century forms of corporate sovereignty are made possible largely by the various legal frameworks behind international trade agreements, foreign investment treaties, and other mechanisms for global trade.

The demos is no longer the sovereign. Financial capital in the guise of ubiquitous digital architecture is the new leviathan: an unprecedented form of power marked by extreme concentrations of knowledge that is largely free from democratic oversight.

Digitally mediated financial capital has become our shared infrastructure, mapping out our world. It defines our collective

nervous system and threatens to turn into a transcendental maw that swallows the world as we have known it. Indeed, nothing seems to escape its control, whether affects, emotions and feelings, manifestations of desire, dreams, or thought—all of life, in short. No sphere of contemporary life has been left untouched by the spread of capital.

Capital now extends its grasp deep into the underbelly of the world. In its wake, it leaves vast fields of debris and toxins, waste heaps of humans ravaged by sores and boils. Now that everything is a potential source of capitalization, capital has made a world of itself: a hallucinatory phenomenon of planetary dimensions.

That is the first megaprocess I want to invoke, the historical bifurcation of liberal democracy and financial capitalism, which led to the emergence of corporate sovereignty, a new form of sovereignty that grants itself immunity and the powers of exception.

2.

The second megaprocess I would like to invoke is technological escalation. A key feature of our times is the extent to which all societies are organized according to the same principle—the computational. The computational is generally understood as a technical system whose function is to capture and automatically process data that must be identified, selected, sorted, classified, recombined, codified, and activated.

But we should not forget that the computational is also a *force* and energy of a special kind. It is a force and energy that produces and serializes subjects, objects, phenomena, consciousness, and memory, which can be coded, stored, and sold for profit.

Whether operating on bodies, nerves, material, blood, cellular tissues, the brain, or energy, the aim is the same—the conversion of all substances into quantities, of organic and vital ends into technical means. Everything must be subjected to quantification and abstraction, the capture of forces and possibilities and their annexation by the language of a machine-brain transformed into an autonomous and automated system. The computational is the institution through which a common world, a new common sense, and new configurations of reality and powers are brought into being.

The emergence of corporate sovereignty, with its extension of capital into every sphere of life, and technological escalation in the form of the computational are part of the same process.

Both are shaped by the alliance between military power, the industry that surrounds it (contractors), and tech giants. They are also driven by corporate elites detached from their territory, who store their capital in tax havens, evade even minimal solidarity in taxation, and increasingly distance themselves from their countries of origin.

These elites currently cannot be brought to account by traditional means of democratic life, such as elections or protests. They defeat citizen's scrutiny via complexity and secrecy, often under the pretext of national security or via an economic rationale that puts capital first, before people. This process everywhere heightens uncertainty and insecurity and even capitalizes on life's inherent risks and misfortunes.

3.

The first two megaprocesses engender a third one that centers around two fundamental questions. These two questions confront us today and will haunt us for most of this century: the question of *life futures*, that is, the self-organization of being and matter, and that of the *future of reason*.

For a long time, the human race has been concerned with how life emerges and the conditions of its evolution. The key question today is how life can be reproduced, sustained, made durable, preserved, and universally shared, and under what conditions it ends.

These debates about how life on Earth can be reproduced and sustained and under what conditions it ends are forced on us by the epoch itself, characterized as it is by impending ecological catastrophe and by technological escalation.

Unprecedented numbers of human beings today are embedded in increasingly complex technostructures that intervene in the dynamics of the Earth system on a planetary scale. This has led to the transgression of planetary boundaries, such as those related to anthropogenic climate change: degenerative land-use change, accelerated biodiversity loss, perturbation of the global biogeochemical cycles of nitrogen and phosphorus, and the creation and release of novel entities such as nanoparticles and genetically engineered organisms.^[3]

Furthermore, both metabolically (for example, in terms of energy needs) and reproductively, technologies are becoming more and more tied into complex networks of extraction and predation, manufacturing and innovation. Take, for instance, what is going on in the domain of genes and molecules. The heyday of DNA study we currently live in has allowed the cracking

and public dissemination of the genetic codes of humans, plants, and animals. This, in turn, has given way to an exponential rise of biological patents. Currently nearly 20 percent of the human genome is privately owned, in a market logic context that addresses *life as a commodity* to be manipulated and replicated under the volatility of market consumption.

Study after study has shown, for instance, that corporations are intervening directly in the natural cycles of life and ecosystems through widespread genetic modification of key elements in the food chain. And as patented GMO genes are absorbed into our bodies in a proprietary relationship of biological subjugation, the body becomes an expanded, multiple infrastructure, where intervention can happen at many different scales.

It is therefore correct to argue that the distribution of powers between the human and the technological are shifting in the sense that technologies are moving toward “general intelligence” and self-replication. They are being granted the powers of reproduction and independent teleonomic purpose rather than having them taken away.

Over the last decades, we have witnessed the development of algorithmic forms of intelligence. They have been growing in parallel with genetic research, and often in its alliance.

The integration of algorithms and big data analysis in the biological sphere does not merely bring with it a greater and greater belief in technopositivism and modes of statistical thought. It also paves the way for regimes of assessment of the natural world, and modes of prediction and analysis that treat *life itself as a computable object*.

Concomitantly, algorithms inspired by ideas of natural selection and evolution are on the rise. Such is the case with evolutionary algorithms—a subset of genetic algorithms that mimic actions inspired in biological operators, such as cells, seeking to optimize the responses to the problems of their environments by self-generating and encompassing processes of mutation and natural selection. The latter are designed to evolve and further adapt to the environment, in a process of self-generation.

As Margarida Mendes has shown, the belief today is that everything is *potentially computable and predictable*.^[4] In the process, what is rejected is the fact that life is an open system, nonlinear, and exponentially chaotic. These are also times when many are gradually coming to the realization that *reason may well have reached its limits*. Or in any case, it is a time when reason is on trial (the Dark Enlightenment).

Reason is a faculty we used to recognize in humans alone. In the Western tradition we have all, willingly or not, inherited, reason was always seen as the highest of all human faculties, the one that opened the doors to knowledge, wisdom, virtue, and, most importantly, freedom.

Although unequally redistributed among humans, reason was the prerogative of humans alone. It distinguished us from other living species. Thanks to our superior capacity to exercise this faculty, humans could claim to be exceptional.

Today, reason is on trial in two ways.

First, reason is increasingly replaced by rationality, and rationality is increasingly subsumed by instrumental rationality. While this fear already drove the scholarship of the Frankfurt School before World War II, epitomized by Max Horkheimer's *Eclipse of Reason*, it has escalated in unprecedented ways.^[5] Reason dwarfed and perverted to instrumental rationality is being reduced in the contemporary to algorithmic processing of information. In other words, what was the logic of reason is being morphed from within by the logics of algorithmic machine learning. The human brain is no longer the privileged location of reason. The human brain is being "downloaded" into nanomachines.

An inordinate amount of power is gradually being ceded to abstractions of all kinds. Old modes of reasoning are being challenged by new ones that originate through and within technology in general and digital technologies in particular, as well as through the top-down models of artificial intelligence.

As a result, an amputated understanding of *techne* is becoming the quintessential language of reason and its only legitimate manifestation. Furthermore, instrumental reason, or reason in the guise of *techne* reduced to one-dimensionality, is increasingly *weaponized* in a way that Herbert Marcuse could not have predicted.^[6] Time is becoming enveloped in the doing of machines. Machines themselves do not simply execute instructions or programs. They start generating complex behavior.

The computational reproduction of reason has made it no longer the exclusive domain of the human species. We now share it with various other agents. Reality is increasingly construed via statistics, metadata, modeling, and mathematics.

The second way in which reason is on trial is that many are turning their back on it in favor of other faculties and other modes of expression and cognition. They are calling for a rehabilitation of affect and emotions, for instance. In many of the ongoing political struggles of our times, passion is clearly trumping reason. Confronted with complex issues,

feeling and acting with one's guts, viscerally rather than through reasoning, is fast becoming the new norm.

We are therefore increasingly surrounded by multiple and expanding methods of calculation. More and more, these calculations incorporate life and matter into systems of abstraction and machinic reasoning. In the process, they generate new automated couplings between matter, machines, and human beings.

Computational and algorithmic logic is found at the very source of general perception. In the age of pattern recognition and anomaly detection, power is increasingly about navigating an ocean of data by recognizing waves of pattern and by making a decision whenever an anomaly is encountered.

4.

The three megaproceses highlighted above leave us with foundational questions that will haunt this century.

The first is, What remains of the human subject in an age when the instrumentality of reason is carried out by and through information machines and technologies of calculation?

The second: Who will define the threshold or set the boundary that distinguishes between the calculable and the incalculable, between that which is deemed worthy and that which is deemed worthless and therefore dispensable, between what can and cannot be insured, what can and cannot be made to or allowed to circulate?

The third is whether in the double-edged conditions of our times, we can turn these instruments of calculation and power into instruments of liberation. In other words, What will it take to turn calculation itself into a site of political struggle, knowing full well that more than ever before, modes of seeing and measuring are key devices in current projects of domination at a planetary scale?

Conclusion

Reason has found its limits when all we can ask from it is to detect patterns or to recover artifacts whose existence is derived from financial models built on technologies of miniaturization and automation. Reason can also be said to have found its limits when it becomes so tightly aligned with the politics of securing, excluding, and enclosing.

We are entering an age when to act without reasoning is the new norm; when to act requires us to leave behind



reflective thinking and the slow pace of consciousness; when data correlation is all that matters. We are fast approaching a time when an epistemic hegemony will have reduced life and the Earth to a financial problem, to a problem of financial value.

The solution is not to turn our backs on technology. What we must find out is what a counter-hegemonic use of hegemonic instruments would look like.

Can we imagine a different political usage and purpose for mass computation?

What kinds of counter-institutions are needed if we are to reclaim mass computing power as a basic right of civil society and demand its autonomy, if we are to intervene at the same scale as governments and corporations?

What contours must activism for the data politics of the future take?

Will we be able to invent different modes of measuring that might open up the possibility of a different aesthetics, a different politics of inhabiting the Earth, of repairing and sharing the planet?

[1] Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: Public Affairs, 2019).

[2] Ibid.

[3] Jonathan F. Donges, Wolfgang Lucht, Finn Müller-Hansen, and Will Steffen, "The Technosphere in Earth System Analysis: A Coevolutionary Perspective," *Anthropocene Review* 4, no. 1 (2017): 23–33.

[4] Margarida Mendes, "Molecular Colonialism," in *Matter Fictions*, ed. Margarida Mendes (Berlin: Sternberg Press, 2017), 125–40.

[5] Max Horkheimer, *Eclipse of Reason* (New York: Oxford University Press, 1947).

[6] Herbert Marcuse, *The One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society* (Boston: Beacon Press, 1964).

Progress



Tradition

Tradition



...the middle of the maze are dealing in

Progress

&spacecraft:

Collaborative making, in this sense, extends to the production of architecture—understood as an envelope for life experience—empowering people to cocreate technology that both frames and engenders their own reality.



Building an

Program

Aeronautics

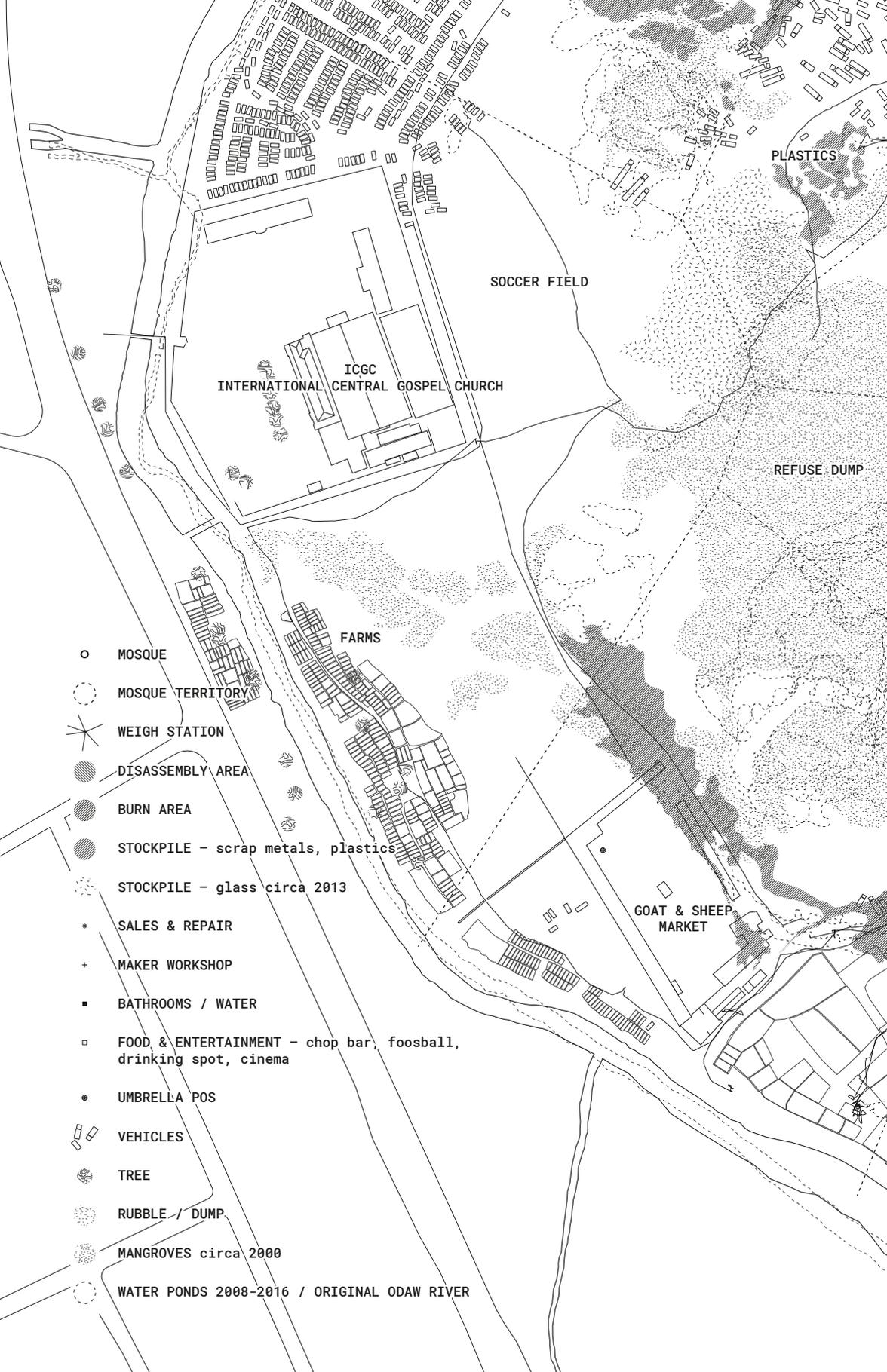
Located near the “center of the earth,” the scrapyards known as Agboglobloshie are black holes, collapsed stars of soil, water, electronic materials, and digital memories, reborn as a hypermassive body that warps the fabric of space-time.[1] Fluctuating between vast unknown territory and a highly constrained, scientifically overstudied site, the scrapyards are an emergent phenomenon that masquerades as anomaly or aberration—an off-grid wasteland of reinvention that seemingly averts the curse of consumerism, while both its existence and propagation are byproducts of technocapitalist mythologies of progress.

Despite its appellation, the Agboglobloshie scrapyards are not actually in Agboglobloshie. Named after a god that lives in the Odaw River, Agboglobloshie proper is a commercial district at the edge of Accra’s South Industrial Area, near the city’s central railway station. The infamous Agboglobloshie scrapyards—a twenty-acre open-air manufactory, scrap emporium, and recycling ecosystem that symbolizes technology’s toxicity and the problem of planned obsolescence—is instead part of Old Fadama, on the opposite side of the Abose-Okai Road. This neighborhood triangulates the scrapyards, a wholesale vegetable market, and a slum settlement (home to as many as eighty thousand people) that perennially invades the banks of the Korle Lagoon, before it opens into the Gulf of Guinea. In 2013 the Agboglobloshie scrapyards were ranked “the most toxic place on earth” because of years of environmental pollution from informal sector (e-)waste-processing activities.[2] Inasmuch as Agboglobloshie typifies the downside of technology, however, it also projects potential for alternative futures.

For many people with limited access to money and power, electronic landscapes such as Agboglobloshie offer livelihood opportunities: they are sites of urban mining, where materials, parts, and components are recovered from expired consumer goods, remade as feedstock for new manufacturing, and repurposed with new use-value. Despite the negative impact of this work on human health and the environment, the men and women driving the “informal sector” scrap and recycling industries across the villages, towns, and (mega)cities of the Global South constitute a network of grassroots makers powering local (re)production.

Notwithstanding their resourcefulness in resource-constrained settings, these self-made makers making do at the grassroots face a multifaceted challenge: how to transcend collective scenarios of circumscribed possibility; how to individually and together find time and space to conceptualize

Setup of the installation during the workshop *Spacecraft_KT. Fabrication d'un fablab mobile*. Afropixel #6, Kër Thioussane, Dakar (SN), May 5–10, 2018.



PLASTICS

SOCCER FIELD

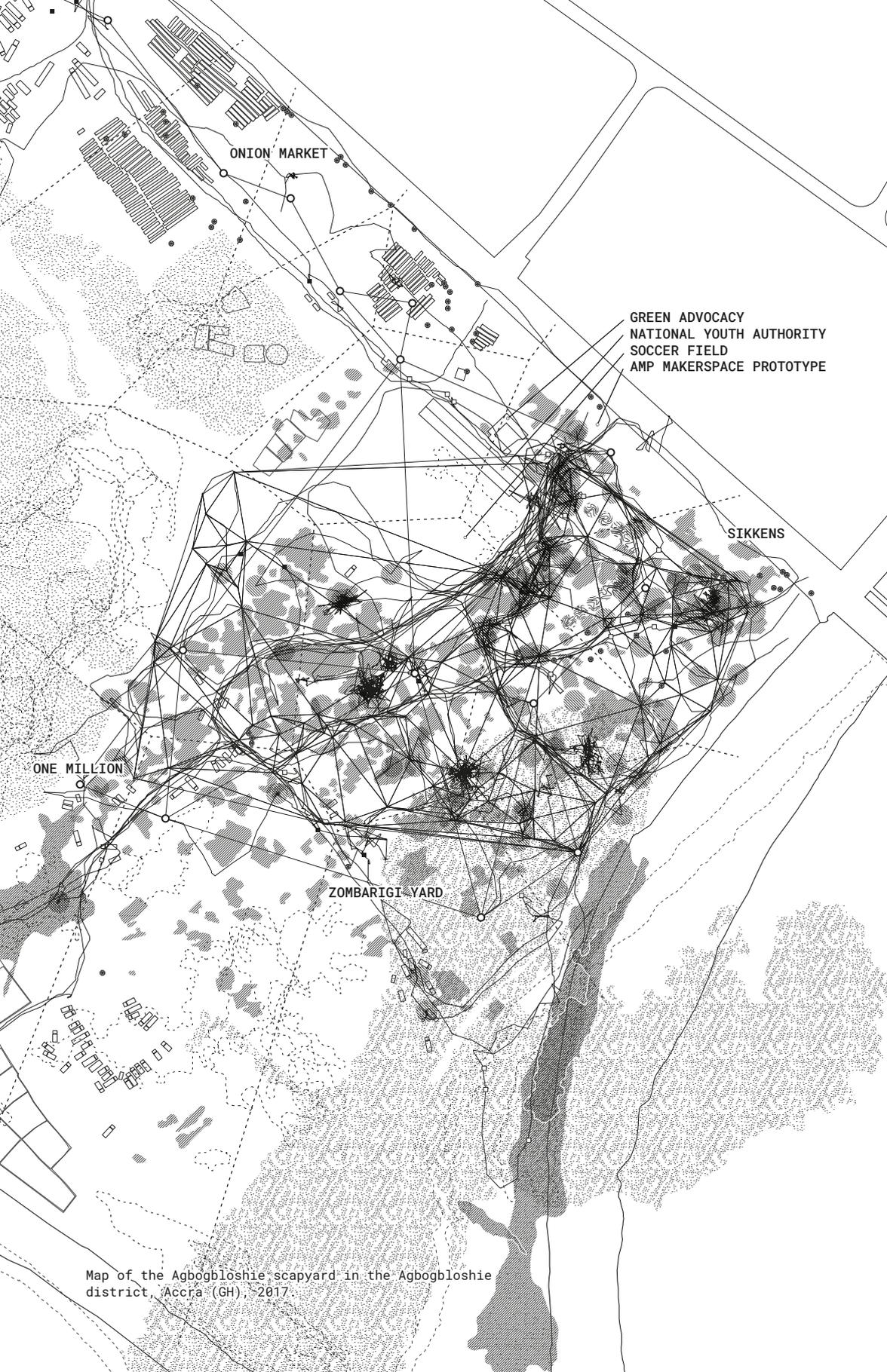
INTERNATIONAL CENTRAL GOSPEL CHURCH
ICGC

REFUSE DUMP

FARMS

GOAT & SHEEP MARKET

- MOSQUE
- MOSQUE TERRITORY
- ✳ WEIGH STATION
- DISASSEMBLY AREA
- BURN AREA
- STOCKPILE - scrap metals, plastics
- STOCKPILE - glass circa 2013
- SALES & REPAIR
- + MAKER WORKSHOP
- BATHROOMS / WATER
- FOOD & ENTERTAINMENT - chop bar, foosball, drinking spot, cinema
- UMBRELLA POS
- ▭ VEHICLES
- 🌳 TREE
- RUBBLE / DUMP
- MANGROVES circa 2000
- WATER PONDS 2008-2016 / ORIGINAL ODAW RIVER



ONION MARKET

GREEN ADVOCACY
NATIONAL YOUTH AUTHORITY
SOCCER FIELD
AMP MAKERSPACE PROTOTYPE

SIKKENS

ONE MILLION

ZOMBARIGI YARD

Map of the Agbogbloshie scapery in the Agbogbloshie district, Accra (GH), 2017

and produce new and improved products, and how to establish ways to make and exchange them; how to actuate stepwise progress—gaining access to more advanced tools and skills for design and fabrication—by cocreating technology that can realize alternate pathways both for their lives and for materials reclaimed from end-of-life equipment.

Portals to Possibility

Viewed from outside and above, Agbogbloshie instantiates the kind of nonstandard counter-space that Hakim Bey calls TAZ (temporary autonomous zone).^[3] His term designates a form of “pirate utopia” imagined along the lines of transgressive territories, where “sea-rovers and corsairs” lived on islands in networked “‘intentional communities,’ whole mini-societies living consciously outside the law and determined to keep it up, even if for a short and merry life.”^[4]

At the same time that there is freedom in informality—operating beyond the boundaries of legality and convention—the ultimate power of TAZ such as the Agbogbloshie scrapyards, understood most generally as a noncontiguous but continuous condition of alterity, is as a space that interlinks competing regimes of world making. In this context and in response, the participatory design initiative Agbogbloshie Makerspace Platform (AMP) works to demonstrate an interclass transdisciplinary approach to retrofitting reality, recognizing that across the African continent, physical and digital realities are increasingly covalent.

AMP spacecraft (&spacecraft) is an open architecture for making that serves as a platform for “crafting space.” Hybridizing the digital and physical, *&spacecraft* combines three open-source assets: (1) a makerspace kiosk that provides a customizable design framework; (2) a set of intercoordinated tools and equipment; and (3) a mobile software application for makers.^[5] Together these elements function as a network, forming portals that can be deployed to forge connections between seemingly disparate realities. Within *&spacecraft*, stories of unmaking, making, and remaking unfold—enacted by shapeshifters, merfolk, intergalactic outlaws, and aliens from other worlds—colliding with raw materials and ingenuity, morphing matter into media, and, in the process, flattening humanity to generate new models of justice and agency.

Designed to be fabricated anywhere, *&spacecraft* can be assembled everywhere. They integrate distributed technology

and global expertise with local needs, know-how, and capacity for making (ways of doing). They serve as collective means by which people can craft space, imagine the unimaginable, and navigate uncertain futures. Simultaneously open-source technology toolkit and kiosk as equipment (a building that is also a machine; an urban robot), narrative condenser, platform for (re)invention and process of (dis)assembly, *&spacecraft* transform through replication, augmentation, and (re)composition. These portals to possibility create new opportunities by modulating between scrapyard, recycling center, community workshop, digital manufactory, farm, school, cinema, and boutique.

Collective Customization

For the occasion of the sixth Afropixel Festival (Afropixel #6) in Dakar, several people collaborated to conduct a technology transfer of the *&spacecraft* model from Ghana to Senegal. Kër Thioossane (“House of the People” in the Wolof language) runs the festival annually. Villa Kër Thioossane, the base of operations of this digital arts and culture organization, is located in the popular neighborhood of Sicap Liberté II, a *commune d’arrondissement* that is now slightly run down but was originally built as a beacon of the city’s modernity. Kër Thioossane is mobilizing a diverse group of artists, hackers, and neighbors to actively reinvent the neighborhood. To amplify this work, Kër Thioossane requested a spacecraft that could serve as a mobile platform for the production and projection of new digital imaginaries.

They recognized that while their in-house Defko Ak Niëp FabLab (Wolof for “Do It with Everyone”) was doing compelling work, such as training youth on digital fabrication technologies and developing prototypes that could be commercialized—work (both process and products) that remained invisible unless people visited the space physically (i.e., the building and community gardens) or digitally (via the website and social media). The *&spacecraft* model presented an opportunity to “liberate” their fab lab as a “pop-up” makerspace and store, citywide, serving as an extension and advertisement of Kër Thioossane’s digital maker activities.

In line with the AMP approach of participatory design and coproduction, development of the *Spacecraft_KT* took the format of an interactive maker session centering on a design and building workshop at Kër Thioossane that we facilitated during March and April 2018.^[6] Participants included local and



Test setup of the *Spacecraft_ZKM* in the Agbogbloshi scapyard, Accra (GH), 2018.



expatriate artists, architects, and designers from the Kër Thioossane community, led by co-founder Marion Louisgrand Sylla and the Defko Ak Niëp FabLab team; trainee seamstresses from a vocational school in the neighborhood; the atelier Bass Design, a grassroots creative studio specializing in metal fabrication; and a duo from Migrating Culture, a Ghana-based sustainable design campaign headed by Brandon Rogers, who traveled to Dakar from Accra for one month, representing the AMP makers' collective.

Starting with the overall goal of realizing a Kër Thioossane version of *&spacecraft*, participants identified top-level programmatic needs and defined requirements for customization of the basic *&spacecraft* design. *Spacecraft_KT* needed to accommodate a range of functions, iterating between different architectural programs: mobile makerspace (bringing Defko Ak Niëp FabLab's digital fabrication technology "to the street"); pop-up retail store (community members' products during the concurrent Afropixel #6 and Dak'Art Biennale of Contemporary African Art); stage (presenting live concerts and band performances to the general public); and cinema (screening films using the Cinécyclo portable bicycle-powered video projector).[7]

Associated design requirements included provision of flexible workspace, storage, and display, as well as adequate security and weatherproofing (basic protection from sun and rain). The base *&spacecraft* platform architecture consists of a lightweight steel space frame chassis, made from eight semioctet trusses and eight box trusses bolted together, top-hung bifold hangar doors fixed on opposite sides of the chassis, and wood floor decking. The main goal of *&spacecraft* is mobility. The prefabricated modular architecture of the design means that *&spacecraft* is both rapidly deployable and fully demountable.

Building on this mobile design, participants developed a set of plug-in components to enable additional functionalities, including side-hung doors with integrated living systems and environmental sensors, a projector screen, stage lighting, speakers and sound system, roof canopy, ceiling-mounted equipment racks, various vitrine tables, as well as more improvised adaptations such as hanging coat hangers on the doors and chassis to exhibit garments for sale. Makers additionally codeveloped a prototype "parawall," conceived as interfacial webbing and responsive furnishing that dynamically mediates environment and habitation.



Spacecraft_KT. Fabrication d'un fablab mobile, workshop. Afropixel #6, Kër Thiossane, Dakar (SN), May 5-10, 2018.

Emerging through intensive co-design and iterative coproduction, *Spacecraft_KT* demonstrates ways in which the flexible design of platform architecture can open up opportunities for its own transformation. The basic *&spacecraft* forms a hackitecture that is made to transform through peer-to-peer processes of learning, designing, and (re)making.[8] Such open approaches to collective customization draw on Yona Friedman's philosophy of mobile architecture that commingles the physical and conceptual mobility of its inhabitants through the reconfigurability of digital and tangible systems.[9] Collaborative making, in this sense, extends to the production of architecture—understood as an envelope for life experience—empowering people to cocreate technology that both frames and engenders their own reality.

Made in Africa

The vast majority of Africans, and most visitors transiting the continent, experience daily, moment to moment, what it means to exist in many worlds. AbdouMaliq Simone speaks of how “African cities operate as a platform for people to engage in processes and territories elsewhere.”[10] Today Africa's digital denizens—beneath, by means of, and despite a disorienting overlay of data-driven surveillance and control—stitch together superfluid strategies for survival in real time and precipitate quanta of relative advantage out of community support, mental and manual dexterity, hard work, hope, and prayers.

Modulating between opportunism and emancipation—*think quick and move fast because this moment may not last!*—



DK Osseo-Asare & Yasmine Abbas, Agbogbloshe Makerspace Platform (AMP), *Spacecraft_KT*, 2018. Installation view, Afropixel #6, Mon super kilomètre / URBI, Gueule Tapée, Dakar (SN), 2018.



#camp
SPACE CRAFT
DAKAR

Afronautics is the never-ending navigation and negotiation of competing and complementary identities, conditions, contexts, and affiliations, of tribe, clan, ethnicity, nationality, religion, political party, locality, language, gender, and class— together with and in opposition to global structures of material and economic exploitation, exclusion, cultural appropriation and exoticization, geopolitical marginalization, and historical negationism.



Participant of the workshop *Spacecraft_KT. Fabrication d'un fablab mobile. Afropixel #6, Kër Thioossane, Dakar (SN), May 5–10, 2018.*

While recognizing a tendency to label as “informal” systems and processes that are noncoincident with standard protocols of international law and economic governance (constructed according to a Westernized composite of what it means to be both “proper” and “global”), Afronauts nevertheless deny any practical distinction between formal and informal sectors. For Afronauts—living in a hyperbolic space where multiplicity is normal—everything is mutable and negotiated, at the same time as nothing is absolute or universal.

For someone used to fixed schedules and deadlines, written contracts, and getting results as planned, maneuvering such multidimensional spatiality can be overwhelming. It demands mental and physical agility, expanded mindsets, patience, and more often than not, deeper pockets than originally anticipated. Having high standards invariably complicates matters, as most likely that means making a given piece more than one time; sometimes it may seem that no one cares if things are straight, level, plum, or square. When life unfolds as persistent crisis, and poverty is palpable, cutting corners—out of necessity—becomes more important than adhering to a kind of global best practices. In minimum money scenarios,

&spacecraft

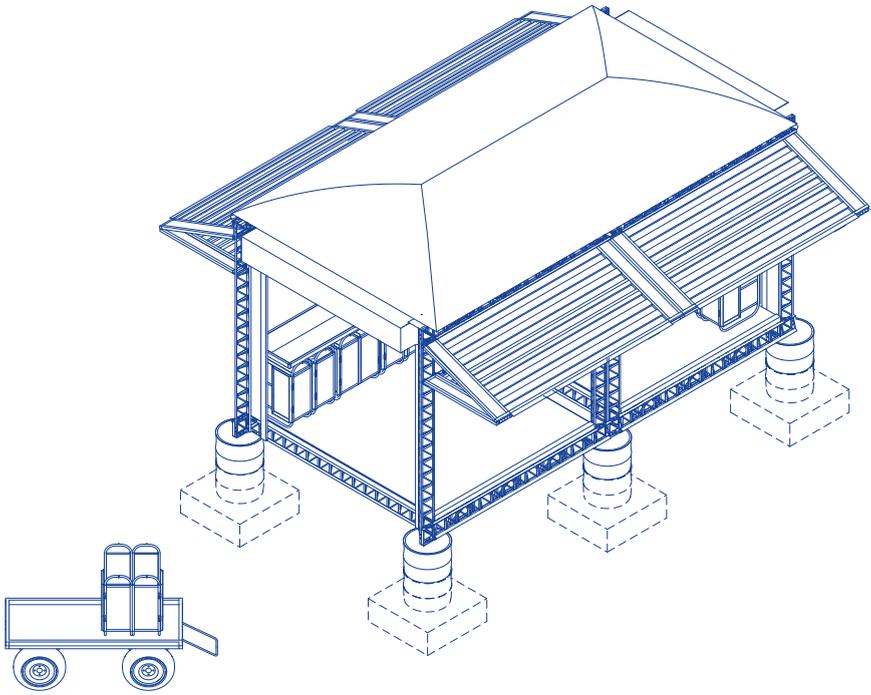
expensive is tantamount to impossible, while precision and accuracy are less important than efficiency and speed.

For adepts of Afronautics, in Agbogboshie, Sicap Liberté, or other spaces that straddle formal and informal Africas, it is a nonevent to not come to a designated place at an agreed-on time, either because of impulse, tragedy, or (the potential of) better prospects elsewhere. In the face of failure, opportunities—especially the allure of instant cash—act as vectors, guiding circuits of mobility in the city and ever renewing its vibrancy. But volatility is inherently risky. As tactical countermeasure to the fact that the ground can fall out from under your feet at any time, on a moment's notice, Afronauts create bonds of friendship and mutual trust to limit their exposure. In many ways, in many African spaces, the practice of work—and of making—intertwines deliberate and sustained community building.

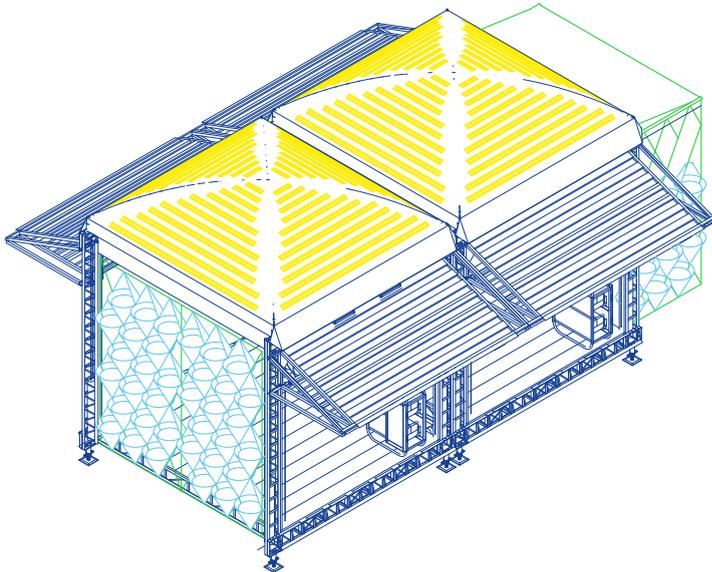
Given the interdependence of making and networking in the galaxy of flash phenomena and shared experience that Afronauts peregrinate, *&spacecraft* is synthetic and syncretic. There is a certain tension between the circumscribed set of materials, tools, and techniques readily available to Africa's grassroots makers—compared to the diffuse field of design decisions these men and women devise day to day, to make possible preferable situations in resource-constrained environments. Hence *&spacecraft* aims to achieve controlled fusion: to combine the agile low-stakes modes of making so pervasive in African spaces, where freedom derives from indeterminacy—that is, the art and science of “making do” that Claude Lévi-Strauss famously terms “bricolage”—with the systematic integration of such forms of informal innovation into an open design framework that can enable long-term crosscultural and interclass collaborative research and development trajectories.^[11]

Containing Contamination

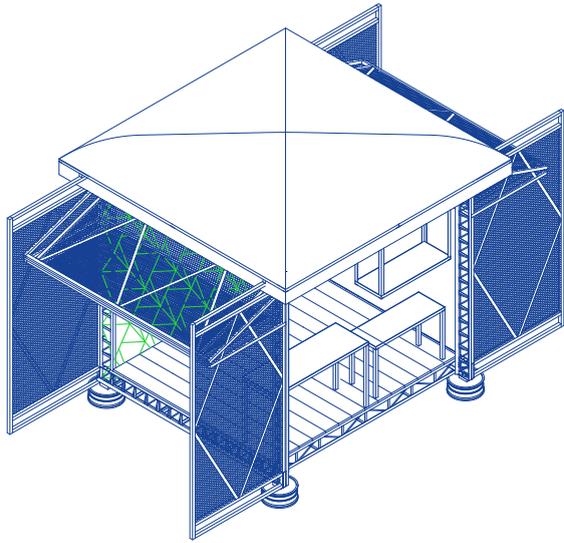
Before sailing across the Atlantic Ocean to Europe, the *Spacecraft_ZKM* traversed the twin cities of Accra and Tema six times: first deploying from Community 18 in Tema to Accra's Timber Market and back, then to the Agbogboshie scrapyards, to Community 17, back to Community 18, and finally—packed in solid black ofram tropical hardwood crates, intended to serve as furniture upon arrival in the museum—to the container port at Tema Harbor. From there it trans-shipped via Rotterdam to the ZKM | Center for Art and Media Karlsruhe in Germany.



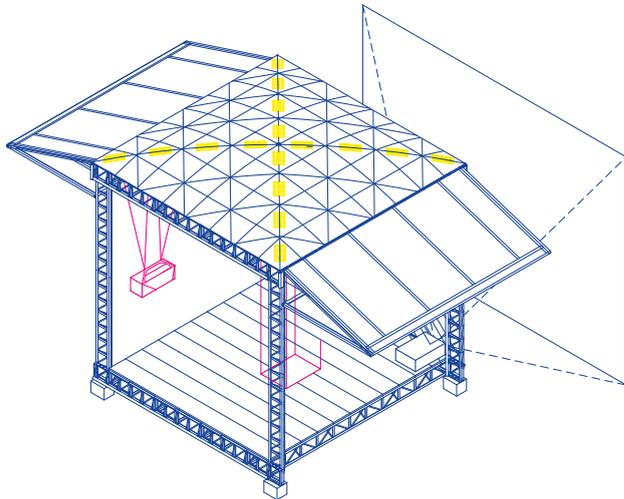
Spacecraft_AG, Accra (GH), 2013-2016.



Spacecraft_AG. Seoul Biennale of Architecture and Urbanism, Seoul (KR), 2017 (unbuilt).



Spacecraft_KT. Afropixel #6, Dakar (SN), 2018.



Spacecraft_ZKM. ZKM | Karlsruhe (DE), 2018.

This journey took six months, and when the *Spacecraft_ZKM* finally arrived in Karlsruhe, the black ofram crates were host to an unidentified fungus. Museum staff determined that the fungus posed too great a risk to the museum collection. So, before the *Spacecraft_ZKM* entered the exhibition space of the museum, its compromised housing—sourced from Ghana’s rainforest and made in Agbogbloshie—was burned off-site at an industrial incinerator.

Often when objects enter the curatorial space of the museum, they are arrested, immobilized, and excised from the continuum of their former life.^[12] Yet, in the case of *Spacecraft_ZKM*, the museum was a stopover in a longer itinerary, the exhibition hall being a staging area, a port not of entry or refuge but of coproduction. Indeed, the installation of *Spacecraft_ZKM* occurred *after* the exhibition opening—executed as a “building performance,” with the artists working with master’s of architecture students from the Karlsruhe Institute of Technology and ZKM technicians.^[13]

One student suggested an alternate assembly process, which was attempted but aborted because of the ceiling height of the museum. Other students suggested color coding specific bolted connections to expedite assembly. In the background, appearing from the past via digital video projection—emanating from the *Spacecraft_ZKM* (the projector was clamped to the semioctet truss frame)—scrap dealers and members of the AMP Makers’ Collective work alongside the students against billowing clouds of electronic pollution. While the students assemble the *Spacecraft_ZKM*, its makers carry out final quality control in Agbogbloshie—crafting a digitally and materially facilitated copresence.

This latest version of experimental *&spacecraft* featured several key improvements to the technical design and engineering kit. All trusses were fabricated using 30 mm (1.19 inch) mild steel angle bars. Overall length of box trusses was reduced and strut geometry modified to more closely align with isotropic vector matrix generative design functions. Removable hardwood floor decking was fixed in place with single self-tapping wood screw pins at both ends of edging strips. Installation locations for bifold hangar doors and parawall system were inverted, so that cable webbing could be rigged exclusively to the semioctet truss portal frame. The hangar doors were redesigned to incorporate continuous tubing hinges and to be affixed to chassis assembly by means of steel mounting brackets. Four overhead truss-mounted trolleys with suspended bar hoist were included for the first

time, and (with assistance from the installation team at ZKM) used to hang a cable-suspended work tray table.

But the key *&spacecraft* technology advanced as part of the final stop of the *Digital Imaginaries* project at ZKM was the “scanopy,” a digital “smart canopy” that collects an array of environmental data (air quality, temperature, humidity, barometric pressure) and shares it in real time to the cloud. Two two-day maker workshops were organized—one in Ghana, and one in Germany—to design, develop, and deploy the scanopy prototype at ZKM. The first was held in October 2018 at Ashesi University and at the *Spacecraft_AGB* in Agbogbloshie (the first *&spacecraft* in the series), in collaboration among the Ashesi Design Lab, Penn State University’s Alliance for Education, Science, Engineering and Design with Africa (AESEDA), and the AIR Centre, a transnational research consortium focused on Atlantic interactions.

The second took place as part of the exhibition launch at the FabLab Karlsruhe and the *Spacecraft_ZKM*, and in collaboration with the OK Lab, a volunteer organization of makers who have also developed an open-source air quality sensor, which was integrated into the scanopy prototype to enable data comparison. This process culminated in the live production of a tutorial video (on scanopy circuitry assembly) by Nicholas Tali, fab lab manager at Ashesi University, who led the hardware development of the scanopy. Narrating throughout with quiet confidence, he tested and soldered electronic components to a custom PCB in quick succession, transmitting into the gallery space at ZKM years of tinkering and teaching young makers in Ghana. Thereafter, a computer monitor mounted on the *Spacecraft_ZKM* continued to display two data feeds that contrasted measurements of the museum’s interior atmosphere with that of the Agbogbloshie scrapyards—until the solar-powered unit mounted on the *Spacecraft_AGB* ran out of data.

In summer 2019, the *Spacecraft_ZKM* was redeployed from the museum, landing at the exhibition *Seasons of Media Arts: City of Participative Visions*, which was held in the city center of Karlsruhe, and operating as “mobile creative workshop” for hands-on maker sessions to support people-powered digital participation in civil society in Karlsruhe. Meanwhile, upgraded documentation of the open-source blueprints for “how to build your own spacecraft” are in the process of being disseminated online—with the goal of empowering grassroots makers to construct their own portals to participation in our increasingly digital universe—and more *&spacecraft* are projected to join the



DK Osseo-Asare & Yasmine Abbas, Agbogbloshie Makerspace Platform (AMP), *Spacecraft_ZKM*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.



fleet. But the question remains: Can we scaffold radically open pathways to digital inclusion, realizing cooperative futures that are nonexploitative and nonaligned, quickly enough to supersede the imminent AI-enabled clouding of African minds?[14] Can we craft spaces that empower youth to realize their full potential as proactive producers of technology, instead of its passive consumers, to collectively challenge the reinscription of (neo)colonial power structures across digital domains?

[1] Agboglobloshie Makerspace Platform (AMP) is a transnational youth-driven project to promote maker ecosystems in Africa, starting at Agboglobloshie. AMP spacecraft is an open-source mobile application, toolset, and demountable makerspace kiosk, designed by DK Osseo-Asare and Yasmine Abbas, that connects grassroots makers with students and young professionals in STEAM fields (science, technology, engineering, arts, and mathematics) to “make more and better, together.” The pilot project phase of the Agboglobloshie Makerspace Platform (2013–2017) was supported, in part, by a Centennial Innovation Award grant (ID: 2013 CEN 316) from the Rockefeller Foundation. Intersecting the Greenwich meridian, and north of the equator (which passes through the Gulf of Guinea), the twin cities of Accra and Tema are the urban agglomeration closest to the origin of the planet’s geographic coordinate system.

[2] “Top Ten Toxic Threats in 2013: Agboglobloshie Dumpsite, Ghana,” Pure Earth, accessed May 20, 2019, https://www.worstpolluted.org/projects_reports/display/107. Originally published by the Blacksmith Institute and Green Cross Switzerland.

[3] This concept relates to Michel Foucault’s heterotopia. See DK Osseo-Asare and Yasmine Abbas, “Waste,” *AA Files: AAlphabet*, no. 76 (June 2019): 181; and Hakim Bey, *Temporary Autonomous Zone: Ontological Anarchy, Poetic Terrorism* (Brooklyn, NY: Autonomedia, 2003).

[4] Bey, *ibid*.

[5] “Intercoordinated” here refers to geometric correlation per nature’s “universal coordination system,” experientially documented by Richard Buckminster Fuller as the “isotropic vector matrix.” See R. Buckminster Fuller, *Synergetics: Explorations in the Geometry of Thinking* (New York: MacMillan, 1975), 587.

[6] See DK Osseo-Asare and Yasmine Abbas, “Investigating 3E-materials at Agboglobloshie in Accra, Ghana,” in *Proceedings of Engineering4Society: Raising Awareness for the Societal and Environmental Role of Engineering and (Re)Training Engineers for Participatory Design* (New York: IEEE, 2015), doi:10.1109/Engineering4Society.2015.7177898. The KT in *Spacecraft_KT* stands for Kër Thiossane.

[7] See the Cinécyclo website, accessed May 23, 2019, <https://www.cinecyclo.com>.

[8] Aksay Goyal, “Hackitecture: Open Source Ecology in Architecture,” in *ACADIA 2013, Adaptive Architecture: Proceedings of the 33rd Annual Conference of the Association for Computer Aided Design in Architecture*, ed. Philip Beesley, Michael Stacey, and Omar Khan (Toronto: Riverside

Architectural Press, 2013), 183–90. See also Yasmine Abbas, “Neo-vernacular/Non-pedigreed Architecture: Design Authorship and Expertise at the Time of Participatory Culture and Crowdsourcing,” in *Who Cares: Second International Conference on Critical Digital, 17–19 April 2009, Harvard University Graduate School of Design*, ed. Kostas Terzidis (Pisa: Arnus University Books, 2012), 145–51.

[9] Friedman’s philosophy described in Yasmine Abbas, *Le néo-nomadisme: Mobilités; Partage; Transformations identitaires et urbaines* (Limoges, France: FYP éditions, 2011), 25.

[10] AbdouMaliq Simone, “On the Worlding of African Cities,” in “Ways of Seeing: Beyond the New Nativism,” special issue, *African Studies Review* 44, no. 2 (2001): 15–41.

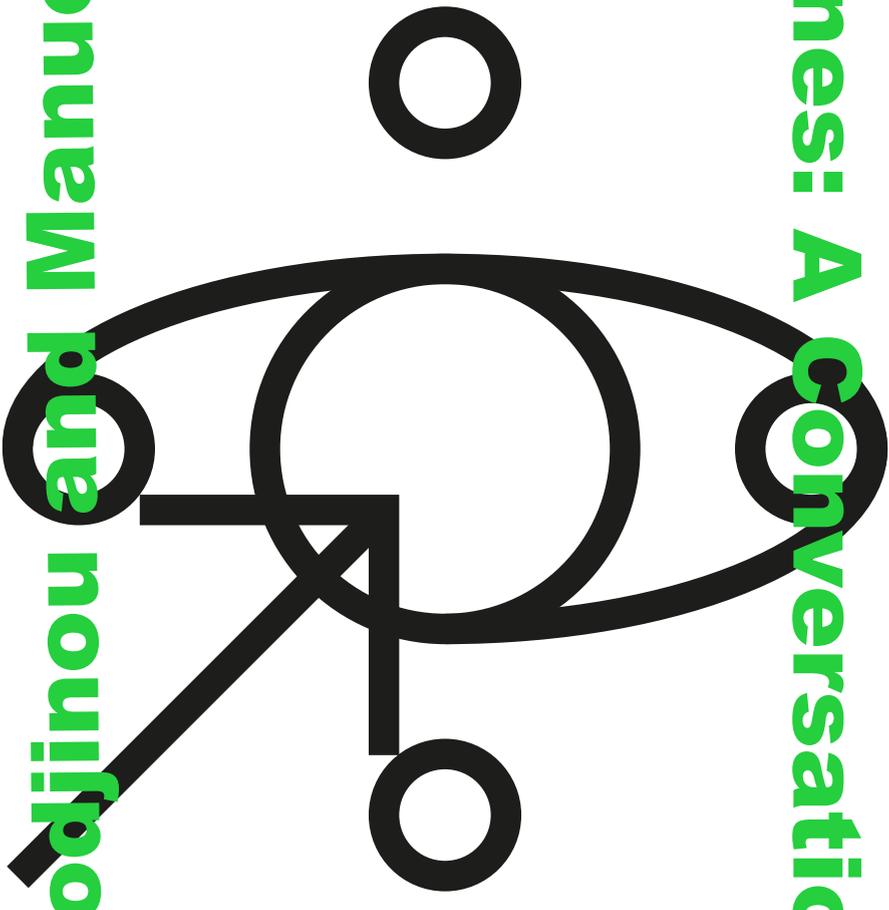
[11] Claude Lévi-Strauss, *The Savage Mind* (Chicago: University of Chicago Press, 1966), 1–33.

[12] Brian Goldberg, an architect and educator who consulted on the RISD Museum’s *Repair and Design Futures* exhibit, describes this transformation as it relates to permanence: “When objects formerly bound up in everyday life and utility, subject to wear and tear and time, are taken up by the museum and enter a collection, they are stabilized and fixed within the scholarly, curatorial, and conservational conventions of the museum, stripped of movement and context, removed from life and exchange, given an accession number and all the claims and promises that follow to steward them in perpetuity, to render them as archetypal, or unique, or at the very least exceptional. However they enter, they become specific, stable objects with a history and provenance, no longer subject to the vagaries and insults of their former worldliness.” Brian Goldberg, “*Two Boots and Four Portraits*,” *Manual*, no. 11 (Fall 2018): 24–34, here 28.

[13] Students were members of the research seminar offered at the Karlsruhe Institute of Technology’s Faculty of Architecture during 2018–2019, entitled “NO FAQ: Artistic Research, Postcolonial Utopias, Digital Culture and You,” taught by Fanny Kranz and Indra Schelble, lecturers in the Department of Fine Arts, and Professor Stephen Craig, Faculty of Architecture.

[14] See “Build Your Own Spacecraft!” AMP, accessed October 23, 2019, <http://qamp.net/spacecraft/>.

HubCités
Africaines: A Conversation with
Sénamé Koffi
Agbodjinou and Manuel
Bürger



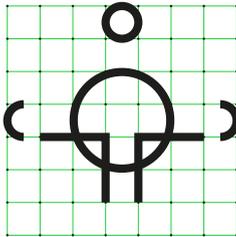
The *HubCités* installation presents itself as a slightly unusual architectural office or even a cabinet of curiosities. On a large table that arranges the space, one can observe a map of the city of Lomé, the capital of Togo, topped with pennants on which graphic symbols are printed. These latter indicate WoeLabs, or, in other words, spaces for research and innovation that are supposed to connect the city and transform it into a dynamic and lively network for the circulation of knowledge, manufacturing, and economic production. On the main wall, a video runs in a loop, featuring the architect Sénamé Koffi Agbodjinou giving a TED-style talk of his vision of a smart city for Africa. Completing the cabinet are historical ethnographic books, vernacular architecture models printed in 3D, a DIY 3D printer made with recycled elements, and a wall of texts and images. The installation is foremost a space for the research that Sénamé Koffi Agbodjinou has conducted for several years now on the future of cities in Africa in the digital age, including in their pan-African dimension.

Oulimata Gueye: Sénamé Koffi Agbodjinou, you are an architect, anthropologist, and now an artist as well. As part of the exhibition *Digital Imaginaries–Africas in Production*, you propose an installation that presents avenues of research in architecture, urban planning, and anthropology, research that you’ve worked on for several years now. Can you tell us how and why you started?

Sénamé Koffi Agbodjinou: The experiment called *HubCités* is a vast conceptual work in progress in Lomé since 2012. It exhumes the logics and combinations at work in the basic forms of spatial organization of villages that were to be found in several regions on the African continent. Part of the *HubCités* project is thus inspired, for example, by the way the initiation enclosure works. The enclosure had a structuring role in African social organization. It was a moment of “seclusion” that made it possible to create links, to transmit knowledge to young people of the same age group, and to guide them on the path to realizing their

potential. It was clear to us from the start of the project that the ambition to connect the city with a network of places for innovation should serve as a launchpad for initiatives with development. It was

also clear that the initiation enclosure, had it survived into modernity, would have served as a preparatory site for start-up-style entrepreneurship. This is why we designed WoeLabs as open spaces for tech incubators and for innovation that are networked and function as sort of 2.0 start-up enclosures. The 2.0 rituals that punctuate the life of these labs are the hackathons. This structuring has allowed us to launch #LowHighTech projects, which, marked by an ethic of inclusiveness and redistribution, are low in environmental cost and help to give shape to an African #SiliconVillage. *HubCités* prefigures a new typology that tomorrow will be called the



co-city, the sharing city, or the “city of the third industrial revolution.”

OG: You understandably advocate a rapprochement between digital technologies and African vernacular knowledge. In your field, which ranges from architecture to urban planning, you find inspiration both in hacker culture and ethics and in the still current practices of vernacular architectural construction. Can you describe how these two practices are articulated so as to think through the city?

SKA: In its concept, the house in Africa is a ground projection of the complexity of social structures and systems of thought.

The fundamental ethic that the house has taken on has been shaken along with the built environment by colonization and its proceeding to wipe the slate clean of particularisms.

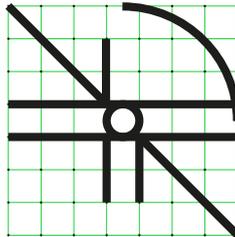
At a time when demographics are boosting African cities, urbanization is already going ahead at the most frenetic pace in the world, any concern for particularism seems ancillary to the urgency to secure housing for the greatest possible number of people as quickly as possible. Yet the moment is one that has unexpectedly gifted us means for a “neo-vernacular” revolution, able to reconcile performance, scale, and quality, on the one hand, and the local, the simple, the spiritual, on the other. This potential is able to steer centralized systems toward a state of disruption and toward more distributed organizations. In my research,

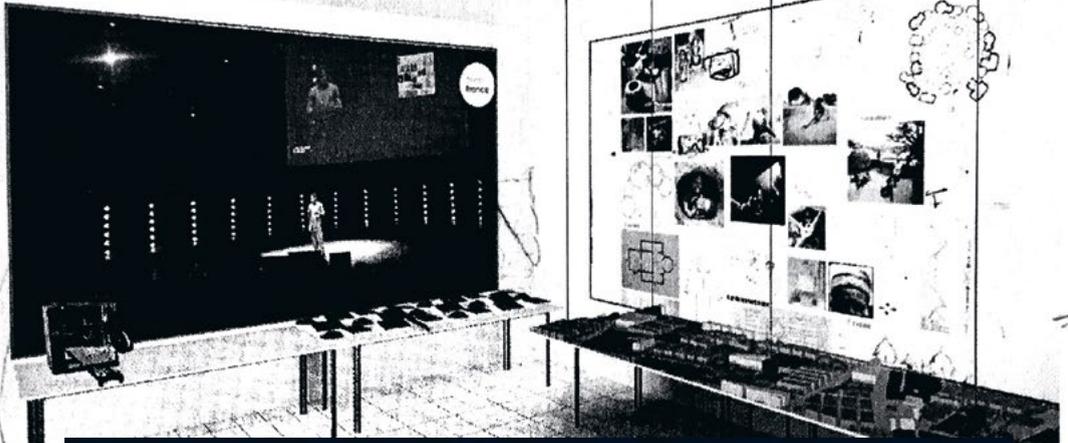
I broach the question of whether the architecture of the next industrial revolution, or rather “the first anti-industrial revolution,” will not be African. Back in 2012, we started proclaiming that the closest person today to the Tammari mason is the MIT engineer!^[1] This is the “glass hole” effect. I understood that by accepting this anachronism, we had the means for a “neo-vernacular” revolution! Today, the use in architecture of open-source plans, CNC machines, DIY drones, and the 3D printing of buildings has freed us from the pseudo-neutrality and aridity of the international style. For example, the perspective of printed architecture, three-

dimensional printing, allows for freedom of form. It also allows us to explore anew the richness of our curved lines and of the animistic massiveness of our old earthen constructions, from

which standardized rationalist architecture has cut us off. The stake for Africa is not the fact that these uses have small environmental footprints! It is first of all a window of emancipation in which we can decolonize the future of our cities, a future pleading for the continent to grasp this *kairos* by the horns.

OG: In recent years, projections for the African continent highlight an expected doubling of the population, which is to become massively urbanized, by 2050. It is predicted that one out of every two Africans will live in a city by then. What is your point of view on urban planning in Africa? What models inspire

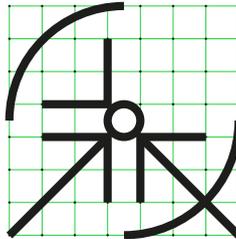




Foreground: S enam  Koffi Agbodjinou, *La Silicon Valley n'a pas le monopole de l'innovation*, Boma (FR), 2018. Video still. Background: S enam  Koffi Agbodjinou, *HubCit es Africaines*, 2018. Layout sketch of the installation at ZKM | Karlsruhe (DE), 2018.

research on the city of the future?

SKA: In 2050, one in every four human beings will be an African and will have a one in two chances of being urban. While the continent's population will double to nearly one billion, it will triple in cities, with half of all Africans concentrated in them by that date. In fact, urban planning is stimulated by this demographic boom. Demographers have drawn a map of what the continent will be like when it is predominantly urban, and center the growth around five axes. Five major conurbations! Five future cities that would stretch across many kilometers: the Nile Valley in Egypt, the Kano region in northern Nigeria, Addis Ababa and its periphery in Ethiopia, the northern shore of Lake Victoria, and the West African coast with the Gulf of Guinea. The megacities of tomorrow will therefore be African! The corridor of the Gulf of Guinea will develop into a sort of continuous city-region stretching from Lagos to Abidjan, into which the discrete Togolese capital will dissolve and become part of a whole with the scale of a world capital. I wonder, for example, whether the city of Lomé is a match for this destiny. The challenges proposed by these projections are so unprecedented that all anticipatory proposals risk being rendered inadequate. Yet it is in the smart city that the "African decision maker" has placed his unshakeable faith, despite the fact that this solution generally shows up an obscene "African deficit." It must



therefore be admitted that this new urban typology moves us a further step away from ourselves. In 2012, we took a stance against this renunciation.

OG: Can you elaborate on this critique?

SKA: We must first of all work globally to raise awareness of what I call "technological imperialism" in order to grasp the urgency of decolonizing it. For the rest of us, what must be posited from the outset is that Africa has no case to make from the point of view of market logic. This disqualifies the smart city option in its current sense. We should take the measure of the shifts

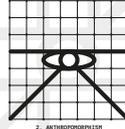
that are taking place at the moment and very subtly position ourselves around new possibilities that match the informal dimension of our structures in Africa, i.e., the do-it-yourself machines, resource mutualization, disintermediation, and so on. We must contribute to the emergence of a new economy, or at least help to "civilize" what is called the sharing economy. We have the potential and the values here to do this. The smart city heralds the completion of a process in which technology is no longer a catalyst for the social but claims to replace it, a process that transfers the complexity of social structures to technology, thus emptying them out completely. This is what is playing out in Africa at the moment. Every day, some age-old habitus is renamed using an alluring term taken from the "start-up standard." Soon—or perhaps it is already so—there

EIGHT PRINCIPLES OF SPATIAL ORGANIZATION



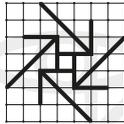
1. FIGURE OF GESTATION

1. FIGURE OF GESTATION
The permanence in African architecture of symbols, of the coupling of the parturient, the fetal, etc. ...



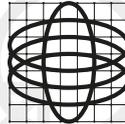
2. ANTHROPOMORPHISM

2. ANTHROPOMORPHISM
The house, and the space, have systematically the figure and attributes of a human, an "anatomy of architecture" modelled on the human.



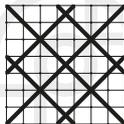
3. DIFFERENTIALITY

3. DIFFERENTIALITY
The space is sexed or gendered, styled on the male-female tension ... never neutral, divided, hierarchized, or stratified. This friction produces rhythm, beauty by contrast ... it sets architecture in motion.



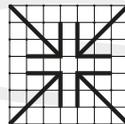
4. GYRATION

4. GYRATION
The organization is revolving. Volutes, concentricism, spirals: this uplifting movement also makes the house aspire to rise.



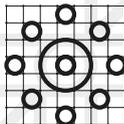
5. FRACTALS

5. FRACTALS
The infinite repetition of everything in the parts ... The calabash is the village linked to itself N number of times. The deployment is "logical", consistent ... taking care to manage all the parts at each change of scale. The house is the adolescence of the calabash of which the village is the figure/ image of old.



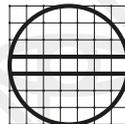
6. PANOPTICON

6. PANOPTICON
All points of view converge in the African space. The house is the place where everything is said; everything is under the gaze of everyone.



7. TOTALITY / COSMO ARCHITECTURE

7. TOTALITY / COSMO ARCHITECTURE
The place is complete. Nothing is missing. Desire for finitude. ambition to summarize the world. Full companionship where plants, animals, minerals, sky, earth, air, water ... Order / Complementarity / Completeness



8. UNITY

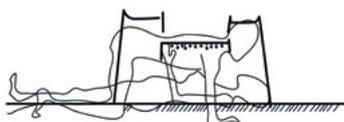
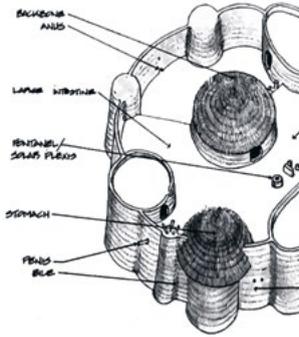
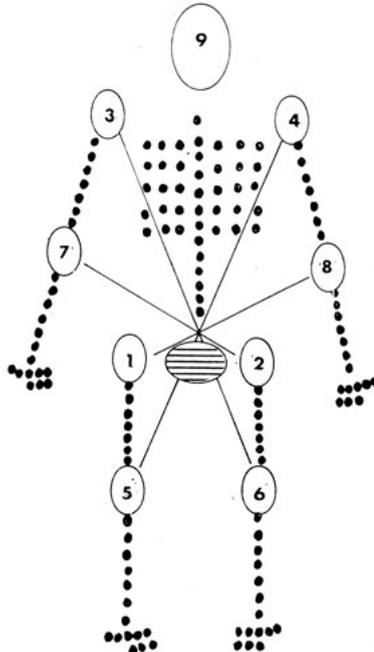
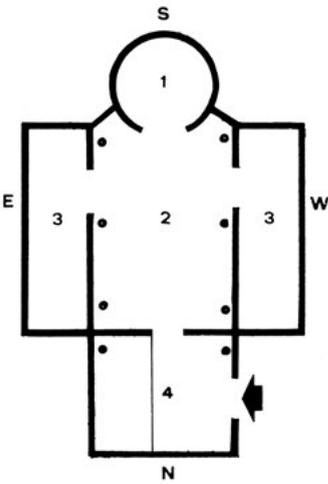
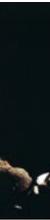
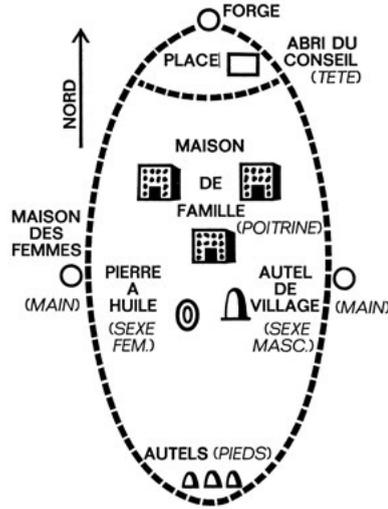
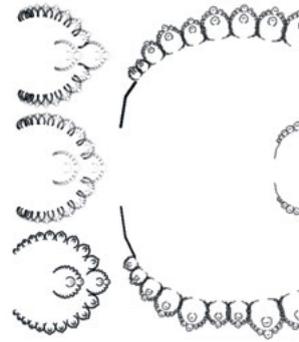
8. UNITY
"Everything is one!" Principle of inextricability of principles. Cohesion where distinctions are not made...

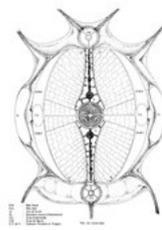
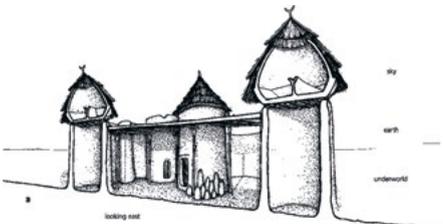
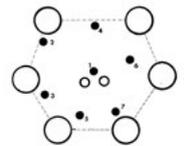
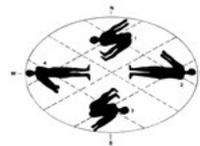
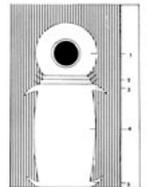
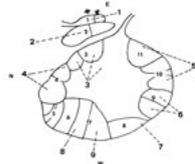
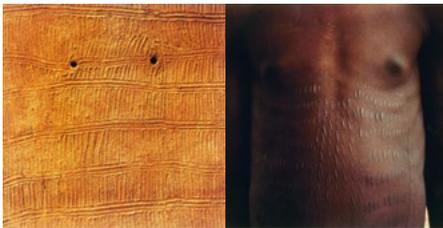
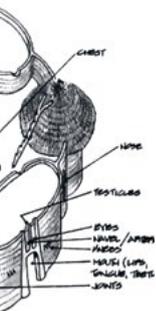
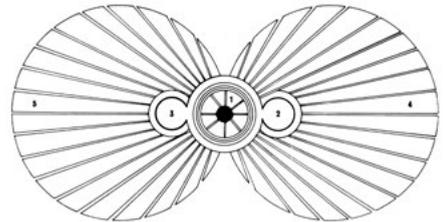
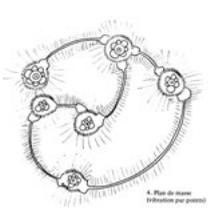
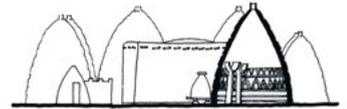
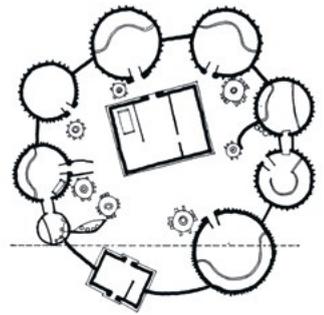
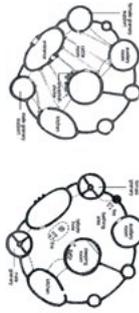
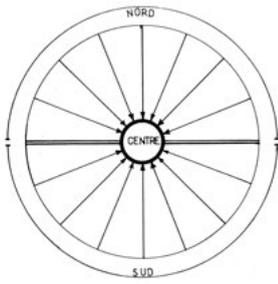


FROM A VERNACULAR ALGORITHM TO THE AFRICAN SMART CITY

EIGHT PRINCIPLES OF SPATIAL ORGANIZATION

EIGHT PRINCIPLES OF SPATIAL ORGANIZATION



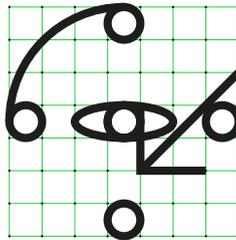


Sénomé Koffi
 Agbodjinou,
*Eight Principles
 of Spatial
 Organization*, 2018.
 Diagram developed
 for the installation
HubCités Africaines.
 ZKM | Karlsruhe
 (DE), 2018.

will not be a single African who isn't dazzled by a screen, who won't religiously celebrate the latest application of the so-called sharing economy, thus forgetting that the mores of our parents ever included such things as hosting visitors, ride sharing, or other pooling groups. [...] and who won't be ready to proclaim loudly, gratefully, that the valley even invented the very idea of all this. It is therefore this transfer from the social to the technological that must be reversed.

OG: The *HubCités Africaines* project presented at ZKM includes in-depth research into the principles of spatial organization structuring the traditional African habitat. You talk about vernacular algorithms. What are they? How does this apply to urban planning and architecture?

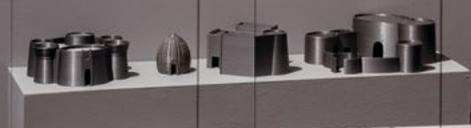
SKA: I work with eight principles of spatial organization. Eight elements that systematically recur in sub-Saharan African architecture, wherever it is found, and which thus form a kind of logic whose combination rigorously structures both the African building and village. This rigorously ordered skein of principles and concepts can be called an "algorithm." They function as the guarantor of the DNA of the African habitat beyond the explosion of its forms, as a "cultural unity" of "black" Africa. Whether we look at the habitat of the Betammaribé in Togo and Benin, the Dogon in Mali, or the Kassena in Burkina Faso, it is clear that the eight concerns are perfectly interwoven, which point to their interdependency.



In fact, all these concepts are intimately linked, are supports and means for each other, and complement each other. The credo of earthen architecture in Africa is ultimately intimacy and unity. For example, the "desire for totality" expresses the obsession of traditional African architecture to want to sum up the world. Another principle is anthropomorphism—the African house always has a human figure—while "gestation" (permanence of motifs of creation) alludes to procreation, mating, birth. As total architecture has a human figure and soul, it tends to indicate the status of man in the universe. Woman is the highest human being in that she holds the secret of life.

OG: These eight principles—gestation, anthropomorphism, differentiability, firations, fractals, panoptics, and cosmo-architecture—have been graphically translated in collaboration with the graphic designer and researcher Manuel Bürger. The result, presented on the pages 222-23, was also integrated into the installation. Manuel, can you explain how you work?

Manuel Bürger: We met during October 2018 in Paris after you suggested that we exchange ideas. Sénamé introduced me to the eight principles of his research. I found the relationship between living, thinking, and architecture very interesting, especially as it comes from a vernacular language, something I have also explored for many years now, albeit in the digital universe of the internet. (As a vernacular language has a



Sénamé Koffi Agbodjinou, *HubCités Africaines*, 2018.
Installation view, ZKM | Karlsruhe (DE), 2018.

wealth of stories, I appreciate it much more than commercial-driven design language). Together we developed an idea for a simple system in which the eight principles can be illustrated but also changed and transformed. We started to exchange basic outlines via e-mail.

OG: Manuel, how did your research go about meeting Sénamé's request?

MB: The grid of the system is crucial. It is very restrictive at one point. but I like that it connects the system to the urban landscape, a way of seeing things from above, a space to design in. It somehow offers the frame and could therefore be adapted easily to other applications and scales. The symbols we use are circles or lines—shapes of movement, but also figures of concentration and focus, which symbolizes the youth centers in Lomé to me as well.

OG: What were you trying to express through the graphic design?

MB: I didn't want to express anything—I wanted to develop a system that *HubCités* could use to support their ideas, beginning at a simple visual level. Of course, I would be happy to see how lines and circles can be applied to signs, wall paintings, digital interfaces or publications, and start to give the centers their own look and, hopefully, some public attention.

OG: Do you have examples of similar approaches?

MB: My studio develops identities for cultural institutions. We work hard at detecting the essence of an artistic concept and symbolizing it, making it more complex step by step and embedding it in a world of references so it becomes alive.

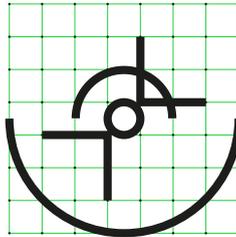
In general I'm interested in communication, in the power of storytelling, also when it comes down to just symbols, graphical elements.

In recent years I sought to apply Robert Venturi's and Denise Scott Brown's ideas of the "duck" and the "decorated shed" a lot to what I see and what we design.^[2] But these concepts from the 1970s are a bit old, and it's not that black and white. I'm

interested in the point at which their concept collapses and it goes beyond. There are examples of ducks which are more contemporary. Focused on design, I would call it "design-becoming-living

sculpture." And what I mean is that because of the rise of social interactions and local networks, driven by the need for change, design can also become a living sculpture, something which changes in accordance with the situation, is not fixed, and is therefore more bound to human thinking and doing. The new living sculpture enables telling stories and creating meaning (decorated shed) while being a strong "overall symbolic form" (duck).

For *HubCité* I would find it interesting how the system develops over years and how it embeds itself in the urban landscape, how inhabitants and participants can relate to it and could build also their identities with and around this



language/system to express new visions but also relations.

OG: As a German graphic designer who works closely with Sénamé to articulate his vision of Lomé, can you say how this work affects your vision of the digital and urbanity?

MB: The combination of supporting a local network with global technology is something we really have to push forward on, not only in Lomé. Over recent decades global technologies have instead been supported such that they destroy local networks and resources.

The text was originally written in French and English. Translated from the French by Steven Corcoran.

[1] The Tamberma people (masons of the earth) are an ethnic group from the north of Togo, a territory classified as intangible heritage by UNESCO since 2004. Approximately thirty thousand individuals inhabit a region extending across five hundred square kilometers near the Atakora Mountains. Tamberma territory straddles Togo and Benin, where they are known as Somba.

[2] Duck: “Where the architectural system of space, structure, and program are submerged and distorted by an overall symbolic form. This kind of building-becoming-sculpture we call the duck.” Venturi calls the city hall in Boston a duck: a modern, rather heroic, brutalist building.

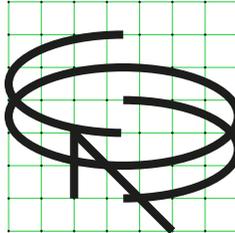
Decorated shed by contrast is “Where systems of space and structure are directly at the service of program, and ornament is applied independently of them. This we call the decorated shed.”

Venturi designed the Guild House in 1963, a (post)postmodernist approach and style where meaning

derives from ornamentation. A McDonalds restaurant is a perfect decorated shed.

Though Venturi and Scott Brown consider both architectural styles legitimate, they advocate strongly for the postmodern “decorated shed,” with its focus on symbolism, historical referentiality, social message, and merging of high and low art. This commitment to an “architecture of meaning” can also be discerned in the following description of what Venturi considered lacking in his own buildings: “We had failed to fit into our buildings double functioning or vestigial elements, circumstantial distortions, expedient devices, eventful exceptions, exceptional diagonals, things in things, crowded or contained intricacies, linings or layerings, residual spaces, redundant spaces, ambiguities, inflections, dualities, difficult wholes, or the phenomena of both-and.”

Robert Venturi, Denise Scott Brown, and Steven Izenour, *Learning from Las Vegas* (Cambridge, MA: MIT Press, 1972), 87, 129.



Commons



Uncommons

Uncommons



Commons

Commoning

What kind of transformations do societies need, pervaded as they are by the dominance of global capitalism [...], accelerated climate change as well as massive and violent exploitation of resources and questions about their ownership and responsibility?

the Digital,

the Commons

Digitizing

Commoning on the Rise

Urban gardening, fab labs and hacker spaces, open source platforms, neighborhood initiatives, food co-ops—collectively organized initiatives that tie in with local traditions and situated knowledge have been causing a global sensation for some time. In an era when the mythical Western capitalist redemptive promise of prosperity, eternal growth, and material happiness is crumbling, answers are being sought to a question that is posed globally but can only be answered in the context of local conditions: How can and will we live (together) in the twenty-first century in the face of globally operative, glaring humanitarian, economic, and ecological crises? What kind of transformations do societies need, pervaded as they are by the dominance of global capitalism and its comprehensive effects of privatization and commodification, social alienation and desolidarization, accelerated climate change as well as massive and violent exploitation of resources and questions about their ownership and responsibility?

Central in this context is the concept of the “commons,” a term introduced at the latest with the emergence of capitalist economic relations as an alternative to and limitation on commodification.[1] In 1516, Thomas More described a world without property as an ideal in *Utopia*; centuries later, Karl Marx based his analysis of capitalism on the idea that distribution could also take place via concepts other than the market; then, in 1944, Karl Polanyi published *Origins of Our Time: The Great Transformation*, a work that would become a milestone in research on the commons. With the rapid upsurge of neoliberal economic theory from the mid-1970s onward, commons research became less vociferous.[2] But by the awarding of the 2009 Nobel Prize to US political scientist Elinor Ostrom for her study on the economic form of the commons as a collective organization of resource management that is sustainable and regional, the discussion on the commons experienced a revival.[3] In the ensuing debates, the conviction emerged that the commons presented a challenge to the “elementary principles of modernity, liberalism, and law” and provided “alternatives to traditional orders [...]: centralized hierarchies, on the one hand, and unbridled markets, on the other.”[4] A characteristic feature of the commons is that, contrary to the logic of the capitalist market, it cannot be equated with specific objects and thus countable values, nor be captured by a fixed definition.

Commons can assume a multitude of active meanings and expressions, since it defines a relationship between people and the conditions collectively described by them as essential for their existence, and thus simultaneously expresses and defines a relationship.^[5] Commons thus initiates a shift of meaning from the material to the social, from substance to process, and consequently from a logic of having to a logic of being. In this sense, commons is always bound to action in a communal, physical, or digital space. It is part of a continuous process of negotiation, which is better understood by the term “commoning,” describing an action and thus something in the making.

On Site: Projects of Commoning in Dakar and Lomé

Dakar: School of Commons

For many years now, the independent cultural space for multimedia arts Kër Thiossane in Dakar, Senegal, has, under the direction of Marion Louisgrand Sylla and François Sylla, been actively involved in the discourse of commoning on a global and local level. The initial moment for this was in 2011, when Kër Thiossane became a partner in the open and collaborative platform Remix the Commons (Remix Biens Communs), which Alain Ambrosi founded in 2010 with the organizations Commonautique (Canada) and VECAM (France).^[6] Remix the Commons brings together different projects on commoning worldwide—here, too, the tension pertaining to a global phenomenon with local configurations is evident. The respective projects can be stored, cataloged, shared, and repeatedly rearranged on the website as video, audio, or text files, thus creating a dynamic field of relationships and exchange. As part of an international series of *petits déjeuners* (breakfasts) in 2012 and 2013, artists, sociologists, historians, activists, and many others regularly conversed in Kër Thiossane with the citizens of Dakar about contemporary art’s critical and activating potential in interaction with digital technologies, and about how this could be incorporated into practices of commoning in Senegal, and thus concretely into everyday life and urban reality.^[7] As Marion Louisgrand Sylla says, “In our experience, culture, artistic practices, and open-source technologies are an excellent entry point for proposing common goods to serve the dynamics of citizenship building in African cities.”^[8]



Foreground: *Images, écrans et réalité virtuelle*, workshop.
Afropixel #6, Sup'Imax, Dakar (SN), May 1-5, 2018.
Background: Jardin Jet d'Eau, Kër Thiossane, Dakar (SN), 2018.



Foreground: *Images, écrans et réalité virtuelle*, workshop.
Afropixel #6, Sup'Imax, Dakar (SN), May 1-5, 2018.
Background: Jardin Jet d'Eau, Kër Thiossane, Dakar (SN), 2018.

In 2014, these joint discussions culminated in the School of Commons (École des Communs) project, which consists of a garden and a fab lab. This school forms a vital place where art, technology, urban ecology, economics, and neighborly practice can come together and be researched and experimented with in a transdisciplinary way. In the immediate vicinity of Kër Thiossane is the Sicap Jet d'eau district—the first modern district in the capital, Dakar—which was commissioned in 1960, upon Senegal's independence, by then-president Léopold Sédar Senghor. Today, the district's buildings are in a state of decay, and the former public garden has become a general nuisance—an abandoned no man's land and a garbage dump at the same time. With the district's residents and the city administration, Kër Thiossane succeeded in winning this location for the School of Commons and, with French artist Emmanuel Louisgrand and Greenhouse, in transforming it into a space of community for the community as part of the Afropixel #4 Festival, in 2014.^[9] The result is a place where local residents can come together to exchange ideas with artists, scientists, craftspeople, and hackers to discuss and work together on different projects. In the garden as well as in the FabLab Defko Ak Niëp, tradition and innovation are combined: knowledge about traditional African botany is exchanged, critical topics such as the commodification or limitation of this knowledge by the global capitalist market are discussed, and new approaches to microgardening or permaculture—a concept for sustainable, nature-oriented agriculture—are realized. Traditional handicrafts are combined with digital tools and practices of cocreation through open source and 3D printing, and they find new hybrid forms in which different times and spaces converge.

Jean-Pierre Elong Mbassi, secretary general of CGLUA (Cité et Gouvernements Locaux Unis d'Afrique), formulated a vision of African cities in 2063: "In 50 years, I hope African cities will invent a different trajectory in urban development. This development should have a small ecological footprint, be on a human scale, and preserve the values of solidarity, sharing and respect for others."^[10] At the Afropixel #5 Festival, in 2016, as part of the Dakar Biennial under the title *Ville en Commun*, citizens explored the coordinates of Elong Mbassi's vision: a city oriented toward the concrete needs of the people living there and focused on people's interrelationships with their environment. The attempt was made to think through and test Elong Mbassi's vision of a sustainable city—one based on solidarity, participation, involvement, and respect, where local

traditions are preserved and developed—with the dynamics of collective action in the context of digital possibilities, such as open source and community-based decentralized technological infrastructures like fab labs.

Lomé: HubCité Africaine

The *HubCités Africaines* initiative in Lomé, Togo, launched by the architect and anthropologist Sénamé Koffi Agbodjinou, also aims to turn the city into a sustainable, creative living space, vital for everyone involved, through self-organization and the self-empowerment of its citizens on the basis of structures of solidarity. He takes a critical look at smart city projects based on the European–North American model, since they often pay scant attention to the actual social and climatic conditions on site. Architectures and technologies developed for other contexts are implemented unchanged, and local structures that would be worth preserving are destroyed in return. This includes, for example, the planning of HOPE City in Ghana, a project that, with its luxury architecture, not only further exacerbates social inequalities in Ghana but also, given its budget of several trillion US dollars, perpetuates relationships of dependency with global players. Sénamé Koffi Agbodjinou, on the other hand, takes his approach from the spatial structures of a city and its sociocultural conditions, in whose concrete context globally circulating technologies and building forms are productively translated and newly linked. As with the projects in Dakar, the central element of this process is the hybridization of local practices and forms of knowledge with those originating from the field of digital technologies.

For his hometown of Lomé, Koffi Agbodjinou is developing a system of so-called smart grids: a network of innovation centers similar to makerspaces, grassroot incubators, and tech hubs, which are distributed throughout the city. Their design is based on eight spatial principles developed by Koffi, which he systematized by comparing architectures in sub-Saharan Africa based on the cosmological aspects that he identified.^[11] These centers function, in analogy to the structure of villages, as a community space in which all a community's concerns, such as food and energy supply, education, and waste management, are discussed and organized. These spaces, each of which is responsible for community organization within a radius of one kilometer, offer not only a space for discussion but also one for the joint implementation of ideas. Community members work on and refine concepts, some of which can



Foreground: Results of the workshop *Images, écrans et réalité virtuelle*. Afropixel #6, Mon super kilomètre / URBI, Gueule Tapée, Dakar (SN), May 6, 2018. Background: Jardin Jet d'Eau, Kër Thiossane, Dakar (SN), 2018.

be implemented and tested in the fab labs both cheaply and easily using low tech. Through the decentralization and democratization of education and technology, the city is continuously transforming itself along with its inhabitants. In 2012, the first innovation center of the smart grid opened, the WoeLab, also called Silicon Villa, with a sidelong glance at Silicon Valley.^[12] Eleven start-up ideas for technological democracy that emerged in this space are being further developed in multidisciplinary teams: Wafate is the name of the first 3D printer developed entirely from recycled computer components on the African continent, an outstanding example of productive re-creation by combining practices and objects that have long belonged to a place with those that circulate on the global market and are added later. The plan is to equip every school with such a 3D printer and make 3D design and printing a regular school subject. Scope is a platform that coordinates the collection and recycling of plastic waste; Urbanattic synchronizes the production of urban organic products and their distribution in the city.

Significant for this practice of cultural translation, which in this context leads to hybrid designs and practices, is the moment that Sénamé Koffi Agbodjinou describes as key for *HubCités's* simultaneous grasping of architecture, anthropology, society, and technology as a future model for African cities: It was the day he first entered a hacker space and experienced how people there came together, in digital or analog space, and collaborated on solutions to collective and individual concerns. In such a hacker ethic, he recognized a practice and an attitude similar to those he was familiar with from traditional African communities, in which people come together in forums to discuss and work on problems. This principle of similarity, or recognition, builds an affective bridge between the known and the unknown; it is a mechanism that sets in motion processes of cultural appropriation and hybridization—processes that function reciprocally and globally and are a central element in social change.

Commoning Digital Hybrids

The artistic-social projects School of Commons in Dakar and *HubCités Africaines* in Lomé move in the field of tension of commoning as a global movement, which is characterized by the activation and cultivation of local knowledge and local practices. Such a link to regional forms of noncapitalist communalization is a consequence of the questioning of

global capitalism, which is also linked to the organizational form of the nation-state as a regulatory authority. As a result, at issue is to by no means evaluate these processes as, for instance, genuine phenomena of the Global South, and thus maintain old polarizations, but rather to understand them as linked to specific economic and social forms of organization.^[13]

In this sense, the School of Commons and *HubCités Africaines* initiatives use the participatory power of self-organization, creativity, and added value of local communities and give space to social and cultural forms and values outside capitalist penetration. Digital technologies and practices play a central role in the concrete design of these projects. Both initiatives start with the potentials of the digital, using them to multiply, share, and jointly develop knowledge and thus liberate creative work from market-oriented models, as well as, consequently, to develop alternative economic models by activating a resource commons. In this way, these initiatives work to dissolve the interlocking of technology and capitalism, which has historically been dominant in Western discourses. Local and global knowledge flow into each other in a retrospective movement, which looks into the respective history, as well as a prospective movement, which uses the technical possibilities of the present and the future. This results in the creation of designed hybrids of digital practices and technologies, in which the technological tradition of European–North American origin is incorporated but creatively transferred to the respective local context, transformed and thus critically reinterrogated. In the communal space of commoning, the globally available digital resources become new forms in local negotiation processes, which can multiply and enrich the imaginations of how we want to live together. Thus undermined is any clear localization of digital technologies and practices. The different hybrid forms are localities that respond to a specific environment. In Bruno Latour's publication *Down to Earth: Politics in the New Climatic Regime*, he distinguishes between globalization-plus and globalization-minus. He understands globalization-plus as a globalizing trend that accepts and cultivates different modes of existence and promotes their exchange without leveling them.^[14] In the context of such globalization-plus, great potential exists within digitality and communing—as dynamic communal processes of negotiation—for dealing with the challenges of our time, a time that requires new ideas of community.

- [1] See Verein Neustart, ed., *Nach Hause kommen: Nachbarschaften als Commons* (Zurich: Edition Volles Haus, 2016), 19–23.
- [2] Richard Rottenburg, in conversation with the author about the prehistory of the commons, September 11, 2019; Karl Polanyi, *Origins of Our Time: The Great Transformation* (London: V. Gollancz, 1944).
- [3] See Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990).
- [4] Helfrich Silke and David Bollier, “Commons als transformative Kraft: Zur Einführung,” in *Commons: Für eine neue Politik jenseits von Markt und Staat*, ed. Silke Helfrich and Heinrich-Böll-Stiftung (Bielefeld: transcript Verlag, 2012), 15–23, here 15.
- [5] See Stavros Stavrides, “Common Space: Die Stadt als Gemeingut—Eine Einführung,” in “An Atlas of Commoning: Orte des Gemeinschaftens,” special issue, *ARCH+* 51, no. 232 (2018): 14–19.
- [6] Remix the Commons website, accessed July 10, 2019, <http://www.remixthecommons.org>.
- [7] “Petit Déjeuners en Commun,” Kër Thiossane, accessed July 10, 2019, <http://www.ker-thiossane.org/spip.php?article99>.
- [8] Marion Louisgrand Sylla, interview by Vasilis Niaros, June 30, 2016. The interview was conducted in the framework of preparations for the publication of *The Co-Cities, Open Book: Transitioning from the Urban Commons to the City as a Commons*.
- [9] Greenhouse is an initiative for art, design, and architecture led by Emmanuel Louisgrand and Jean-François Chanal.
- [10] Jean-Pierre Elong Mbassi in Kër Thiossane (Dakar, Senegal) festival brochure, 3, for *Afropixel #5: Ville en commun*, April 4–June 3, 2016.
- [11] Koffi’s cosmology and architecture links include (1) figure of gestation: food resource; (2) anthropomorphism: production or living environment; (3) differentiality: education; (4) gyration: mobility; (5) fractals: energy resource; (6) panopticon: governance; (7) totality: communication; and (8) unity: environment or waste management.
- [12] “Premier Espace Africain de Démocratie Technologique,” WoeLab, accessed July 10, 2019, <https://www.woelabo.com>.
- [13] Interesting in this context are the investigations of the historian Tine de Moor (Universiteit Utrecht), who deals with the commons and commoning in a historical perspective with a focus on Europe, especially the Netherlands. Europe has an intensive tradition of the commons, which from the Middle Ages until the end of the nineteenth century structured all areas of social organization and was only dissolved by the development of the industrial revolution, the rise of the bourgeoisie, and the emergence of nation-states. See, for example, Giangiacomo Bravo and Tine de Moor, “The Commons in Europe: From Past to Future,” *International Journal of the Commons* 2 (July 2008): 155–61.
- [14] Bruno Latour starts from the thesis that what we call “globalization” consists of two opposing phenomena: globalization-plus and globalization-minus. While globalization-plus, a global viewpoint, “ought to mean multiplying viewpoints, registering a greater number of varieties, taking into account a larger number of beings, cultures, phenomena, organisms, and

people,” the opposite happens with globalization minus: “The term [globalization] is used to mean that a single vision, entirely provincial, proposed by a few individuals, representing a very small number of interests, limited to a few measuring instruments, to a few standards and protocols, has been imposed on everyone and spread everywhere.” In the context of globalization-minus, the particular communing configurations of the digital disappear or are adapted to globally operating capitalist functional models, whereby the potential to adequately and productively meet local challenges is lost. Bruno Latour, *Down to Earth: Politics in the New Climatic Regime*, trans. Catherine Porter (Cambridge: Polity Press, 2018), 12–13.

Co-creative

There is no doubt that the co-creative dynamics at work within the Defko

Ak Niëp Lab reflect the image of an Africa that is totally in tune with modernity, but that remains rooted in its own culture.

Dynamics at the Defko Ak

Prospects and Stakes

Niëp Lab:

The maker movement refers to individual or collective do-it-yourself (DIY) practices that make use of digital manufacturing in fields as varied as daily life, research, and industry. These practices are deployed in physical spaces called makerspaces. This generic term designates technological spaces of open innovation that are alternatively called fab labs, hubs, accelerators, incubators, hackerspaces, biohackerspaces, living labs, or coworking spaces. Makerspaces are generally equipped with digitally controlled machines, such as 3D printers or laser cutters, computer equipment, electronic kits, and a variety of other equipment or tools, like saws or sewing machines. Beyond the material aspect, makerspaces are characterized by their community dimension: regardless of their field, people with similar interests can come together to socialize, to collaborate, and to discuss common themes and problems. However, the maker movement—it is worth mentioning—is not a new phenomenon. As Michel Lallement says, “We have always been makers.”^[1] This is all the more true in the African context, where resourcefulness, DIY, recycling, and repairing/mending practices are anchored in daily life. With an estimated over 100 makerspaces in Africa,^[2] this ever-increasing expansion cannot go unnoticed.

A New Space of Research in the Social Sciences

Since the early 2000s, the maker movement has been the subject of several scholarly studies and publications demonstrating its strong economic, educational, empowerment, local development, and justice potential. On the sociopolitical level, as Ron Eglash and Ellen Foster show, the maker movement offers Africa anchoring points for building a sustainable and more egalitarian future.^[3] A.M. Stercken puts it thus, “Innovation spaces enhance users’ social, intellectual and psychological capabilities, not to mention their economic capital.”^[4] This idea is also endorsed by key figures in the African technoscientific ecosystem, such as Ndubuisi Ekekwe, who founded the African Institute of Technology (AFRIT). He believes that the maker movement can play an important role in the empowerment of African citizens.^[5] On the educational front, we should not overlook several works that advocate setting up makerspaces in African libraries as a way of improving the quality of education.^[6] Finally, on the economic level, makerspaces have become a widespread form of support for technological entrepreneurship in Africa.

The Defko Ak Niëp Lab

In this text, I endeavor to describe the prospects and issues surrounding the process that catalyzes creative agility in those who frequent makerspaces. To this end, I visited the Defko Ak Niëp Lab,^[7] which was created in 2014 by Kër Thiossane Villa for Art and Multimedia and is located in the SICAP Liberté II district in Dakar. Two research experiences inspired me here: the first was a series of interviews and observations that I carried out at the Defko Ak Niëp Lab during my PhD fieldwork. It was on this basis that I approached the question of the collaborative possibilities opened by fab labs. The second was the result of a debate on “Digital Arts and Crafts in Senegal: Fab Lab between Promises and Local Prospects,” held during the Afropixel #6 Festival in May 2018. This brings me to the issues raised by this collaboration with the Defko Ak Niëp Lab.

The Collaborative Potential of the Defko Ak Niëp Lab

Sophie Boutillier and Claude Fournier define collaboration as the set of interactions between the members of a small working group set up to operate in a given situation.^[8] This collaboration aims to favor actors’ autonomy by allowing them to overcome constraints of hierarchy, time, and space.^[9] With regard to collaboration within fab labs, the Defko Ak Niëp Lab provides further insight into the specificities of the African context. Indeed, around the Defko Ak Niëp Lab a rich educational ecosystem comprising artists, startups, associations, and universities has formed. Whence the idea that inclusion is the *sine qua non* condition for the emergence of collaborative practices.

Inclusion as Basis for Collaboration

Through pivotal values such as equality, solidarity, and sharing, the Defko Ak Niëp Lab clearly manifests its willingness to be as inclusive as possible. Indeed, Kër Thiossane’s fab lab places the priority on people, regardless of gender, age, academic level or discipline. Thus, that the participants working together on fab lab activities have varied but complementary profiles is a pleasing thing. Beyond the feeling of equality infusing its members, the Defko Ak Niëp Lab also presents a real island of solidarity and family-like belonging. This inclusive dynamic stimulates an impulse to share (knowledge, information, equipment or space) and a duty to engage in mutual aid, such

as may be at the origin of peer learning/teaching. It is a matter here of a pedagogical strategy for transmitting knowledge, skills, or attitudes between learners in a group or members of a work team. This is how several members of the Defko Ak Niëp Lab themselves acquired knowledge about 3D printing, electronics, and programming on Arduino cards.

Collaborative Work and Co-creation

In fab labs, inclusion combined with peer learning/teaching forms the basis for collaborative action, one of the most important forms being collaborative work. The notion of collaborative work varies depending on whether the collaboration takes place within one organization or between several organizations. Through its collaboration with local actors, the Defko Ak Niëp Lab is resolutely part of a co-creation approach, which can be defined as a process of collaborative innovation. Below I present two examples that illustrate this dynamic.

Spacecraft Reproduction/Construction

First, the designing of a mobile research and development unit, the so-called Spacecraft, aimed to provide a space of transition between the STEM (science, technology, engineering, mathematics) sector and the informal metal and digital waste recycling sector. The design was developed by architects DK Osseo-Asare and Yasmine Abbas in the context of their work at the Agbogbloshie open-air waste dump near Accra, Ghana, and produced by their platform, the Agbogbloshie Makerspace Platform (AMP). In 2018, Kër Thioissane, in collaboration with AMP and artisan designer Bassirou Wade, produced a special Spacecraft edition—*Spacecraft_Ker Thioissane*—for the Afropixel #6 Festival. Bassirou Wade is a *tegue* (“blacksmith,” in Wolof) from Dakar. Bassirou describes his contribution as follows: “This is how I usually work with artists who want to do something. If you’re an artist, a draughtsperson, and you want to make giant structures, if you have the ideas, I can help you with the material. I know about material as I’ve been involved in many jobs. I can give you advice on the material and put you on the right track, to carry something out.” His comments reveal an idea and practice of collaborative work as a sharing of functions. This same blacksmith also welcomes the opportunity to use the equipment at the Defko Ak Niëp Lab to carry out



Participants and team of Defko Ak Niép at the *Dakar Typo Remix Makers* workshop. Afropixel #6, Kër Thiossane, Dakar (SN), February 26–March 10, 2018.



his own projects. This highlights the coworking opportunities that the Defko Ak Niëp Lab offers.

Second, a UCAD (University of Dakar) professor wanting to bring out a water wheel to produce hydraulic energy visited Kër Thioossane to benefit from their fab lab's expertise. He expressed his request as follows: "We are assembling a wheel that we are going to put in a river; as it turns, it will drive a small alternator to produce electricity. First we need the wheel, and then we're going to change the wheel configurations; that's going to require a lot of measurements. This is our prototype, but accuracy is a problem. You see, sometimes it spills over in one direction, sometimes in the other. The blades are not identical, the assembly, the cutting is not precise, and you can see that when it turns, it gets stuck." His comments reveal that he rooted his approach to his project in teamwork.

A Theater of Sociocultural Tensions

That the Defko Ak Niëp Lab offers various opportunities for collaboration is, it will be agreed, a godsend for the various local players. The debate that was held on "Fab Labs: Between Promises and Local Perspectives" at the Afropixel #6 Festival in May 2018, brought out certain limits to the functioning of fab labs in Senegal—that is, beyond the economic model, which remains central everywhere. Indeed, the speakers highlighted several discontinuities between the principles of the fab labs and Senegalese sociocultural realities.

The first cultural discontinuity is linked to the lack of digital literacy of many local actors. The manager of the Ngaye Mekhé factory indicates as much by saying that, for more than two years now, he has had a laser cutter (one of the fab labs' flagship devices) that he cannot use because it has broken down and there is no one with the requisite skills to repair it. In other words, the availability of technological equipment does not always guarantee its appropriation and use by local actors. This is a symptom of the second-level digital divide, which is related to different ways of using or practicing technology; it differs from the first-level divide, which concerns access to equipment.

A second discontinuity appears on the managerial level. Based on their different experiences, the speakers in the debate were unanimous about the fact that managing a fab lab horizontally and openly is almost impossible. A very strong hierarchical system, modelled on the hierarchical relationships in African society, would seem more appropriate for a smooth



Wall mosaic, Defko Ak Niép Lab,
Kér Thiossane, Dakar (SN), 2018.

functioning of fab lab structures. A model, in other words, that is similar to a family and that is headed by a respected leader who organizes and governs life in the community. This managerial choice highlights the cultural difference that exists between the horizontal values advocated by fab labs (sharing, collaboration, transparency, openness) and the vertical values of respect that are strongly rooted in African society (hierarchy, taboos, birthright, the right to secrecy, etc.).

A third discontinuity appears on the issue of inclusion. Speakers indicated a willingness to welcome everyone and be maximally inclusive by involving each person in the life of the space. However, certain realities render this desire for inclusion fragile, realities that force a reconsideration of the modalities by which some actors are included, specifically those actors who come only to acquire knowledge, to learn a profession, to create a start-up, and then leave without sharing or keeping a link with the community. The attitude of the many young Africans who thus go out in search of opportunities is described by the theory of commonality as that of free riders. There should be no surprise that inclusion in the traditional sense is not raised, a sense that often links to gender in general and to women in particular. It should nonetheless be pointed out here that the Defko Ak Niëp Lab itself is run by women—a rare case in maker circles in Africa and one that is to be celebrated.

A fourth discontinuity relates to the sharing of endogenous knowledge/technology. As was stressed by the various speakers, the existence of castes in Senegal is a real obstacle to knowledge sharing. For example, in Senegal trades such as those related to leather work are transmitted from father to son. Thus, if you do not come from a family of “leather workers,” you are excluded from these circles, making it impossible to share with these families of leather workers or to acquire know-how about leather work.

There is no doubt that the co-creative dynamics at work within the Defko Ak Niëp Lab reflect the image of an Africa that is totally in tune with modernity, but that remains rooted in its own culture. The aforementioned discontinuities are therefore only the consequences of a departure from the predictive models that we hope to see emerging on the continent. These discontinuities should raise questions. Is the lack of digital literacy, for example, not due to the fact that CNC (computer numerical control) was enforced (in one way or another) at the Ngaye Mekhé factory? Does the presence or requirement of digital equipment in a fab lab respond more

to a marketing or fashion need than to a need in the local communities? Similarly, the allusion to castes can be seen in a different light than just a simple refusal to share knowledge. In other words, the behavior of the leather worker caste can be justified as an identity-based withdrawal that aims at protecting itself against the monopolization of endogenous knowledge by free riders.

All in all, one could not have chosen a better case than the Defko Ak Niëp Lab to illustrate the theme of the Afropixel #6 Festival: *Digital Imaginaries—Non-Aligned Utopias*. Beyond the fact that it has defied all predictions concerning the diffusion and promotion of the fab lab concept,^[10] Kër Thiossane's fab lab also traces its own path by adapting to the immediate context and by remaining sensitive to the sociocultural and economic realities of local communities.

Translated from the French by Steven Corcoran.

[1] Isabelle Berrebi-Hoffmann, Marie-Christine Bureau, and Michel Lallement, *Makers: Enquête sur les laboratoires du changement social* (Paris: Seuil, 2018).

[2] This approximation is based on a map generated by Makery Labs (www.makery.info/labs-map/) and one by The Fab Foundation (www.fablabs.io/labs/map). However, the number presented here is allegedly far lower than the real number.

[3] Ron Eglash and Ellen Foster, "On the Politics of Generative Justice: African Traditions and Maker Communities," in *What Do Science, Technology, and Innovation Mean from Africa?*, ed. C. C. Mavhunga (Cambridge, MA: MIT Press, 2017), 117–36.

[4] A. M. Stercken, "Cultivating Serendipity and Efficacy Beliefs: The Impact of (Caireen) Innovation Spaces on Human Development," MA thesis, University of Utrecht, 2015.

[5] Ndubuisi Ekekwe, ed., "Africa's Maker Movement Offers Opportunity for Growth," *Harvard Business review*, 29 May 2015, <https://hbr.org/2015/05/africas-maker-movement-offers-opportunity-for-growth>.

[6] Helen Nneka Okpala, "Making a Makerspace Case for Academic Libraries in Nigeria," *New Library World*, 117, nos. 9/10 (2016): 568–86. DOI 10.1108/NLW-05-2016-0038.

[7] In Wolof, Defko Ak Niëp means "do it with others." Kër Thiossane is a Senegalese association that encourages the integration of multimedia into traditional creative and artistic practices.

[8] Sophie Boutillier and Claude Fournier, "Travail collaboratif, réseau et communautés: Essai d'analyse à partir d'expériences singulières," *Marché et organisations* 3, no. 10 (2009): 29–57. DOI: 10.3917/maorg.010.0029.

[9] Christine Gangloff-Ziegler, "Les freins au travail collaboratif," *Marché et organisations* 10 (2009): 95–112. See also F. Silva and A. Ben Ali, "Emergence du travail collaboratif: nouvelles formes d'organisation du travail," *Revue Management et Avenir* 6 (2010): 340–65.

[10] We ought to recall the fact that fab labs are widely promoted by the Massachusetts Institute of Technology (MIT).



Video Games

The act of “play” revolves around constant reconsideration of change in one’s intervention, by iterating and reframing one’s action in order to achieve any set goal. Play set in reality can poke at our motivations and access to reframing our states of being in a given context, opening up space for imaginaries to thrive.



as Tools

We're all hallucinating all the time, including right now. It's just that when we agree about our hallucinations, we call that reality.[1]

This chapter examines the potential of alternative video games to guide us in recalculating and reimagining ways of crafting and harnessing possibilities for the near future in Africa, at a moment when the world is rapidly changing. I am writing from my experience as a game-thinking lead, game-lab design-facilitator, and researcher on the alternative use of games.

Since 2017, I have led the development of alternative video games in various African and European cities, but I did not start out in the gaming field. I started as an architect studying and working in Addis Ababa at the Ethiopian Institute of Architecture, Building Construction and City Development (EiABC), with an exchange at Bauhaus University, in Weimar, Germany. Looking back now, coming from a different background was important. Seeing video games from a different angle allowed me to imagine alternative usage easily. What brought me into game studies, though, was the search for an answer to a question that puzzled me as an experimental architect and as a designer working to bridge digital and analog self-awareness. If architecture shapes our reality, wouldn't people want to interact and experiment digitally with how this reality comes into being? Could games provide a way for people to playfully participate in the imaginary remaking of their realities by equipping them with tools that motivate and intrinsically engage? And could such digitally mediated play provide the basis for change and perhaps even invite a future where the digital merges with the analog in new ways?

Utilising video games for "game thinking," provides a way to develop, test and own possible futures individually and collectively. One way of doing this is by designing experiences, one of the most powerful forms of communicating empathy and reasoning, more accessibly, opening floors for interactions to entertain an ideal on a larger scale and deeper level. The act of "play" revolves around constant reconsideration of change in one's intervention, by iterating and reframing one's action in order to achieve any set goal. Play set in reality can poke at our motivations and access to reframing our states of being in a given context, opening up space for imaginaries to thrive.

Enter Africa, a Goethe Institut-hosted game-based Pan-African project that seeks to explore future scenarios of African cities, allowed me to pursue these questions further. As the game-thinking lead and project manager, I explore the impact of games



Social experiment using "free hugs" to probe people's responses. Addis Ababa (ET), 2019.

on African societies and focus on the possible outcome of how games made by participants foster dialogue and exchange, of how they create a reason to come together, to network, to play and to finally discuss implementations of visions and future scenarios they first played in the games. The city and its society are a complex structure. Designing games as tools is about how the games become a means to an end and not just an entertainment end product. An example from an event in Kampala illustrates how game thinking can be used to understand and potentially change complex urban systems.

Gaming Interventions in Urban Space

We were in Kampala to investigate sites for a potential gaming intervention when we observed from a third-floor café the local minibuses transportation system at a busy intersection. No one could put a finger on how it was organized until we all went down to investigate. The beautiful chaos was actually a controlled one, where each taxi owner temporarily hired someone to guide, sometimes convince passengers to ride in their minibus, as there were two to five minibuses at a time heading to the same destination. Their line-up, though, is made transparent using signs above the minibuses, saying which direction they were going, so that passengers could stand closer to their destination rides until the guides showed up to help them select which bus to take. This system works for the people, and it has not been designed and implemented by officials or experts. It was constructed by the people using it (the drivers, taxi owners, guides). The job of officials is to test whether it should be passed into law. Clearly seen, hacking one's way into an everyday solution is a principle here. This principle is also close to heart for a gamer because games also provide a quest within a framework where, once a gamer is in it, the goal becomes to explore and hack away toward finding the best system that works to complete the quest as long as the framework doesn't fail it. What the best system could be is decided by the gamers, depending on how skilled their hacker mentality is. Gamers operating from this principle change their decisions multiple times until they feel like they have a grip on what works better. Therefore, gameplay stops being about finding that one right thing to do to win; it becomes learning to avoid the one thing that's wrong and exploring even better possibilities to win faster, be stronger, or just improve on one's previous score—also known as hacking. This one example shows that people can entertain tasks to solve everyday

problems, and they do it better when adapting to the context seamlessly. Informal systems, which characterize many urban infrastructures across Africa, are particularly well suited to game thinking, because they already have many of the elements that make a good game, which players happily take ownership of.

From January 2018 to December 2019 I led video game events in Kampala, Kigali, Windhoek, Johannesburg, Dar es Salaam, Addis Ababa, Nairobi, Accra, and Lagos to test and develop the use of digital games as tools of collectively reimagining urban space. Within these exchanges between multiple cultures and layers of realities, I understood that there cannot be a cookie cutter formula made by an “expert” and given to users to solve an aspect of their problem. I grew interested in the differences between approaches and processes, from how differently we construct thoughts and build communities to how we give life to things we design. There are two core principles in how this can be approached through games beyond entertainment:

1. The majority of participants in game making within a particular theme should be locals and nonprofessional game designers. They should come from all fields and walks of life in the particular country where the game will be executed. This allows a deeper understanding of the societal context and the reality related to it, as well as the possibilities of a recalculated future.
2. Training game design as an icebreaker instead of as an end product follows a different process. By allowing the workshop participants to build all content and construct a vision that addresses their existing reality and caters to the possible future, a trainer guides participants in translating their content into a playable framework so that many more people can access the making of the games and are triggered to play.

Because of the ownership that participants take, their sense of empowerment is growing. At the end, this makes the game a “by the community, for the community” experience, which is sustainable after trainers leave. Therefore, what we opt for when we’re presenting ourselves in a room full of seekers is not only that we design a good game for the community vision but that the game-making process itself be rewarding enough that participants go home thinking, “If an alternative use of games could redefine how we interact with each other, what can I use it for next in my life?”

The East African Gaming Context

My work in the game-thinking sector has to be understood in the context of the commercial game sector in Africa, which is rapidly developing. Egypt, South Africa, and Nigeria are leading the commercial gaming scene in Africa, and East Africa is slowly getting in on the show as well. Indie game studios are emerging in large numbers, and some strong ones are surfacing, with competent skills. What has been happening in eastern Africa for a while now are plenty of small and scattered game nights, game jams, and game store competitions, sometimes happening spontaneously and sometimes planned selectively. Out of these and better education around games, we are seeing several indie studios gaining the confidence to risk venturing into the business of video and mobile games. Most of them are on the mobile gaming stream, for good reasons. Africa is now one of the largest growing economies, and a large number of transactions are happening on mobile devices, making mobiles the best tool to tap into in Africa. If there is any gaming scene to be created in East Africa, a big share will definitely be mobile games because of the hardware's ease of access and mobile money companies like M-Pesa penetrating the market. The indie studios are definitely not the only ones you'll find in a Google search, and that is one of the factors that stunts an understanding of what's currently happening in the underground. Most teams that come to work in the gaming sector are (1) inactive because they lack resources (since there is no trusted way of making money across the country); (2) client based, working only on client request, because of the risk of designing a game in an ecosystem not strong enough yet to value or devalue it; or (3) invisible because studios are subsumed under the permit of some event organizer or mobile app developer since no license recognizes gaming as a business yet. So the ones that are search friendly over the internet are studios that made it past these barriers. I cannot say that there is no gaming scene in East Africa, at least for consumption, but since the data are still being collected, I cannot yet give out precise numbers on how big it is. One thing that I can note, though, is that 90 percent of video and mobile games already produced were developed by local talent and produced by a European producer. Now, more Africans are getting in as producers, at least in Kenya. The similarities among these games and the wishes of their makers characterize games made in Africa. The uniqueness of these games relies heavily on the attempt to create a feel



White collar and blue collar workers as well as homeless people united by a simple game on the streets of Addis Ababa (ET), 2018.



for different African contexts, to create relatability and a strong belongingness within the local community, but also to attract new content seekers for the global market as well. These archetypes of an “African” touch are crafted visually, in storytelling, and even in the design of new mechanics, giving insight into local ways of life.

Within the community of game developers and designers, there seems to be an understated mantra: “How we compete is through the use of our culture and identities; that’s what we know well.” And this can potentially create a genre of mostly visual African archetypes, sometimes deeply embedded in the game play as well, such as in *Kukulu*, a game from Leti Arts in Kenya and Qene Technologies in Ethiopia. Since the ecosystem hasn’t flourished yet, until the work is done from the bottom, these existing and working indie studios are targeting diasporas and sometimes non-Africans interested in African visuals and content for profitability and for nonprofit; the community is very underground but quickly growing huge. Games designed locally are usually distributed across as many outlets as possible to at least gain recognition. More successful developers have their games on Steam and self-running games on itch.io, but the simplest ones are distributed over a chatting app, such as Telegram, which is used in Ethiopia.

Against the background of these developments in the game sector, we, as people in the game-thinking sector, cultivate the use of games as platforms, as places where layers and layers of change strategies open up horizons. Afterward, what the people want to do with these discussions is up to them, from simply hosting a game jam on similar concepts to actually activating volunteers to tackle what they played in real life.

Games as Real-Life Tools

Games as tools are about bringing people from different walks of life to talk, envision, play, and collect different perspectives about issues that matter most to them. Within this process, the one thing there is no vocabulary for in games is bias—be it in gender, race, age, or even social status—which we clearly use to identify people outside the context of play. Games to begin with, on a very basic level, help to open up complex and outstanding discussions very casually, playfully, creatively, and most importantly, without societal bias because, hey, it’s just a game, right? :)

As a technological tool, video games can push conversations further, especially where people feel afraid, isolated, or powerless.

Video Games as Tools

With the right tools in hand, the informal infrastructures and systems in use in parts of Africa could be seen as an invitation to learn from and build in participatory imaginaries with a plug-in option to reality from the digital—changing imaginaries and pushing actual change. Let's play.

[1] Anil Seth, *Your Brain Hallucinates Your Conscious Reality*, TED Talk, April 2017, https://www.ted.com/talks/anil_seth_how_your_brain_hallucinates_your_conscious_reality.

Lead The Way



Sumbandila

Lead The Way Sumbandila

Lead the Way is a triptych, fashioned from the physical and audio-visual debris of collaborative performances in Dakar, Johannesburg, and Karlsruhe. It is named in honor of SumbandilaSat, the broken South African satellite that continues to orbit the Earth. Forming constellations, with collaborators and materials in each site, we oriented ourselves collectively toward the damaged satellite to make sense of our conflicted, racialized subjectivities.

In Dakar, I performed for five hours in collaboration with Senegalese musician Lamine Kora Kouyaté and dancer Fatou Cissé, creating shifting shadowscapes of imaginary futures, obliterated with technological objects from Dakar's Chinese markets. The second iteration, in Johannesburg, took the format of a video installation, made in collaboration with the poets Lebogang Mashile, Prophet JD, and Mantala Nkoatse. It featured shadow projections layered on top of African artefacts from the classical collection of African art at the Wits Art Museum. The resulting sound and shadow landscape creates an imaginary speculation, attempting to reflect as much on the embedded origin and use of the objects as it does in exploring provocations for future projections. The third performance and installation, in Karlsruhe, took place in dialogue with South African robotic lights and their makers, Paul Setate and Janus Fouche, as well as the German performer Mira Hirtz and sound artist Nino Alonso. The contribution to this book is written with Mwenya B. Kabwe and accompanied by a drawing and documentation of a collaborative studio performance that was part of its making. In all four instances of this work, Sumbandila Satellite acts as a broken techno-poetic reference point, which might or might not give guidance to our digitally mediated, contingent, and charged selves.

LEAD THE WAY SUMBANDILA

A bald white man in white overalls walks onto an empty stage with a white back wall and black floor.

He looks up and points, slowly tracing an invisible line in the sky.

White Man shouts: "Sumbandila! Sumbandilaaa! Lead the way!"

He waits for a response. Silence.

He fetches a ladder and a light. Climbs the ladder and sends morse code signals into the sky with the light. The morse code, like his screams are directed at the invisible line he traced in the sky.

.-... . .- -.. -- .- -.-

He waits for a response. Silence.

He climbs down the ladder leaving the flashlight on and places it on the floor to cast the shadow of the ladder against the back wall.

He fetches a suitcase and empties some of the items it contains in front of the flashlight, casting more shadows.

He picks up a hand radio with an extendable aerial, extends the aerial, turns it on, and searches the channels. Static sound. Then he picks up space sounds.

He listens. Shakes his head. The sound continues.

He opens the notebook. And draws into it. Tears out the page. Rolls it into a telescope and looks into the sky, searching. He stops at a point in the sky farther along the trajectory drawn by this flashlight. He crumples the paper into a ball and throws it in the direction of the invisible trajectory he continues to trace.

He watches the crumbled paper fall back to the ground.

He picks up white chalk and tries to mirror the invisible line along the floor with a dotted line. He adds circles, arrows, and other marks on the floor. He picks up the flashlight, climbs up the ladder, and illuminates the drawing below while looking up.

On the ladder he shouts into the sky: "Sumbandila! Sumbandilaaa! Lead the way!"

He waits for a response.

Lead The Way Sumbandila



Marcus Neustetter and Mwenya B. Kabwe, *Lead The Way Sumbandila*, 2019. Performance.

He climbs down, turns off the radio, sits in front of the other items on the floor and picks up a map and unfolds it.

He reads: Sumbandila Sat—micro Earth observation satellite. Launched on September 17, 2009. Sumbandila means “Lead the Way” in Venda language. Orbiting. June 2011—Sumbandila Sat was damaged in a solar storm. No longer sends images. Status, obsolete?

He looks up.

He has an idea.

He looks at the map and starts to take notes and draws a diagram.

He talks to himself, perhaps reading out his notes: She is still searching. Taking pictures. But she cannot send. She must be overflowing with data. Creating impressions of imaginary landscapes. She can lead the way. How to read her garbage datascape. Her data image fragments. With what receiver.

He draws.

He picks up objects from the pile on the floor and tries to build a receiver from junk parts, mirror sheets, and toys. The construction sound is amplified. He steps back and illuminates this structure with his flashlight. He puts on headphones to listen and looks at a small screen to see.

Just visual static. Just white noise.

He is disappointed.

He lies down on his back, looking into the sky. He closes his eyes.

Rhythm emerges in the white noise, a soundscape of layered data and space sounds.

A projection appears on the back wall, casting the man’s shadow and that of the objects around him as a shadow landscape.

Dots and lines draw imaginary exploration maps and landscapes showered with falling data flakes. Collaging, layering, disrupted, abstracted satellite images of Earth dissolve.

The horizon rotates and slowly vanishes in the distance. Space junk zooms past, tracing new trajectories and horizons. All fades to black; the sound reverts back to white noise and fades out.



Marcus Neustetter, *Lead The Way*, 2018. Test setup, Johannesburg (SA), 2018.

Origin



Circulation

Circulation



Origin

The This idea of Africa as the other side of Europe is thus an old and tenacious one: Africa as the sanctuary of the traditional saved from the evils of modernity, the soulful supplement of a world devoured by mercantile and techno-scientific reason, an idea that continues down to current apprehensions about the digital and technological present.

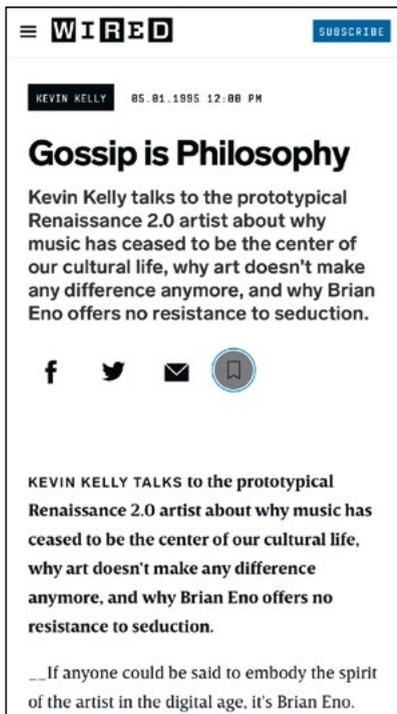
Primitivist



Veil

In certain discourses, Africa has long been considered and sometimes celebrated as a preferred place of nontechnicity. While outlining a critique of this conception of Africa, we argue that it continues to inform conversations about the continent and the people who inhabit it—including conversations that deal with the digital. This topos of nontechnicity often presents itself as progressive. In this chapter, we sketch out paths for the construction of antihegemonic digital imaginaries and practices that, far from relying on this *preconception* of Africa, are inscribed in a historical rather than a culturalist analysis.

In conversation with the prestigious technology magazine *Wired*, renowned artist and musician Brian Eno states, “The

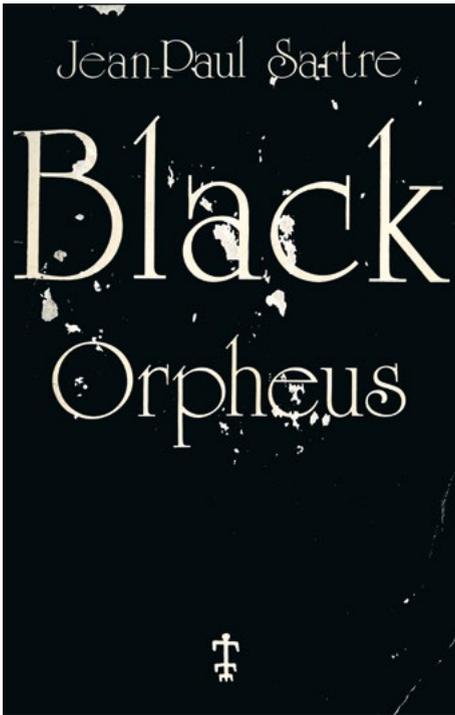


problem with computers is that there is not enough Africa in them.”[1] Asked by the journalist to clarify what he meant by Africa, Eno—confusing the continent with some of the musical expressions that emanate from it—revealed that, for him, “Africa is everything that something like classical music isn’t.”[2] Africa for Brian Eno is a way of being unbound, a space of fluidity rather than of fixed, compartmentalized entities. It is the site of a humanity freed from systematic thinking, the potential redeemer of the staid West.

One cannot fail to see in Eno’s approach—which infers a conception of Africa from a conception of music—a homology with the young Léopold Sédar Senghor, who sought, in African statuary, the sensitivity, style, and turn of mind of the “Negro.” Where Eno spoke of “peculiar mixtures of independence and interdependence” in the context of music, Senghor spoke of “asymmetrical parallelism.”

Far from presenting a new and singular conception of Africa, Brian Eno’s talk about computers and their “lack of Africa” seems to us to peddle, with a rather remarkable sense of the formula, old ideas about the relationship between not the African continent and technology but between a representation to which Eno gives the names Africa and technology. Here, we

cannot fail to think again of the creators of Négritude, who, in the 1930s, sought to oppose the denials of colonial discourse by asserting the full humanity of the peoples from which they came. Their texts provided early examples of a discourse that, while anticolonial, asserted “nontechnicity” as a black value.^[3] In the same way, the authors of Négritude also claimed the name “Negro” for themselves in an effort to overturn the stigma. Aimé Césaire’s *Journal of a Homecoming / Cahier d’un retour au pays natal*, an emblematic text of the Négritude movement, sings of “Those who invented neither gunpowder nor compass / those who have never tamed steam or electricity / those who have not explored either seas or sky,”



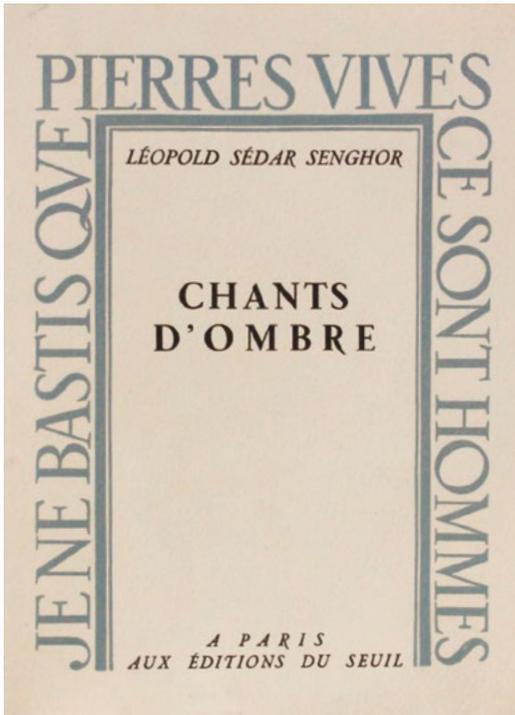
but who are rather to abandon themselves, to be “seized, to the essence of all things,” to be “ignorant of surfaces but seized by the movement of all things,” and who stand on the Earth “careless to tame, but playing the game of the world.”^[4] Senghor also takes up this topos in his poem “Prière aux Masques” (Prayer to Masks), published in 1945 in the collection *Chants d’ombre*, in which the question is pondered: “Who would teach

rhythm to a dead world of machines and guns?”^[5]

This idea of Africa as the other side of Europe is thus an old and tenacious one: Africa as the sanctuary of the traditional saved from the evils of modernity, the soulful supplement of a world devoured by mercantile and technoscientific reason, an idea that continues down to current apprehensions about the digital and technological present. This idea can be expressed directly, as in Brian Eno’s remarks, or it can emerge in the course of a sentence, in debates that implicitly assume that Africa and computers are two notions that belong to antithetical worlds of meaning. Insofar as it depicts Africa as an entity that opposes (Western) hegemonic practices with something that is specific to it, this idea is often proclaimed to

be progressive and benevolent. The idea seems to us instead to situate Africa outside history and to escort an essentialist conception of the continent. To keep exoticism and all ensuing technological primitivism at bay, we must be attentive to this topos, never far away when it comes to Africa: this idea of Africa itself ends up eclipsing the continent and the concrete beings who inhabit it, yet its pervasiveness has meant that it can figure significantly in the identity of individuals from the continent.

If, in conversations over the digital in Africa, we untangle ourselves from the topos that Brian Eno embraced, what might we say in turn? That the African continent, as part of a global movement, is just one of many places where digital technologies



and practices are being deployed on a massive scale. In Africa access to a computer terminal is becoming the norm rather than the exception, even for those with the lowest incomes and education levels, although it should be noted that both the power supply and the cost and speed of connectivity are generally below international standards. In a city

like Dakar, the shops that make money from connectivity are now on every street corner, adjacent to and indistinguishable from those that sell the most trivial basic necessities. In the space of a decade, the internet has become as commonplace as radio. More and more fiber optic cables are being laid on the shores of the continent.^[6] Africa is part of cyberspace and the intensification of what Paul Reinsch, already at the beginning of the last century, referring to the implications of the telegraphic networking of the globe, called “the psychological unity of the world.”^[7] The global reach of the algorithms of GAF A (Google, Apple, Facebook, Amazon) are discovering more and more about African subjects, whose online presence is growing. Africa’s relationship with these entities is one of a

weak state capacity to control and regulate their activities. If the algorithms in the service of GAFAM are discovering more and more about African subjects, one can unfortunately not say that African subjects—just like those in the rest of the world—are discovering more about these algorithms, or indeed about those of the rival BAT (the Chinese companies Baidu, Alibaba, and Tencent). If we stick to this level of analysis, we can thus say that contemporary Africa is immersed in the technological present just like the rest of the world.

In view of this, digital technology is taking on many particular dynamics and forms on the continent. But it is important not to interpret these latter as the products of a supposed

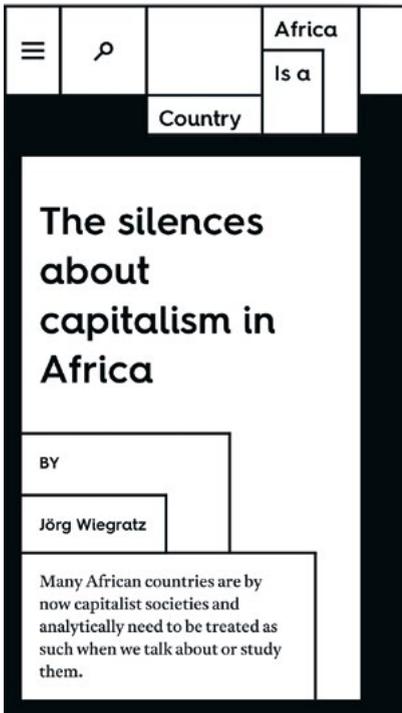


African genius for bricolage, recuperation, frugal innovation, or soulful supplements. These readings, which are based on the preconception of Africa's otherness and originality, tend to veil the fact that, here as elsewhere, human societies are being marshaled within the snare of the capitalist world system.^[8] The recasting of practices and technologies that can be seen on the continent stems from their interlocking

within specific political and economic contexts. For example, the advent in Africa of mobile banking is highly regarded as an illustration of African inventiveness and adds grist to the mill of the "Africa rising" discourse. Its initial condition is that the large mass of African workers do not bank, since unlike those in the centers where capital is accumulated, they have never attained the status of waged workers, who are provided with, among other corollaries of this status, an employment contract and a regular guaranteed income deposited in a bank account. General wage employment, full employment, has no history on the continent, and if we are to believe the development economist Ndongo Samba Sylla, it has no future on it either.^[9] This is why other forms of banking

are emerging on the continent as the expression of not a specific genius but of local economic and technological constraints.

Ignorance of the factor of capital is one of the major trends in digital discourse in Africa, a discourse in which the individual's creativity and even genius holds a preeminent place.^[10] This neglect of the influence of capital allows for dramatic situations to develop. Following in the footsteps of Silicon Valley—a kind of new Olympus, where the pantheon of neoliberalism resides, at the top of which stands Steve Jobs—several states on the continent are encouraging the creation of start-up incubators. Skilled young people endowed with technical credentials and haunted by the mystique of neoliberalism are rushing in and



developing all sorts of useful innovations, which in the absence of business angel investors—that is, of capital—never become products. Entrepreneurs conquering markets end up being transmuted into “social entrepreneurs” subsidized by “development” agencies from the north or multinationals in the framework of their “social responsibility policies.”

In his treatise on the Négritude movement, which he interprets from the point of view of his own preoccupations, Jean-Paul Sartre decreed—to the displeasure of some of the

authors concerned—that the black's “mission” “just like that of the proletariat, comes to him from his historical situation: because he has, more than all the others, suffered from capitalistic exploitation, he has acquired a sense of revolt and a love of liberty more than all the others. And because he is the most oppressed, he necessarily pursues the liberation of all, when he works for his own deliverance.”^[11] While we are careful not to adopt the lyricism and grandiloquence of Sartre's discourse, we nevertheless retain the idea, unfortunately still valid more than seventy years after he pronounced it, that Africa is the part of the world that draws the thinnest of capitalism's benefits and the heaviest of its detriments. If we think of the digital revolution, which was not extracted

from Jupiter's thigh, as the most recent episode of creative destruction, and therefore as a moment in the history of capitalism, we can perceive the importance of the development on the continent of antihegemonic digital imaginaries and practices. For all that, it seems to us essential to highlight that these imaginaries and practices are not already there, present in the voice that Brian Eno and the singers of Négritude detect coming from some deep truth of Africa. On the contrary, as elsewhere, these imaginaries and practices will come from those who, rather than being dazzled by Silicon Valley, grasp the ambivalence of the digital revolution and its anchoring in globalized capitalism, and who consider as crucial and problematic the global deployment of a privately controlled network and the data commodification of the world.

Translated from the French by Steven Corcoran.

[1] Brian Eno, "Gossip Is Philosophy," *Wired*, May 1, 1995, www.wired.com/1995/05/eno-2/. "The problem with computers is that there is not enough Africa in them. This is why I can't use them for very long. Do you know what a nerd is? A nerd is a human being without enough Africa in him or her. I know this sounds sort of inversely racist to say, but I think the African connection is so important. [...] So, how does one Africanize, or Brazilianize, or otherwise liberate a computer? Get mad with it." In addition to its essentialism, Eno's sentence is striking in its neglect of the eminent place occupied by minerals from the African continent in the production of components.

[2] Ibid. "Africa is everything that something like classical music isn't. Classical—perhaps I should say 'orchestral'—music is so digital, so cut up, rhythmically, pitchwise and in terms of the roles of the musicians. It's all in little boxes."

[3] Jean-Paul Sartre, *Black Orpheus* [1948], trans. John MacCombie, *Massachusetts Review* 6, no. 1 (Autumn 1964–Winter 1965): 13–52, www.jstor.org/stable/25087216.

[4] Aimé Césaire, *Journal of a Homecoming | Cahier d'un retour au pays natal*, trans. N. Gregson Davis (1939; Durham, NC: Duke University Press, 2017).

[5] Léopold Sédar Senghor, "Prayer to Masks," in: *Léopold Sédar Senghor: Prose and Poetry*, trans. by John Reed and Clive Wake (London: Oxford University Press, 1965), 107.

[6] Since 2008, a quarter of the investment in the construction of new submarine cables (\$2.9 billion) has been earmarked, either exclusively or in part, for increasing African bandwidth.

[7] Quoted in Dwayne Winseck, "The Geopolitical Economy of the Global Internet Infrastructure," *Journal of Information Policy* 7 (2017): 228–67, www.jstor.org/stable/10.5325/jinfopoli.7.2017.0228.

[8] See Samir Amin, "Capitalisme et Système-Monde," in *Sociologie et Sociétés* 24, no. 2 (1992): 181–202; and Immanuel Wallerstein, *The World System and Africa* (New York: Diasporic Africa Press, 2016).

[9] Ndongo Samba Sylla, “Face au défi démographique et aux mutations technologiques, l’emploi salarié décent a-t-il un avenir en Afrique?,” in *Écrire l’Afrique Monde* (Dakar, Senegal: Philippe Rey, Jimsaan, 2017), 287–305.

[10] The tendency to ignore this factor when it comes to Africa is also found in the academic discourse. See Jörg Wiegartz, “The Silences in Academia about Capitalism in Africa,” *Africa Is a Country*, December 13, 2018, <https://africasacountry.com/2018/12/the-silences-in-academia-about-capitalism-in-africa>.

[11] Sartre, *Black Orpheus*, 47.

Towards a

A closer look at beadwork reveals a deeply entrenched use of binaries, mathematics, and algorithmic thinking, contributing to growing evidence that African coding practices have existed for longer and in more diverse form than has been recorded by the West.

Vernacular Algorithms

Vocabulary for



Towards a Vocabulary for Vernacular Algorithms

The short history of mathematics, particularly of digital forms of calculation, creates the false impression that it is a unique achievement of the Western world. A longer history shows the importance of contributions from ancient Indian and medieval Arab and African mathematicians. A closer look at beadwork reveals a deeply entrenched use of binaries, mathematics, and algorithmic thinking, contributing to growing evidence that African coding practices have existed for longer and in more diverse form than has been recorded by the West. Through our project *A Vocabulary for Vernacular Algorithms*, we, a group of artist researchers, unpack the rich patterns of beadwork as a localized, binary, and potentially subversive language. We describe ourselves and our project as follows:

We are an informal and yet very intentional group of individuals working between Durban, Johannesburg, and Maputo. We came together through a shared interest in how vernacular and traditional knowledges contribute to rethinking technology—not as a deterministic and material form, but a form that is egalitarian (of people) and culturally driven.

A Vocabulary for Vernacular Algorithms is the very start of a series of questions that investigate the mathematical and algorithmic forms in beadwork and weaving practices from KwaZulu and Mozambique, a scope that will eventually widen to include more African regions and practices.

Together and with various communities of makers, we aim to understand what is required to form a “vocabulary” not only of computational knowledge but one that is sensitive to embodied forms of knowing and being in the world.

The initial project was born from an investigation by Tegan Bristow with IT skills developer Lindiwe Matlali, who was using knitting as the first step to teach coding to young female learners in South Africa. As part of the curatorial process for the exhibit *Digital Imaginaries*, Bristow invited Matlali to visit the Wits Art Museum in Johannesburg to understand what it might mean to use beadwork, like knitting, for teaching creative coding. Both Bristow and Matlali understood this as a position that not only could take advantage of the complex mathematics found in African beadwork, but would further tap into traditional culture and intergenerational knowledge structures to support technical learning. In this, Bristow started envisioning a unique African curriculum for creative coding that would be both regionally and culturally relevant to African learners.

```
Code 1
// IDE: Processing 3.0.2
// Author: Tegan Bristow
// Date: 2018
// Locations Developed: Durban - South
Africa,
Johannesburg - South Africa.
/* Developed as a three step way to learn to
use a for loop to make bead replica's. This
is step one*/

int x = 0;
int y = 0;
int mySize = 10;
int repeats = 0;

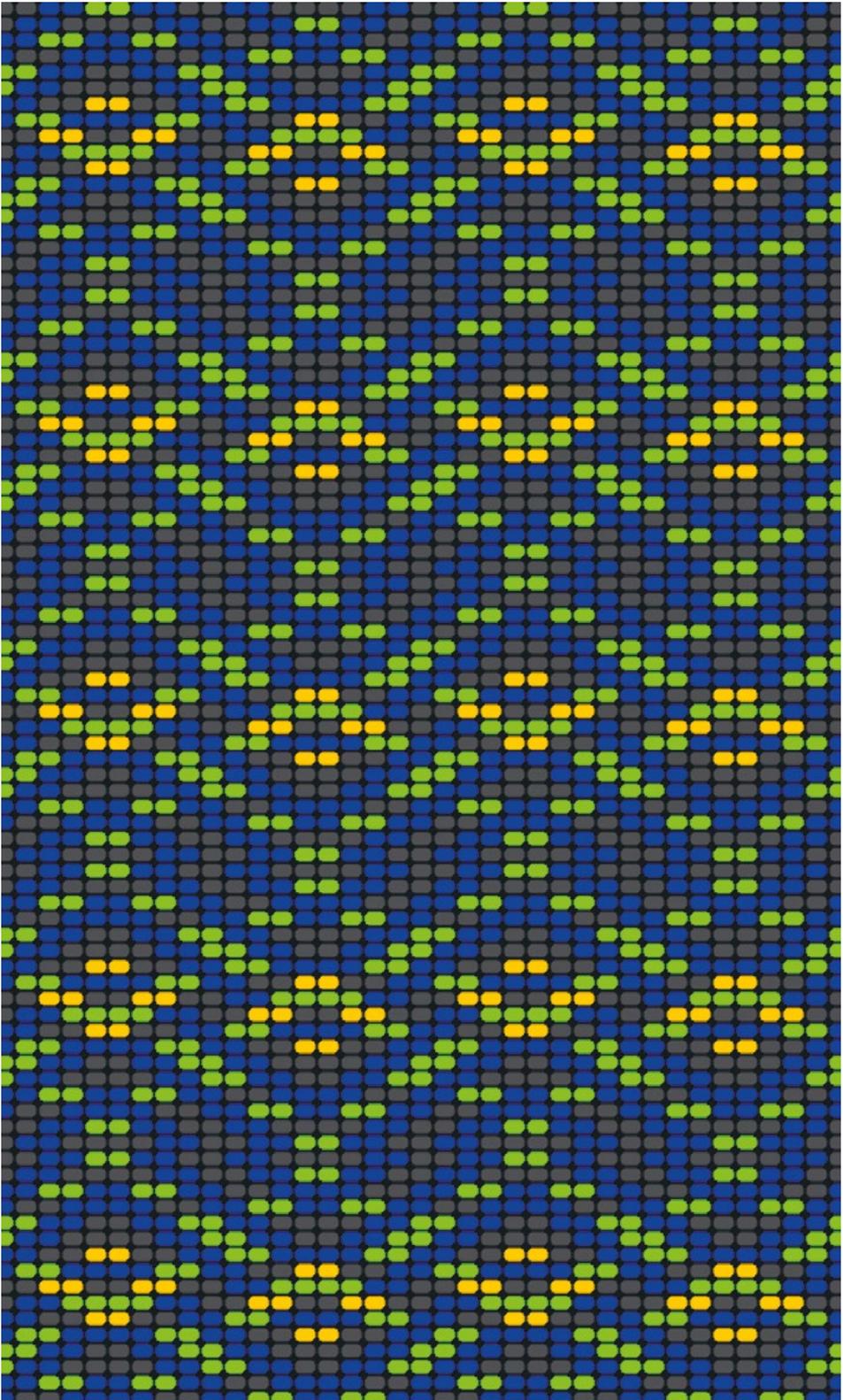
void setup() {
  size(500, 200);
  smooth();
}

void draw() {
  noLoop();
  background(200);
  stroke(127);
  strokeWeight(0.5);
  ellipseMode(CENTER);

  repeats = width/mySize+1;

  for (int i = 0; i < repeats; i++) {
    for (int j = 0; j < repeats; j++) {
      //fill(200,10,60);
      ellipse(0+x, 0+y, mySize, mySize);
      x = x + mySize;
    }
    y = y + mySize;
    x = 0;
  }
  y = 0;
}
```

Algorithmic pattern representing Johannesburg (SA). Created for the installation *Towards a Vocabulary for Vernacular Algorithms*, 2018.



Algorithmic pattern representing Karlsruhe (DE). Created for the installation *Towards a Vocabulary for Vernacular Algorithms*, 2018.

Though starting as an investigation of pattern and math in African beadwork found in the Wits Art Museum, the project grew to a wider investigation into the discordant relationship of African knowledge and Western philosophies of technology.

Following the initial entry with Matlali (who has since left the project), Bristow led the project into a collaboration with Russel Hlongwane—a KwaZulu-based cultural practitioner. With Hlongwane, the project took on the title *A Vocabulary for Vernacular Algorithms* and was expanded to investigate beadwork at the source of the traditional Zulu practice so well known across southern Africa.

As Alex Coelho and João Roxo joined to explore basket weaving and geometry from Maputo, Mozambique, Bristow and Hlongwane set up community research, the outcomes of which were subsequently presented at ISEA2018 in Durban. The research took the form of a series of community meetings designed to explore the patterns, structures, and knowledges embedded in Zulu beadwork.

Initial insights from the first meetings informed the structure of what were to be “coding workshops,” or “code-a-thons,” attended by hackers, creatives, and interested members of different communities; the group developed an approach that would become the first in a series of publicly engaging presentations and research explorations, a process now integral to the *A Vocabulary of Vernacular Algorithms* project. Since ISEA 2018, four more took place, with more to come:

1. *Digital Imaginaries—Premonition* at the Wits Art Museum in Johannesburg and Fak’ugesi African Digital Innovation Festival.
2. *Digital Imaginaires—Africas in Production* at the ZKM | Karlsruhe.
3. *African Crossroads* in Marrakesh, Morocco.
4. *Digital Earth/Afropixel* in Dakar, Senegal.

In KwaZulu, we found that each unique piece of beadwork had innumerable layers of knowledge coded within it. Each maker had woven their purpose, intuition, and history into the handmade work. These included histories of tribes; personal experiences of love, loss, life, relationships, births, and deaths; encounters with time; political experiences; and the influences of the environment at locations of making. At a distance, many pieces could be categorized as originating from a specific region or from a specific group of people, but close inspection showed that each was imbued with layers

Towards a Vocabulary for Vernacular Algorithms

of knowledge that were specific to the knowledge of people, place, and time.

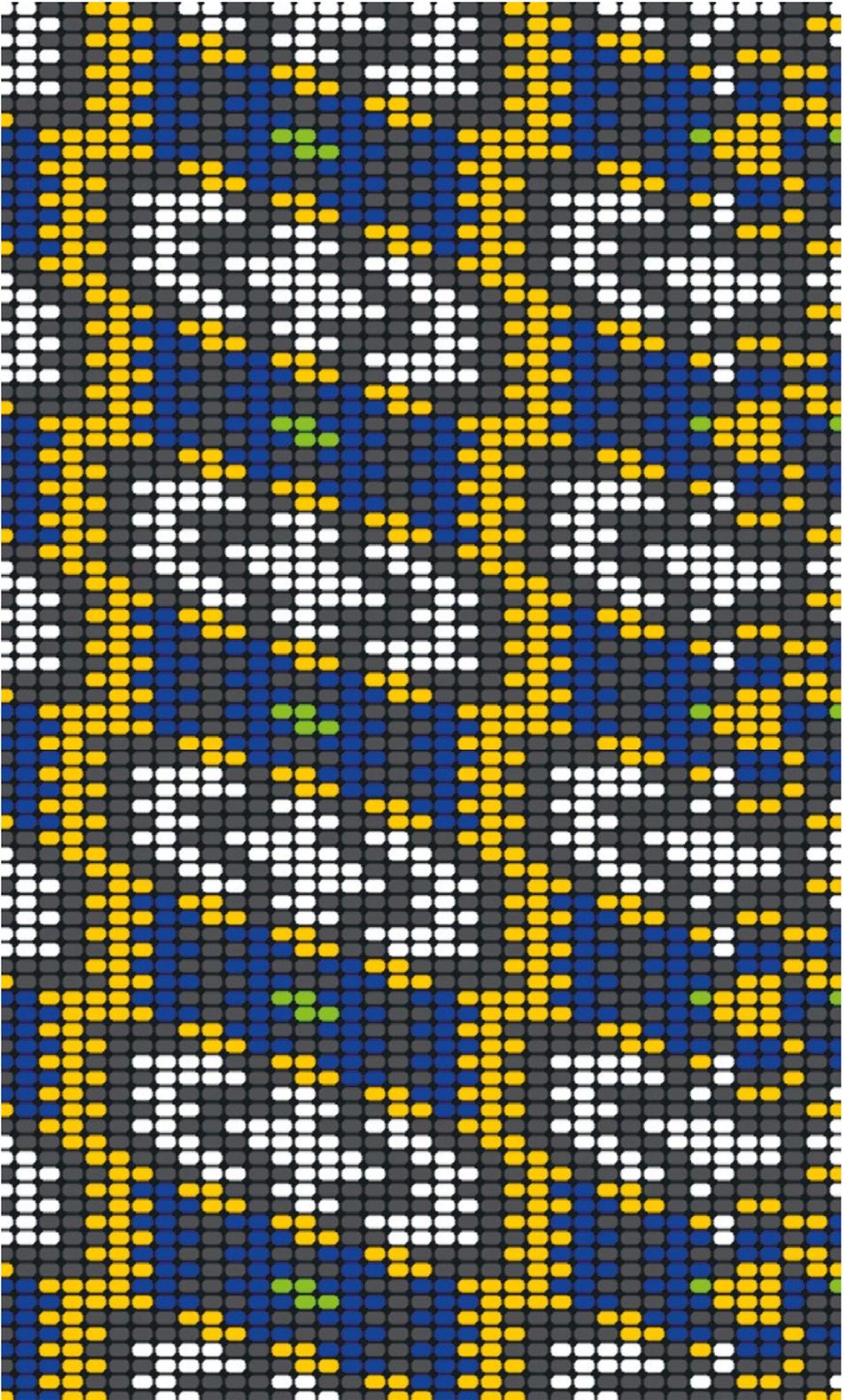
This wealth of information was woven together to exceed the mathematical and technical—which in itself is vast and complex. Weaving story and math together, the pieces began offering an understanding of what a comprehensive and inclusive vocabulary for vernacular algorithms could be.

By the time the project was presented at the Wits Art Museum, part of *Digital Imaginaries—Premonition*, under the title *Towards a Vocabulary for Vernacular Algorithms*, our understanding and position had come a long way from being a simple material translation from beadwork to code. Apart from identifying this wealth of knowledge, our search for a *vocabulary* now informed a series of pertinent questions about knowledge and the intersection of the traditional and the technological. In subsequent workshops, Bristow asked individuals from multiple backgrounds the following questions in lieu of community research:

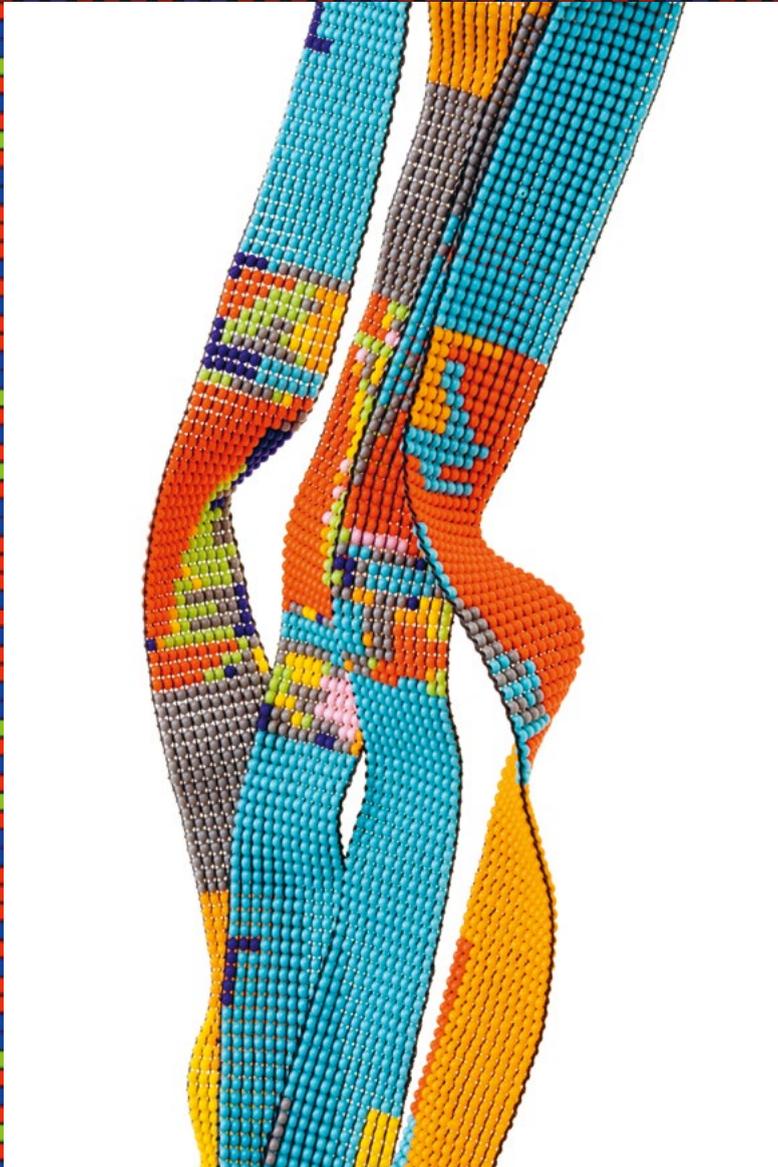
1. How do we conflate the mathematical with the experiential?
2. How, in Africa, do we bring together the philosophical, cultural, and algorithmic?
3. How do we develop a curriculum for coded vernacular knowledges using a new approach to learning about technology and knowledge?

Participants are asked to answer these questions and present solutions, drawing on knowledge of self, community, and technology. In each instance, the answers have enlightened and astounded the listeners. A wealth of views, visions, and solutions emerged that show a vast intergenerational source pointing to African methods, which are deeply philosophical and aesthetic in the care of culture as knowledge.

As the project develops (it is by no means complete), we continue to add important contributions from an international community of makers and thinkers sensitive to the opportunities that African knowledge offers. We believe that the only way a vocabulary for vernacular algorithms can be formed is through the collective. We hope to form from this a curriculum for vernacular algorithms to allow materially driven technological cultures to click past the habitual frenzy of the corporate machine of likes and updates to a philosophy of technology that acknowledges the egalitarian potential of technology—and the wealth in this.



Algorithmic pattern representing Marrakesh (MA). Created for the installation *Towards a Vocabulary for Vernacular Algorithms*, 2018.



Foreground: Joni Brenner, Nothando Bhebhe, and Scott Hazelhurst, *Marigold Beads: The Genomic Admixture Necklace*, 2018. Beads, cotton thread.
Background: Algorithmic pattern representing Dakar (SN). Created for the installation *Towards a Vocabulary for Vernacular Algorithms*, 2018.

Changing

The possibility of describing technomorphic relations with the world from the outside, for the sake of recovering the freedom of configuration (Gestaltungsfreiheit) that we have forfeited [...] can be demonstrated with the aid of technics-related aesthetic praxes and the reflections associated with them.

Codes in Search

Pathways

for Liminal

In Ludwig Wittgenstein's text *Tractatus Logico-Philosophicus*, he grapples with the relation between logic, language, and world, and thus with the question of the limit, or boundary, of thinking. In the preface, he writes, "For in order to draw a limit to thinking we should have to be able to think both sides of this limit (we should therefore have to be able to think what cannot be thought). The limit can, therefore, only be drawn in language and what lies on the other side of the limit will simply be nonsense."^[1] Were we to adhere to this claim, we would have to admit that we are in fact trapped inside language. Accordingly, we would be unable to explore the limits of our language from anywhere but within it. Insofar as technics, with its specific coding, is a subcategory of language, we would be unable to shed any light on the limits of technical possibility from anywhere but the inside.^[2]

Wittgenstein later distanced himself from these dogmatics, in that he came to regard language less as calculation and more as praxis and game, which in turn meant that one could move between various language games.^[3] This switching between language games makes it possible to cross the boundary of one game and to describe that game from the outside, or from within another game with other limits. This way, one can do a liminal walk along the boundary that was nonsensical and even unthinkable from inside.

One could describe, say, the language game—or coding—of the economy by way of the coding of technics, morals, politics, aesthetics, the sciences, and more. In so doing, one performs a kind of code switch.^[4] One could also proceed analogously in the other direction, with the language game or coding of technics—or more precisely with the various codings, respectively, of mechanics, genetics, and informatics, for instance. When it comes to technical codings, what is at stake is boosting efficacy, reproducibility, automation, and, increasingly, machine readability.

The increasing dominance of digital technics in all spheres of life at once expands and limits the human freedom to configure the world. On the model of the "iron cage" metaphor, that Max Weber used to express the dominance of capitalist industrialization as an ever-accreting bureaucratic and mechanistic apparatus, today's all-encompassing technical assemblage might be described as a "digital cage."^[5]

In this chapter, I pursue the question of how boundary crossing via code switching could help us better contemplate our digital cage from the outside. Toward this end, I discuss the theoretical considerations that I have been developing

since 2016, with respect to the project *Digital Imaginaries*. I propose that the three exhibitions initiated as part of this project, as well as the contributions assembled in this publication, are exemplifications of the code switch, which as yet remains to be more precisely defined, but which nevertheless makes thinkable the new interpretive and configurative potentials latent in digital technics. In so doing, I am proceeding from the assumption that—as in the past, so today, and into the future—actual technical developments are informed by our technical imaginaries.[6]

In the first section of this chapter, I undertake some general considerations of the universalization of technics as method. In the second section, I thematize to what extent “technics” and “Africa” exist in a reciprocal relationship of mutual production and discuss the question of how technics circulates, if it is always situated in local assemblages, and to what extent digitization changes the structure of technics. Against the background of these deliberations, in the third section I interrogate the relation between technics and aesthetics and focus on the question of whether and to what extent it is even possible to take a decentralized view of technics—to cross, in other words, the boundary and do a liminal inspection from the outside—by applying technics to aesthetic ends and seeing what sort of reflections on technics might then emerge.

Technics as Method

At the root of the questions just outlined lies an age-old dilemma over the fundamental bonds that join technics with life (*Lebensverbundenheit*) and with the indeterminacies of technics bound up with that. Technics is a part of the human relation with the world (*Weltbezug*) that cannot be thought away. It is just not possible to imagine humans and society beyond or before technics. Technics is a prerequisite for the constitution of both humans and society. Technics harbors the promise that another, better world is possible.[7]

Technics encompasses not only artifacts and devices but also processes and complex apparatuses and equipment, as well as the skills and capacities necessary to realize and update them. In this broad sense, technics is always thought of as a means that effects an end outside itself. Further, technics is not a means for a single application; rather, it makes actions and operations reproducible, predictable, and reliable to such an extent that latent and unavoidable errors recede as discretely as possible, and for as long as possible,

into the background. This process of stabilization is central to an understanding of technics, since the reliable achievement of every end rests on a whole series of other such achievements or presupposes these as infrastructure. In this way, the very conduct of human life is enmeshed in a complex web of infrastructures.[8] For the sake of my argument, recall the oft-simulated scenarios that are played out when the power goes out in a major urban center. Or, nearer to my theme: for both the production and the reception of digital art, countless infrastructures, all built on and interwoven with one another, must function reliably.

In addition to the above-mentioned skills and capacities, the configuration (*Gestaltung*) of the technical assemblage increasingly requires two additional capacities: expertise in the self-reflexive analysis of technical apparatuses and the effort to increase their ability to self-correct. In this sense, in many contexts, speaking of technics already raises the question of the implicit logos, which is why I continue to speak of “technics” instead of using the more established term “technology.” For the purpose of this chapter I thereby interrupt the contemporary English language convention according to which the word “technics” sounds old-fashioned while the word “technology” gets used indiscriminately in every context without reminding any longer why it entails the logos.

One can attempt to better grasp the ideational dimension of “technics” or “technology” by way of the concept of “schema.”[9] Schemata are prerequisites for actions and operations that secure their success and that have a material as well as a semiotic aspect. To put it more concretely, technics always implies schemata of classification and bundles of affiliated rules—that is, immaterial things—that are built into it and is happily forgotten in the routine execution of actions and operations, even while they are of course running in tandem in the background. The term “black boxing” is used to describe the invisibilizing of the schemata in technological processes. Sociologist of science and technology John Law speaks in this sense of “hinterlands,” of an implicit, concealed, or forgotten technical hinterland that functions as prerequisite for technology.[10] Technics thus implies schemata, the skills and capacities to actualize these schemata, the process of actualization itself, as well as the results of this actualization, insofar as they in turn provide an infrastructural precondition for further updates. Technics already encompasses reflexivity in this sense, something that is expressed a second time when making it “technology”.

Technics also stands in the wake of economic and political forces, or rather is a part of those same forces. The claim that political-economic figurations ever determined the development of science and technics, however, has no legitimate grounds. It is much safer to assume that political-economic and technoscientific orders give rise to one another in a reciprocal manner, each mutually stabilizing and reinforcing the other within an assemblage.

In light of the circumstances established by global capitalist markets—digitally controlled global finance markets in particular—it is safe to assume, more so today than ever, that a permanent competition exists between, on the one hand, mechanisms of standardization as well as those producing connectivity and, on the other, mechanisms of safeguarding differentiation and those producing difference. Both mechanisms run counter to one another but are propelled by the same forces, which only on first glance appears paradoxical. To attract globally circulating capital, a certain degree of compatibility, and thus isomorphy, needs to be assured. But there must also be a sufficient degree of heteromorphy, or difference, likewise safeguarded, to underscore the relative advantages of a particular place or product.

Bear in mind that achieving isomorphy can in no way be fully reduced to a rational calculation. An apt example, hotly debated in spring 2020, was the use of smartphones to contain the COVID-19 pandemic. The original idea was that our smartphones, which we would have on our person at all times, would detect through Bluetooth any contact with another smartphone and then saved them to a central location, allowing relevant contacts to be notified in the event of a positive test. An app like this would have allowed the automatic collection and central storage of private contact information. Following protests from data privacy advocates, and after Apple and Google introduced a new interface, other companies were commissioned to do the programming in different countries. In the end, for instance in Germany, tokens that change daily are exchanged from smartphone to smartphone and stored only in the apps of the smartphone holders. In the event of a positive test, the previous two weeks' worth of tokens belonging to the person who tested positive are sent to a central server, which then transfers these bundled data to all users of the app. The determination of whether there had been contact takes place only on the users' smartphones and cannot be analyzed from a central location.

The uncertainty regarding which apparatus is optimal for a given concrete context is often overridden by mimetic isomorphism—the new apparatus orients itself to an apparently successful one somewhere else, which then serves as a model. In this case, the isomorphy does not result from a rational calculation but is instead propelled by mimesis. Thus “mimetic isomorphism” mitigates the irresolvable uncertainty that always arises when one must decide in favor of organizing something in a particular manner without knowing whether that way promises success.^[11] The model thus chosen as “best practice” must ultimately be adapted to the particularities of the given context to persist. This adaptation—or better, translation—contains that moment of freedom to configure (*Gestaltungsfreiheit*) that enables the emergence of the new.^[12] This moment actually exists even when dealing with a forced isomorphism, since forms enforced through power rarely function according to plan in new environments. In retrospect, one can read the colonization of Africa as a succession of mostly failed attempts at a forced isomorphism that in effect generated a series of unintended innovations.

Before I get closer to an understanding of innovations, I should elucidate more precisely the context of their emergence. To keep to the foundational promise of technoscience—that a better world than the given one is possible—we must be able to designate ways *out* of the circular stabilization of the entangled relationships between technoscience, law, politics, and the economy. This is even more important today, since over the past thirty years, the prospect of the planet’s ecological collapse has appeared imminent precisely because of these entanglements. This is even more important today, since over half a century the prospect of the planet’s ecological collapse has appeared imminent and is considered an undisputed fact since about a quarter of a century. The mentioned entanglements are known to be the cause of this bleak turn of events. The field of science and technology studies (STS), which emerged during the same half of a century, has been working all this time to understand what it means that solutions to technoscientific problems (like proving an ecological collapse of the earth) seem also to offer solutions to problems in the social order.

Since approximately the seventeenth century, particular procedures for adducing evidence—namely, experiments and measurements—have grounded the claim to objectivity in scientific statements. This claim has since been used to legitimate political positions and decisions. Undergirding this

tendency is the insight that in this way, insoluble metaphysical controversies might be avoided that could otherwise be overcome only through the use of power and violence. Modern science found itself in a position to supply politics a code whereby it could leverage fact-based evidence to decide on controversies. The corresponding procedures for deciding between evidence-based and non-evidence-based (i.e., invalid) assertions quickly spread throughout Europe—and later, with European colonization, the world—to become the founding principle of modernity. While the political and the scientific are from the outset interwoven, this approach stages itself as the exact converse, as a strict division of the two spheres—a division that, following this claim, is presented as the method of all methods.[13]

In the literal sense, “method”—in ancient Greek *meta-hodos*—appeals to the possibility of an overarching “meta” way, a single correct way of proceeding. The commitment science makes to the one and only meta-hodos makes science itself *technomorphic*. This means that methods become analogs of technics as means for something else, thought of as beyond themselves and practically applied.[14] It likewise means that methods get applied as technics to the extent that the method is a procedure whose utility is realized in its invariable repetition—in, say, an experiment. Through this very repeatability, the method seeks to provide a verifiable and replicable check on scientific statements. Still, it remains in this sense merely an approximate attempt, since every repetition implies unavoidable changes or differences from one iteration to the next.[15] A seamless interweaving of technics and methods is prototypically manifest in the classical robot, which, as a mechanical device, invariably and autonomously repeats an identical sequence of motions and for this reason has become the icon of automation.[16] The new robot of our era is, on the one hand, only a further, albeit quite sophisticated, development of the classical model. The new robot is marked by its capacity for learning which is no longer a matter of invariable mechanical repetitions but to the contrary, repetitions that are intelligently adapted to a context. It is this development that, on the other hand, marks a crucial difference to the classical robot, to which I return further on.

Whoever is following today’s efforts to overcome the COVID-19 pandemic will recognize the extent to which politics is deferring to scientific expertise on a heretofore unprecedented scale. And yet, in the first months of the pandemic, this

expertise could offer only probability calculations and recommend preventive isolation. The vindication of politics with the help of science turns out to be a surprisingly candid experiment, the effects of which can be registered only after the fact. Moreover, it is striking that, despite enormous differences in, for instance, demographics and public healthcare structures, many countries have adopted the same methodologies with only slight variations.

There can be little doubt that the worldwide implementation of the meta-hodos beginning in the seventeenth century represents an extreme instance of forced isomorphy that drastically reduced the diversity of human relations with the world. Thus it is important to keep in mind that this happened first in Europe and then throughout the world, whereby the diversity of ways of relating to the world narrowed to a single manner of deciding between true and false, which had the same consequences in Europe as it did elsewhere. It took some time for the suspicion to grow and spread that the sweeping implementation of a single valid method for establishing verifiability may have inadvertently led into a trap. Epistemologically, the trap consists in the fact that one cannot escape from a self-confirming assemblage of evidence-based procedures by way of the same evidence-based procedures. Nonetheless, what we are dealing with is not an epistemological problem but a legal-political one. It is not as if technoscience were somehow incapable of reflecting on the entanglements of its own methods. Of greater concern is that the conjunction of its methods with power, law, and politics is what leads into the trap in question. And it seems that the increasingly acute prospect of a planetary ecological collapse is what has caused this relatively long-standing insight to increase its appeal to what is now approaching a majority.

On that note, our knowledge of global warming is based in the application of the same meta-hodos. In other words, our knowledge of global warming is based in the same assemblage of evidence-based procedures alleged to have founded a world that inevitably leads to a progressive rise in global temperatures. Yet, without a procedure capable of yielding evidence-based certainty, there could be no global consensus about the fact that the planet's equilibrium has been upset.^[17] One might wish to identify here a kind of internal self-correction of the meta-hodos, but against that argument are the facts that the insight comes so late, remains so precarious, and still fails to be addressed sufficiently enough to prevent the coming catastrophe. The meta-hodos appears to be

further away from a capacity for self-correction than the falsification principle promises. We would meanwhile be amiss in identifying an epistemological problem here, where in fact something else is at issue. What is at issue is the conjunction of knowledge, power, and money, as well as the function of the meta-hodos in political negotiations, which together lead every other code to be repudiated as unfounded in matters of fact and thus displaced into the sphere of mistakes that are explained away as a matter of culture.

The insight that it is impossible to discover the one correct way to knowledge of the world implies that there are many possible means of producing human relations with the world. The idea that scientific facts could be cleansed of values and metaphysical convictions by way of a meta-hodos was made to forfeit much of its cogency around the turn of the last century.^[18] Today we must take into account that, with different methods and diverse scales of time and space, multiple and equally plausible realities will emerge. The challenge of our era consists in identifying the above-mentioned zones and moments of freedom to configure, that offer a way out of the fatal self-stabilizing assemblage of science, technics, politics, and economics, which has sworn itself to a single valid meta-hodos and dismissed all other relations with the world as animism or other forms of superstition.

Even so, a turn away from the meta-hodos harbors its own dangers. Therefore, in light of the worldwide triumph of skeptical opposition, the question needs to be asked: How might emancipatory positions distinguish themselves from reactionary and nativist movements? The challenge therefore also consists in avoiding a technopolitical figuration in which there is no possibility of holding power responsible.

For the purposes of the *Digital Imaginaries* project, these questions can be posed as follows: How does the openness, and with it the emancipatory potential of digital technics get worked out and amplified? And what does that have to do with Africa? And with art?

Technics and Africa

Against a general tendency to identify here either a development problem (failed mimetic isomorphism) or a colonization problem (failed forced isomorphism), the *Digital Imaginaries* project starts out by posing a challenge to “technics” and “Africa” as ontologically given and reciprocally delimiting objects—which is why the terms are here enclosed

in scare quotes. Both entities must first interact and reciprocally constitute one another in order to be evoked as real and distinct. “Africa” and “technics” may be invoked as facts only if they have previously been entangled with one another—say, through the circumnavigation and mapping of a continent that thereby becomes “Africa.” Together with countless other internal and external colonizing processes of this sort, the conditions requisite for a possible awareness of continental solidarity or coherence thus emerge, much like cognizance of the nation is significantly correlated with the invention of the printing press.^[19] The projects undertaken in the context of *Digital Imaginaries* interweave in this sense both technical and African threads. Depending on the context of this interweaving, multiple Africas emerge that go by the same name and yet express multiple matters of fact.

As an assemblage gets produced in real time—an assemblage that interweaves “Africa” and “technics”—new technics are constantly being deployed and new imaginaries generated that in their turn enunciate the various “Africas” and various “technics” of the future. Of secondary importance to this approach is the extent to which ceaselessly emerging assemblages and their attendant imaginaries are driven primarily by the potentiality of “technics as the art of the possible,”^[20] or the other way around, primarily by the fundamental human competence to imagine worlds other than that which is given. The question about origins is secondary here because humans, society, and technics are indissolubly entangled in one another. What this approach allows us to see is that the relations of the human to the world turn out to be much less naturally given and far more configured, in a continual process of *assembling* said relations and this way generating a ceaselessly emergent *assemblage*.^[21] Thus, for this reason precisely, imaginaries of other futures always resonate in technically enabled and realized relations.

Within this outline of the problem, two central questions arise: How do technics circulate globally if they are always emplaced in local assemblages? And in what way does digitization cause fundamental changes of technical assemblages? While both questions incessantly interlock and overlap, in the three subsections below, I begin with a stronger focus on the first question, addressing it in terms of the concepts of disruption, circulation, and assemblage and, in so doing, pose a fundamental challenge to intellectual property rights concerning technoscientific achievements.

Disruption, Circulation, and Assemblage

Each relation with the world (*Weltbezug*) is fundamentally bound to life and can only be realized through the interweaving of webs of belief, technical infrastructures, and webs of institutions into an assemblage that presupposes its own schemata. To persist, this interweaving procedure must be continuously repeated, thus continuously introducing changes into the assemblage, since each iteration generates difference. This process never concludes and consequently never constitutes a fixed, predetermined world. The nonconclusivity of this eternal emergence implies an indeterminate and unpredictable world that affords considerable leeway for configuration.

To begin with, zones and moments of freedom to configure relations with the world emerge on account of the disruptions that unavoidably accompany the elaboration of assemblages that are essential to relate to the world. Disruptions occur most often when elements of our webs of belief fall into contradiction with elements of our webs of institutions or aspects of our technical infrastructures. Such is the case, for instance, not only when the promise of digital social media to facilitate free and egalitarian exchange is massively disappointed, but when it turns out that, because of its technical configuration, simply using social media automatically generates “data” that have potentially immense economic value—a value that users (at least at first) unwittingly and unremunerated create for others, largely sacrificing their own privacy, or at least radically reconstituting it. The person-specific data also have great political value. They enable forms of surveillance that creep in largely unnoticed and are then brought to light only through disruptions, which is why the figure of the whistleblower and the hacker have, over the past several decades, become icons of the emancipatory disruption of a new kind of surveillance apparatus. The use of a smartphone app to contain the COVID-19 pandemic—particularly with respect to the difference between the original plan and its later application—reveals especially well the ambivalence inherent in technics.

This leeway for configuration that disruptions make visible resides at the heart of various efforts to transform the internet. For some, this means further removing any hindrance to data extraction and making that process even more effective. Others would like to redeem the disappointed promise of freer, more universal, and more egalitarian communication. Still

others are at pains to draft national and supranational regulations that will be more effective against attempts to defraud them, whether through profit maximization, political disinformation, or the undermining of democratic institutions (e.g., elections). As the hackers of the world prove again and again, none of these measures is secure against sabotage or subversion. The age-old competition between what are considered the “correct” and “incorrect” uses of technics here advances to its (for the time being) highest level and, precisely through its distortions and disruptions, provides the leeway for the configurative innovations that are at issue here.

Further leeway emerges via the circulation of technics, which makes it impossible for territories with clear demarcations to emerge at all. Circulation leads to differential outcomes in the range, delimitability, and independence of assemblages. Thus, the spatial dimensions of the webs of belief and institutions, infrastructures, and technical archives that are all interwoven together are never coextensive. They do not yield coherent and clearly demarcated space. Nor are they coextensive with national, regional, or continental spaces and archives. The internet certainly does span the globe in some sense—as did, for instance, the Gregorian calendar before it—but in no way does it harness a homogeneous space where access is equal everywhere. Then again, other infrastructures are designed and laid out strategically, not to span the globe but to integrate a specific territory by way of enclosure—for instance, national law enforcement and border protection. Even where tensions and frictions exist between only partially overlapping assemblages, disruptions emerge and, with them, configurative possibilities.

Of particular significance are the permeability of the boundaries of the assemblage and the variable porosity of the diverse networks that are interwoven into an assemblage. We are justified in assuming that technical infrastructures are more open than institutional webs—in other words, technics circulate more easily and more quickly than the webs of belief and institutions they are interwoven with. This assumption about the circulation of technics implies that technical elements may separate from their assemblages, and their social attributes may be cleansed to a certain extent, to travel more or less independently. A typical example of this would be weapons, the AK-47, for instance, which was originally designed as an automatic weapon for the Red Army in its battle against German fascism; while it went into production too late at the time, there is hardly an armed conflict today in

which it does not feature. A peaceful example would be the stand-alone hand-operated water pump, which can be unproblematically integrated into local rural contexts since it comes with hardly any infrastructural requirements and is easily maintained by users.[22] These observations have far-reaching consequences for an inquiry into how circulating technics may be interwoven with fundamentally open assemblages of infrastructures and webs of belief and institutions in concrete local situations—in our case, on the African continent.

Origin Myths of Science and Technics

The majority of technoscientific achievements can be traced back, with the help of well-meaning oversimplifications, to an originating time and place, occasionally even to an inventor or a patent. At the same time, none of these achievements—whether the insights of Galileo Galilei, Nicolaus Copernicus, or Muhammad ibn Musa al-Khwarizmi,[23] the list of names is long—would have been possible at all without an infinitely long concatenation of preparatory efforts that, more often than not, were performed in the distant past and have since traveled widely, for much of this work was done in remote places.[24] Robert K. Merton coined the catchy metaphor according to which the giants of science are dwarfs standing atop pyramids of other dwarfs.[25] Rendered in a spatial metaphor by Michel Serres, the great inventions of the human species can be conceived of as the estuaries of massive rivers—the Amazon, for instance, or the Nile, or the Congo—which come into being only because countless streams and rivulets far upstream flow into rivers and gradually join together into a massive current that eventually disembogues into the sea.[26]

Contrary to this rather self-evident insight, ever since the fifteenth century, on the model of the Roman and other empires, imperialist Europe has perceived and advanced itself as the sole source of all knowledge, despite the actual diversity of its sources and fairly obvious long list of historical antecedents. In correcting this stupendous fraud, one easily falls prey to the mistake of validating false European claims to intellectual property after the fact, whether out of ignorance or resentment. This happens when one denounces an object of knowledge as “Western” or “Eurocentric” rather than the reverse: combating the imperial origin myth and embracing the object of knowledge as one’s own. Or one falls prey to the opposite mistake, allocating to oneself exclusive intellectual property rights to

the same object of knowledge qua evidence of having taken a different singular source into account. In this case, the result may be a toxic aggravation of the mistake by imputing to cultures separate ways of thinking. All three types of argument mimic the model of the original deception and disavow the insight embedded in the estuary metaphor, that all great inventions have many more creators than we are able to recognize. They also disavow in this way the fact that all great inventions belong to all of humanity. Binary coding provides a fitting example of this, as can be seen in several contributions to the three *Digital Imaginaries* exhibitions as well as those in the present volume.^[27]

Adaptation, Creativity, and Translation

The praxes enabled by the flowing together of rivers and streams of knowledge can be conceived of as translation. Their location is encounter. The encounter takes place, in a simplified model, between a circulating idea, necessarily bound up with a material carrier, and a context or a situation. The situation is often precipitated by an irritating event, for instance, a disruption in the above-mentioned sense, and is characterized by efforts at reorientation that increase the receptivity for circulating things in the interests of a mimetic isomorphism. The latter implies a particular combination of adaptation and creativity.

The word "adaptation" in most of its uses refers to one of two different meanings, both of which imply a pressure from without: (1) an adaptation to overwhelming circumstances, whereby extant assemblages are set aside and replaced with purportedly superior ones (this can start out resignedly, as a kind of submission that then is later performed with deep conviction and messianic zeal); or (2) the other way around, meaning a tactic aimed at preserving existing structures as well as epistemological and normative orders by making the minimal changes necessary for fitting these to a new situation. After a while, the thus adapted assemblage acquires a certain quotidian self-evidence, and the original motive for the adjustment gradually recedes from memory.

"Creativity" refers in most uses to a praxis that aims to change things for the sake of improved prospects rather than as a result of pressure from without. These improved prospects are understood as the outcome of a particular aptitude that is difficult to name, given that its only expression is the outcome itself. The process of adapting oneself to

circumstances that cannot be changed by simply imitating what is already given—the givens belonging as a matter of course to the problematic circumstances to begin with—would lie at the opposite pole of creativity's semantic field.

This discursively fixed opposition between adaptation and creativity has far-reaching consequences for the distinction on which the contemporary problematic binary opposition of the Global South and the Global North is based. This opposition is already contained in the concepts of modernity, progress, and development. Certain regions of the world and their people consequently appear trapped in a role that has them endlessly lagging behind and in effect endeavoring hopelessly to catch up with the developments in other regions by, at best, "leap frogging." This in turn means that whatever they do, they can only ever imitate what is invented in the already further developed countries. The most grievous denigration resulting from this sort of thinking is the accusation that an extant modern praxis is merely an imitation and ultimately a façade for an older, underlying, unmodern praxis. An egregious example of this is the accusation that political parties are only a democratic-seeming façade for ethnic or clientelistic associations that mask the repurposing of governmental and state-run appointments.

But were one to consider creativity not as the other of imitation and instead situate both within the same semantic field of mimesis as creative adaptation, then a new view onto the translation of circulating ideas would open up. Translation does not aim at the faithful replication of an original; on the contrary, translation modifies the original to such an extent that it may persist in a new context. A true copy cannot feasibly accomplish this. The point is to translate the content or to achieve a comparable effect, not to maintain the form. In so doing, surprising discoveries or inventions may occasionally occur—surprising in the sense that something new is found that no one had been looking for. From this point of view, the false opposition between invention and imitation disappears, and with it the allocation of the former to the Global North and the latter to the Global South. A space of serendipity emerges, which is the ideal condition for creativity.

In this connection, a further distinction is operative, which on closer examination also does not hold. A widely held view assumes that outstanding resources and freedom from immediate material need are the actual conditions for creativity. From this perspective, creativity emerges from satiety, occasionally from boredom, and from the urge to rearrange

things for the sake of play, curiosity, and experiment. Another view holds the opposite: that deprivation and lack of resources are the actual conditions for creativity. Both ideas may reside geographically in proximity. Silicon Valley, with such immense resources so near at hand, is seen as a center of innovation; yet, at least in its own urban mythology, the deprivation theory of innovation is celebrated. Giddy stories proliferate of important innovations undertaken by young unknown people with no formal training, plugging away with astounding skill in backyards or garages—on the margins, in other words, of well-endowed corporations and research institutions. The maker movement discussed in this volume is situated exactly within the zone of tension between these divergent conditions for innovation.^[28]

Like the opposition between adaptation and creativity, the opposition between abundance and lack is imprecise and misleading. The contexts are more prosaic and contingent. To achieve something new that is meaningful for others, all the requisite resources are indispensable: without access to digital devices and an internet connection, for instance, one can hardly make works of media art. Fundamentally, experimentation that is motivated by satiety and boredom will be less persevering than experimentation performed with a burning existential problem in view. The urge to change a situation for the better can emerge anywhere—independent of the resources at hand. Accordingly, there is no reason to expect innovations to come in greater measure from either the North or the South, since the right conditions for ingenuity are latent in many different places. With respect to digital technics, this observation rings especially true, given that, for the first time in the history of technics, the infrastructural conditions at play may actually be found on the other side of the planet—say, in Silicon Valley or in Shenzhen—since a fast fiberoptic connection between them suffices to create similar conditions.

I have thus far argued that the manifold provenance of every technoscientific achievement—therefore also that of binary coding as calculation technics—is beyond dispute, with disruption, circulation, and translation being the relevant mechanisms. I now turn to the second question posed at the start of this section, regarding the potential changes to a technical assemblage wrought by digitization. I first thematize the issue of technics' indeterminacy in terms of the relationship between closure and opening, to consider whether and to what extent digitization changes something in this relationship. In the subsequent subsections, then, I exemplify this theme in terms of the entanglements among body, nature, society, and technics.

Technization as Closure and Opening

Many contemporary discourses are of a single mind on the following point: that the digitization of all webs or networks and of all infrastructures radically changes the assemblages discussed above. According to this assessment, within a few decades, human relations with the world that have been proliferating since the start of modernity will have become unrecognizable. The dystopian aspect of this premonition is expressed in the fear that digitized infrastructure will loosen itself bit by bit from human control, and we will thus no longer have the ability to correct the errancies already locked down inside it. Such a development would lead us to experience an unimaginable loss of freedom or perhaps even the end of life on our planet. The opposing position claims that digitizing our relation to the world by way of machine learning (ML) and artificial intelligence (AI) would aid us in escaping the trap of the meta-hodos of modernity.[29]

Today's dreaded "digital cage" looks different than the analogous mechanical "iron cage" of industrial capitalist modernity that Max Weber imagined a hundred years ago. Charlie Chaplin used the then-cutting-age technics of cinematography to illustrate this nightmarish cage in his film *Modern Times*. Digitization promises to overcome all boundaries; it presents itself as emancipation and liberation. In this way it resembles the past heroic promises of modernity, which held out the prospect of a liberating rationalization that instead gradually assumed the form of an iron cage. The perhaps most radical boundary crossing that is today put forth by digitization, together with nanotechnology and genetic engineering, is the interweaving of carbon-based biological processes of life with the silicon-based processes that underlie digitization. This fundamental transgression beckons with the most dreamlike promises, including that of eternal life, while holding out the prospect of the end of our relations with the world as we know them.[30] Here we might recall Ridley Scott's 1982 sci-fi film *Blade Runner*, which illustrates—analogously to Chaplin's *Modern Times*—the coincidence of salvation and damnation.

Whether we will attain a better world through digitization—ML and AI in particular—or ultimately find ourselves enclosed inside a digital cage is a matter of speculation and prognosis. Prognoses are founded speculations that extrapolate from the past into the future. Such calculations are in principle possible and reasonable—all our everyday routines would collapse, and every sort of precaution would be pointless were this not the

case. Today, however, it appears imperative that we use probabilistic methods to make clear the limits of our possible prognoses.^[31] This reference to the limits of foreseeability, and thus ultimately to the insurmountable unpredictability of the future, is itself already an extrapolation from past futures. The futures of the past, whose outcomes we know, have habitually turned out differently than prognosticated. Contingent developments have always influenced the course of history in such a way that its patterns to date have emerged only in retrospect from the standpoint of the present.

Meanwhile, we cannot today rule out with any certainty the possibility that the digitization of stochastics will help them in making radically improved prognoses. This, in principle, is what the so-called Markov chain has been known for since its first formulation by Russian mathematician Andrey Markov (1856–1922). To be sure, radical changes in processing speeds and capacities over the past twenty years have made this particularly useful for modeling future scenarios. The so-called Markov chain Monte Carlo (MCMC) methods revolutionized, for instance, not only Bayesian statistics and statistical physics but also bioinformatics, which is now able to predict the development of protein structures (say, in cancer research).

It remains to be seen what exactly might be achieved by new forms of modeling and prognostics. For the time being, it seems reasonable to proceed on the assumption that also this time we are not dealing with matters of salvation or damnation, but instead we must attune ourselves to something unknown, something surprising that does not correspond with either extreme. The basic openness and indeterminacy of technics, its ineluctable bondedness to life, and thus its ambivalence in bringing forth both good and bad appears not to change on account of its digitization. Its likewise ineluctable interwovenness with webs of belief, technical infrastructures, and institutions into an assemblage having its own schemata or hinterlands also appears, at least in principle, to have remained unchanged.

It therefore seems helpful in the context of these considerations to recall what we already know with more or less certainty about the historical and contemporary technicity of human relations with the world. To this end, in what follows I survey the interweaving of nature, technics, humans, and society. At the center of these reflections is the human body, since this belongs equally to nature, technics, and society, and it has a significant share in their interweaving. What is more: this interweaving turns out to be the development that is most difficult to foresee.

Body, Nature, Society, and Technics

Along with the skin, clothing takes part in the protective enclosure of the human body. Clothing involves a vast techno-economic apparatus of production and distribution via capitalist markets that entails economic consequences, both incisive and difficult to predict. A likewise elementary extension of the body to an external assemblage lies in the spheres of nourishment and the digestive system, which extends to agriculture and the processing, preservation, and distribution of food. The magnitude of agricultural production—including not only livestock production and food processing but also and especially their ecological consequences—exceeds that of other industries and raises questions concerning the future of the planet.

The situation is analogous when it comes to the human brain. A considerable share of its functions is externalized and distributed among various entities. This state of affairs also exists without technization, considering, for instance, that language attaches to the collective and not the individual and always exists a priori of the latter, or more generally, that collectives comprise individuals, but individuals likewise constitute the collective, which is most obvious in the cases of language and thought. If we factor technization into this context, then we would first have to consider the invention of writing, which almost infinitely expanded the spatial and temporal scope of communication. In connection with the printing press, a sociopolitically, economically, juridically, and technically mediated assemblage came into being that generated an infrastructure of knowledge to which belong books, newspapers, bureaucratic files, libraries, archives, various technics for the transmission of information, and many other things as well.

The technical expansion and amplification of the cognitive functions of the brain—analogous to the assemblages that emerge around the skin and the intestines—cannot be said to unfold in an amicable narrative of progress. In the incremental technical expansion of the brain, step by step over long periods, the end of each respective step was always the following step—which may very well have been to win a war. The overriding aim—progress and emancipation—may have always shone forth from the horizon, but it had few concrete consequences at any given step. As centers of calculation, these assemblages became entangled with centers of power and mechanisms of capitalistic profit maximization, which,

over centuries, were implicated in the worst crimes against humanity, such as slavery, colonization, racial fanaticism, concentration camps, and the industrial extermination of humans. None of these crimes can be explained by reference to an assemblage, but, conversely, none of these crimes could have attained such horrifying scope without these amplifying assemblages.

A third aspect of the entanglement of the human body with nature, technics, and society is the question of health, sickness, and healing. Since time immemorial, humans have been at pains to bolster or supplement the body's own capacity for self-healing by way of ritual, psychosomatic, social, surgical, and pharmacological or toxicological procedures. Without these procedures—that is, technics—human health could hardly be thought of, given that our ideas of it only began to emerge in tandem with these technics. One cannot think about health without also thinking about these technics as arts of healing. The claim that technics are the condition of possibility for the constitution of the human and society while harboring within them the promise that another, better world could be made is particularly plausible.

Still, the story of the strengthening of the body's innate power to self-heal—analogously to the expansion of the intestines and brain—is hardly an all-around happy narrative. Modern biomedicine, which came into being with the institutionalization of the meta-hodos, did indeed drastically improve human health and reduce illness- and age-related suffering in a very short time. Nonetheless, this advancement came at a very high price. For quite some time already, unacceptable differences have become apparent between those with access to modern medical care and those without. Add to that unwanted side effects of these medicines— in the individual body under treatment, in particular populations, in all human bodies, and likewise in all nonhuman forms of life on the planet.

A partial aspect of this looming change in direction has to do with a key concept of modern biomedicine—extinction. Many illnesses are caused by an infection of the human body by various microorganisms. The aim has historically been, at a minimum, to keep these microorganisms at bay, which, in extreme cases, has meant their extermination. Meanwhile, it has become obvious that this problem-solving approach only causes other, sometimes greater problems elsewhere. All prior attempts at, for instance, ridding the world of malaria have led to new resistances in the various pathogens; attempts at

vector control—to contain or eradicate the *Anopheles* mosquito, which carries malaria pathogens—through insecticide have resulted in considerable environmental harm. Ongoing attempts at neutralizing the *Anopheles* mosquito as a vector, through bacterial infection or genetic manipulation, are in their pilot phase and could under certain circumstances entail serious collateral harm. Illness-inducing bacteria provide another example. While since 1942, penicillin and later other antibiotics have drastically reduced human suffering and death, the illness-triggering bacteria have adapted and developed resistances. Over the decades, this has grown to become a problem for which there is no solution in sight. For several years, notable studies have turned away from extinction and oriented themselves more toward models of cohabitation. Reliable prognoses concerning cohabitation with microbes can only be made to a very limited extent.

Nature, technics, society, and humans are all mutually constituted, in the course of which a vicious circle emerges through political, juridical, and economic commitment to the meta-hodos. This then excludes other forms of access to the world and entraps itself in a hall of mirrors. Technics, which are meant to optimize the world's foreseeability, in the end appear to accomplish this only within a single realm, whereby this same foreseeability is minimized in other realms.

One might speak here, pointedly and metaphorically, of a sort of locked-in syndrome (LIS), whereby those afflicted are conscious but unable to communicate or even move any muscles apart from those in their eyes. Wittgenstein, in the context of his reflections on language, asserted that the limit to thinking can “only be drawn in language and what lies on the other side of the limit will simply be nonsense.”^[32] To the extent that modern technosciences have established themselves within a system that has its own coding and that defines the boundary of the imaginable via a meta-hodos, this boundary can likewise only enter into view from the inside.

Of course, this same Wittgenstein, in his later works, had begun to conceive of language as praxis rather than as a fixed code for calculation. To this end, he coined the concept of the “language game,” whereby what matters is that humans move back and forth between different language games.^[33] The switching between language games, or code switching, is unavoidably and regularly taking place in everyday life, and this is what opens the possibility of crossing the boundary and doing a liminal inspection walk from the outside: One language game can be observed from the outside through another.

Changing Codes in Search for Liminal Pathways

Now, what do these considerations mean for the languages, or codes, of technics in particular? At the beginning of modernity, technoscientific coding had been reduced as far as possible to a single valid meta-hodos. Interactions between science and politics generated a corresponding metacode that permitted controversies of all varieties and in every sphere of life to be settled with reference to facts, avoiding metaphysical disputes altogether. Other codings were ousted from public debates on account of this assemblage, or they could only be justified with great difficulty, since they fell short of the singular standard of justification. Boundary crossings for the observation of technics through liminal walks from outside gradually became technomorphic themselves and consequently began to take place almost exclusively from the inside. Code switching, and thereby inspecting technics from the outside, became increasingly difficult if not impossible. Any other codes were discredited as cultural codes that can be explained by reference to social relations and to reality.[34]

One of the starting hypotheses of *Digital Imaginaries* was, that bringing together scientific and artistic practice and research could facilitate our stepping outside the established sphere of the digital and aid our rethinking of it by way of this boundary crossing. And this is the question that I address in the final section.

Technics and Aesthetics

Technics is, as we have seen, initially a means deployed to effect something outside itself. This is fundamentally also true when these means are deployed in aesthetic practice. Thus in dance, body techniques are used to articulate ideas and affects, while in music, voice techniques and instruments accomplish the same. A look at music and its technical means reveals that music changes with its instruments in such a way that new instruments are called for.[35] Means and ends here mutually constitute one another through reciprocal interactions. The situation is no different when technics are deployed in daily life or in any sphere of praxis where achieving some end is at stake. Still, there are fundamental differences between an instrumental and an aesthetic application of technics. In this final section, I map out particular moments wherein the distinction begins to vacillate and thus the possibility of boundary crossings and liminal walks from the outside appears.

The general observation that science and technics, and likewise their modern interweaving in technoscience, are instrumental—even when their development is driven at least

in part by playful, purposeless, exploratory activity—must be differentiated against the background of the previous section. The above reflections on the entanglement of the human body with nature, technics, and society demonstrate especially well that instrumentally deployed technoscience gets elaborated in a medical system in such a way that all the elements in the resulting assemblage can be seen as reciprocally constituting and changing one another. This means that over the course of this essential interweaving into an assemblage, the means change, the end quickly becomes another, and all the elements interwoven together will likewise assume new forms. Since the start of the twenty-first century at the latest, we have had to confront the possibility that the assemblage thus brought into being has become its own end and taken on a life of its own. In the worst case, which I metaphorically designated as LIS, what follows is a monopolization and, with it, an impoverishment of imaginative possibilities. The boundaries of the possible will keep narrowing and may well keep getting ever more arduous until it is ultimately too late to rework or re-lay them. The increasing devastation of life on our planet should in this sense be understood as a side effect of a form of technics that has made it nearly impossible to cross its limits and inspect it from the outside.

This unsettling worry accompanied the development of technics from the outset. Jewish folklore captures this anxiety in the figure of the golem. A golem is a being that humans form out of inanimate material—primarily clay—that then comes to life, eventually escaping human control and making mischief. The parables of the golem thus call into question technics' alleged instrumentality. The somber sociological and philosophical studies on technics, particularly those in the aftermath of German fascism, have empirically and philosophically corroborated this profound uneasiness with a technics loosed from reason.^[36] Francois Knoetze, in his work *Core Dump*, created a robot-like figure that he staged in both digital and physical space as a zombie, as a dead and resurrected golem.

Now, to map out that moment in which technics are present and active in both ways, instrumental and aesthetic, in which their distinction begins to vacillate and a liminal walk from the outside becomes possible, I would like to juxtapose two particular instances: an example of the instrumental application of digital technics in the sciences and an example of the aesthetic application of digital technics in art to explore the relations between knowledge acquired through human senses and knowledge acquired through technics.



Francois Knoetze, *Core Dump Dakar*, 2018. Rehearsal by Bamba Diagne for the performance at Afropixel #6, Kër Thiössane, Dakar (SN), April 23, 2018.

A device for magnetic resonance imaging (MRI) generates a visualization, the interpretation of which, performed by a doctor, is decisive for patient outcomes. Without this interpretation, the visualization—which looks something like an image of clouds from the patient’s point of view—remains, with respect to a diagnosis, a useless effect of the MRI machine. It is no coincidence that the field of the doctor’s expertise in correctly interpreting MRI-generated images has become a popular target for advanced technization through ML. Doctors’ trained sensory competence, or art of interpretation, grows as a result of their personal and embodied experience, which enables them to quickly see or recognize the correct interpretation. The most state-of-the-art MRI machines can meanwhile be trained—like doctors—to learn for themselves. To this end, humans must match images with their “correct” interpretation, assemble them with countless other correctly human-annotated images, and save these in an appropriate digital platform; the MRI machine must then be provided access to these data. Within a short time, an individual doctor’s personal horizon of experience is expanded by several thousand cases, and again by millions of cases after several years. For this expansion to be put to its intended use, an algorithm must learn to interpret new images on its own, based on a sufficiently large database of human-interpreted images, and to then provide its own interpretation to doctors as a point of reference. The doctors’ reactions to the machine’s interpretations—as well as the reactions of their colleagues around the world—further train the algorithm. The result may be a breathtaking improvement in doctors’ art of interpretation or a nightmarish golem story in which the learning algorithm gradually washes out the doctors and robs them of sensory competence, to the extent that the doctors no longer train the algorithm but instead come to trust it. The algorithm can then set about making mischief.

We see a similar pattern in electronic music, where music production increasingly uses algorithms. The sensory effect of music on the listener is in this case no longer elicited by artists who, through a physical connection with their instruments, interpret the work of a composer. Rather, the instrument is replaced by an algorithm that actually functions independently of it.^[37] Despite this comparable development, there nevertheless remains a distinction between an instrumental and an aesthetic application of technics—which becomes illuminating with respect to questions of sensory knowledge and questions of knowledge about and mediated



Marcus Neustetter, *Lead the Way - Speculative Scapes*.
Performance with Lamine Kora Kouyaté and Fatou Cissé.
Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.

by technics. The aesthetic experience of music generated by a learning algorithm would fail if it were perceived and understood merely as the effect of one thing on something else. Aesthetic experience comes about only once the technics in question (in this case, the learning algorithm) and its background conditions (the capacities, skills, procedures, and schemata realized in its production) *both* retreat into the background for the recipient, as already instituted and therefore self-evident, *and* remain available self-referentially as a theme. The aesthetic value of the acoustic experience can only come about in an assemblage. And yet, to come into its own as such, it must loose itself from its bond with the assemblage that enabled it and be capable of emancipating from it.

Even as music composed by algorithms generates an aesthetic experience, at the same time, it makes its own manner of functioning into a theme, in equal measure implementing and modeling it. In so doing, it also gives expression to the assemblage into which it is necessarily integrated, making this visible and capable of being experienced. If, contrary to Walter Benjamin, the technical reproducibility of the work of art did not abolish the aura after all but instead, by putting it in doubt, made it tangible and then merged with it—as in, say, photography—an analogous process is repeated in the technical production of music through learning algorithms.^[38]

At this point, it is worthwhile to follow Nelson Goodman, who made the difference between a “metaphorical” and a “literal” exemplification the primary distinguishing criterion between aesthetic and technical praxis.^[39] One of the artistic contributions to the *Digital Imaginaries* project should clarify the concept of exemplification in Goodman’s sense.

In Marcus Neustetter’s performance *Lead the Way*, in the art space Kër Thiossane in Dakar in 2018, he danced with Fatou Cissé to lute music by Lamine Kora Kouyaté in a miniature landscape he had made, in a darkened room reminiscent of a cave. The two figures in red coveralls danced, errant and seeking, in erratic movements that vacillated between tender affection and startled rejection, which were out of joint with the tranquil music of the lute player. Their movements were doubled as shadows, which were in rhythmic harmony only insofar as they were equally, but almost always asynchronously, propelled by reciprocal attraction and repulsion. The miniaturized pieces of earth that Neustetter had made as the stage for his performance were littered with mass-produced plastic toys made in China. This world was on the verge of disappearing,



Results of the workshop *Images, écrans et réalité virtuelle*,
Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.

its shadows on the cave walls signaling its precarious dependency on the electric light source. While at first the toys were in working condition, blinking and chirping, by the end of the five-hour performance, they had been dashed to pieces with increasing violence.

After the individual plastic objects had all been broken and the last electronic convulsions had subsided, the toys lay strewn in disarray as if in the aftermath of a catastrophe. They condensed, as electronic scrap, into the image of a grotesque postindustrial collapse, littered amid the effectively ridiculous ruins of our era. The landscape, surrounded by pieces of dying earth, consisted of wobbling silhouettes on the cave walls that recalled mountain ranges but were actually the shadows cast by mounds of demolished toys. The frantic efforts of the artists to trace charcoal outlines of the moving contours of the shadows generated by electric light appeared like a desperate rescue operation, before they disappeared with the extinguishing of the light. In the midst of this seismogram of alienation, the pair kept trying, desperately and in vain, to make their bodies resonate with each other, with the music and the world around them, which from the start did not bode well.

The audience could detect similarities with objects, forms, movements, or narratives from actual life or our own familiar schemata. At the same time, we could perceive, in a metaphorical reorganization, disturbing differences from these. While the performance portrayed scenes of beginnings, of origins, it depicted these at the same time as scenarios of apocalypse. The plastic toys that still blinked and chirped at the start of the performance evoked associations with the naivety and innocence of childhood, with purposeless play, though by the end they were all shattered and turned to a heap of electronic scrap, which gave the impression of an expiring landscape. Beyond the sheer physicality of the pair of dancers, who lingered alone in this landscape, the performance evoked a primal scene of the meeting between a man and a woman that, on account of the gender-neutral costumes and their fiercely unsettling nonencounter, was fundamentally resignified. At the same time, one imagined oneself in some sort of Platonic cave, with the shadows of the world dancing on the cave walls. But the shadows were not cast by the light of the real world outside the cave, which one might enter in hopes of redemption from the darkness of one's own self-delusions, if only one could free oneself from the chains that bind. The shadows were cast by electric light that illuminated the contours of a ruined world made of scrap and that threatened to go out

at any moment. One was not enticed into this ruined world but driven back into the protective cave. The performance thus enacted an inversion of sensory perception and technical reproduction, in a way that has become quintessential of the digitally mediatized world: first the mediatized world and only then our sensory perception of it.

In Neustetter's performance, he deploys signs as a metaphorical exemplification in such a way that they first appear familiar and then strange and disconcerting. This shift violates the habitual, ordinarily unquestioned assignment of a sign to its usual schema and thus carries out a misassignment. At the same time, this enables a reassignment that opens heretofore sealed insights. Goodman formulates it this way: "Metaphorical truth depends upon reassignment."^[40]

Conclusion

In this chapter, I discuss possibilities for nontechnomorphic reflections on technics and attempt to show how scientific and aesthetic practice could come together to effect code switches for crossing the boundary of technics. In the best case, and perhaps only for a moment, these code switches expand the circulating imaginaries of "Africa" and "technics" and challenge the assemblage that generates them, or simply demonstrate possibilities for configuring the digital cage in a more habitable way.

Searching for clarity, I precisely delineate the question concerning the possibilities for configuring digital imaginaries. The point of departure for my reflections is the observation that science and technics have firmly established themselves around the globe in modernity's various assemblages and have, in tandem with the forces of capitalism, led to a situation in which only technomorphic relations with the world appear valid. Thus, at the start of the twenty-first century, a digital cage has emerged in which the only kind of questioning that appears justified is again technomorphic. To make the cage more habitable, we need to be able to pose nontechnomorphic questions, to search for boundary crossings and liminal walks from the outside that, at a minimum, intimate what it would mean to perceive and to configure technics from outside the cage.

The outside of technomorphic relations with the world is not to be found in history, for there is no era of being human in nature prior to technics. Nor is it to be found in culture, for there is no culture prior to technics. The outside of technomorphic relations with the world is likewise not to be

found in a place, whether a country or a continent, for there is no place outside of technics. The possibility of describing technomorphic relations with the world from the outside, for the sake of recovering the freedom of configuration (*Gestaltungsfreiheit*) that we have forfeited—which can only be done by making visible and posing challenges to technomorphic schemata—can be demonstrated with the aid of technics-related aesthetic praxes and the reflections associated with them. The space for reflection emerges when switching language games or when switching the code. This space cannot be attributed to either the sphere of art or that of technics, since each sphere can enable reflections for itself by switching codes. Nevertheless, the metaphorical exemplification enacted by aesthetic practice is preordained for this, on account of its independence of a given enframing as means for an end outside itself—as is the case with philosophical practice.

With the project *Digital Imaginaries*, undertaken starting in 2017 in collaboration with Julien McHardy, and then in 2018 with Oulimata Gueye, Philipp Ziegler, Marion Louisgrand Sylla, Fiona Rankin-Smith, and Tegan Bristow, I propose to reflect on these sorts of boundary crossings in Africa and, from there, in translocal intermediary spaces, or spaces in between. We did not anticipate at the time that we would discover an apparently fundamental difference in boundary crossings somewhere else. We rather imagined we would encounter a variety of boundary crossings that were interwoven into various locally situated assemblages that resisted explanation on these or on universal models. The artistic contributions to the exhibitions in Dakar, Johannesburg, and Karlsruhe, as well as the present publication, can be read as contingency experiences that cannot be overcome, or at least not at first, through more philosophizing, but that one must simply abide for the time being.^[41] As boundary crossings, they point beyond contexts of use and essentializing philosophies that profess to be able to name an essence of technics and an essence of art.^[42]

The energy of the project *Digital Imaginaries* is fed by the conviction that—as in the past, so today and in the future—technical imaginaries actually influence the development of technics. The many and various imaginaries of artists and scientists from Africa have to be present when we are dealing with the development of technics for the future of the planet.

Translated from the German by Lauren K. Wolfe.

- [1] Ludwig Wittgenstein, *Tractatus Logico-Philosophicus* [1922], transl. by G. E. M. Anscombe (Mineola, NY: Dover, 1999), 27; see also 88, §5.6.
- [2] On language and code after Niklas Luhmann, see Claudio Baraldi, Giancarlo Corsi, and Elena Esposito, *GLU: Glossar zu Niklas Luhmanns Theorie sozialer Systeme* (Frankfurt am Main: Suhrkamp, 1998), 33–37.
- [3] Ludwig Wittgenstein, *Philosophical Investigations* [1953], transl. by G. E. M. Anscombe (Upper Saddle River, NJ: Basil Blackwell and Mott, 1958), 30e ff, §65–71.
- [4] On code switching and boundary crossing, see Dirk Baecker “Auf dem Rücken des Wals: Das Spiel mit der Kultur—die Kultur als Spiel,” *Lettre Internationale* 2, no. 29 (1995): 24–28.
- [5] Weber’s metaphor in the original German—*stahlhartes Gehäuse*—was translated in 1930 by Talcott Parsons as “iron cage” and has since sedimented in the English language in this formulation. But the translation falls short of the sense that Weber wished to express. Steel (*Stahl*) does not rust—unlike iron—and a shell (*Gehäuse*) both houses and safeguards, even as it encloses. Since there is no elegant translation for the literal “shell as hard as steel” I will stick to the less precise but conventional and smooth translation to “iron cage.”
- [6] Sheila Jasanoff and Kim Sang-Hyun, *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (Chicago: University of Chicago Press, 2015); Barbara Czarniawska and Bernard Joerges, *Robotization of Work?* (Northampton, MA: Elgar, 2020).
- [7] Hans Blumenberg, *Schriften zur Technik* (Berlin: Suhrkamp, 2015).
- [8] Max Bense, *Technische Existenz: Essays* (Stuttgart: Deutsche Verlagsanstalt, 1949).
- [9] See chapter 6 in Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols* (Indianapolis: Hackett, 1976); and chapter 7 in Christoph Hubig, *Die Kunst des Möglichen I: Grundlinien einer dialektischen Philosophie der Technik* (Bielefeld: Transcript, 2006).
- [10] John Law, *After Method: Mess in Social Science Research* (New York: Routledge, 2004).
- [11] Paul J. DiMaggio and Walter W. Powell, “The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields,” *American Sociological Review* 48, no. 2 (1983): 147–60.
- [12] Andrea Behrends, Park Sung-Joon, and Richard Rottenburg, “Travelling Models: Introducing an Analytical Concept to Globalisation Studies,” in *Travelling Models in African Conflict Management: Translating Technologies of Social Ordering*, edited by Andrea Behrends, Park Sung-Joon, and Richard Rottenburg (Boston: Brill, 2014), 1–40.
- [13] Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle and the Experimental Life* (Princeton, NJ: Princeton University Press, 1985).
- [14] Christoph Hubig, *Mittel*, vol. 1, *Bibliothek dialektischer Grundbegriffe*, edited by Andreas Hüllinghorst (Bielefeld: Transcript, 2002).
- [15] Harry M. Collins, *Changing Order: Replication and Induction in Scientific Practice* (London: Sage, 1985).
- [16] Czarniawska and Joerges, *Robotization of Work?*
- [17] To see this argument in the context of a different problematic, see Richard Rottenburg, *Far-Fetched Facts:*

A Parable of Development Aid (Cambridge, MA: MIT Press, 2009).

[18] Hilary Putnam, *The Collapse of the Fact/Value Dichotomy* (Cambridge, MA: Harvard University Press, 2002).

[19] Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* [1983] (New York: Verso, 2006).

[20] Hubig, *Die Kunst des Möglichen*.

[21] An alternative term for “assemblage” (*Gefüge* in this chapter’s original German, or one could also say *Gebilde*) is “system,” though the latter, in its established usage, largely suppresses the endless becoming and the leeway for configuration that are conveyed in the derivatives of the German: *fügen* (join, fit, or piece together) and *bilden* (to form, to pattern, to build, to shape, to cultivate). Other alternatives to *Gefüge* that are currently in use include “actor-network” or in French “agencement” (English: assemblage; German: *Ermöglichungsstruktur*), which are inspired by the Heideggerian concepts *Gestell* (enframing) and *Versammlung* (gathering). All these terms relate to the same thing, each emphasizing various aspects and evoking multiple realities, though their (etymological) affinities remain recognizable.

[22] Marianne de Laet and Annemarie Mol, “The Zimbabwe Bush Pump: Mechanics of a Fluid Technology,” *Social Studies of Science* 30, no. 2 (2000): 225–63.

[23] In Latin, Muhammad ibn Musa al-Khwarizmi was known as the mathematician Algorithmi, the inventor and later eponym of the “algorithmic” calculation. He is also considered the inventor of the mathematical discipline of algebra, the term having been derived from the Arabic word *al-jaber*, meaning “concatenation of parts that have broken apart,” among which several have been lost (i.e., the “unknowns” in an algebraic equation). See in this regard Bartel L. van der Waerden, *History of Algebra: From al-Khwarizmi to Emmy Noether* (New York: Springer, 1985); and Souleymane Diagne Bachir, *Boole 1815–1864: l’oiseau de nuit en plein jour* (Paris: Belin, 1989).

[24] Michel Serres, *Éléments d’histoire des sciences* (Paris: Bordas, 1989).

[25] Robert King Merton, *On the Shoulders of Giants: A Shandean Postscript* (Chicago: University of Chicago Press, 1993).

[26] See the preface to Serres’s *Éléments*.

[27] See Bristow, “Towards a Vocabulary for Vernacular Algorithms,” in this volume.

[28] See Gueye, “*HubCités Africaines: A Conversation with Sénamé Koffi Agbodjinou and Manuel Bürger*,” and Thomas Hervé Mboa Nkoudou, “Co-creative Dynamics at the Defko Ak Niép Lab: Prospects and Stakes,” in this volume.

[29] Michel Serres, *Erfindet euch neu! Eine Liebeserklärung an die vernetzte Generation* (Berlin: Suhrkamp, 2013).

[30] Abou Farman and Richard Rottenburg, “Measures of Future Health, from the Nonhuman to the Planetary: An Introductory Essay,” *Medicine Anthropology Theory* 6, no. 3 (2019): 1–28, <https://doi.org/10.17157/mat.6.3.569>.

[31] Ian Hacking, *Taming of Chance* [1990] (Cambridge: Cambridge University Press, 2013).

[32] Wittgenstein, *Tractatus Logico-Philosophicus*, §65–71.

[33] *Ibid.*

[34] Rottenburg, *Far-Fetched Facts*.

[35] Myles W. Jackson, *Harmonious Triads: Physicists, Musicians, and Instrument Makers in Nineteenth Century*

Germany, Transformations (Cambridge, MA: MIT Press, 2006).

[36] Harry Collins and Trevor Pinch, *Golem at Large: What You Should Know about Technology* (Cambridge: Cambridge University Press, 1998). Max Horkheimer, *Eclipse of Reason* (New York: Oxford University Press, 1947); Herbert Marcuse, *One-Dimensional Man* (Boston: Beacon Press, 1964); for an opposing point of view, see Hans Blumenberg, *Lebenswelt und Technisierung unter Aspekten der Phänomenologie* (Turin: Editione di Filosofia, 1963).

[37] Nick Seaver, “Algorithms as Culture. Some Tactics for the Ethnography of Algorithmic Systems,” *Big Data and Society* (July–December 2017): 1–12.

[38] Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility,” translated by Michael W. Jennings, *Grey Room* 39 (Spring 2010): 11–38; see by contrast Antoine Hennion and Bruno Latour, “How to Make Mistakes on So Many Things at Once—and Become Famous for This,” in *Mapping Benjamin: The Work of Art in the Digital Age*, edited by Hans Ulrich Gumbrecht and Michael Marrinan (Stanford, CA: Stanford University Press, 2003), 91–97.

[39] Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols* (Indianapolis: Hackett, 1976).

[40] Goodman, *Languages of Art*, 70.

[41] Richard Rorty, *Contingency, Irony, and Solidarity* (Cambridge: Cambridge University Press, 1989).

[42] See, for instance, the particularly influential works of Martin Heidegger, *Die Technik und die Kehre* [1949] (Stuttgart: Klett-Cotta, 2006); and *Der Ursprung des Kunstwerkes. Gesamtausgabe, Abt 1, Veröffentlichte Schriften 1914–1970, vol. 5, Holzwege* (Frankfurt am Main: Klostermann, 1977).

Decolonial

Decoloniality is a path for the retrieval of justice, a radical emancipation of the mind, body, and soul from the subordination to coloniality.

Decoloniality is a path toward healing.

Healing: In Defense

Technologies

of Spiritual



Decolonial Healing

I call upon the remaining wisdoms of those who have walked the path we are walking to inform and guide us.[1] May the forces of creation reveal themselves to us, through us, as us. So be it. So it is.

To invoke decolonial healing. To demand decolonial healing. To imagine decolonial healing. To manifest decolonial healing. To honor decolonial healing. To practice decolonial healing. To sing decolonial healing.[2]

We breathe. We give. We struggle. We dream. We love. We fall. We resist. We dance. We care. We remember. We survive. We deserve. We trust.

I sing in remembrance of a time-space where data flow from the “cosmos database” to our inner information portals.[3] I sing in defiance to restore our lineage of scientific knowledge. As considerable and crucial as all the applications of decolonial healing are, these words are written to harvest our potential for connection. What is our collective state of connectivity? How do we connect? What do we connect to? From where? How does it feel? As electronic networks swiftly replace intuition-based technologies, what effects do computing technologies have on our heart-mind-womb lands? How can we retrieve ancestral knowledge as a weapon against modern/colonial imperialism?

By engaging with African and indigenous ancestral technologies of information and communication, we dare to reconcile the worlds of organic matter, energy, and electronics to nurture a mystic-techno consciousness. So we sing to decolonize and heal our technologies.

To grasp the immensity and the responsibility decolonial healing demands, we must first apprehend the necessity and urgency of both decoloniality and healing in their singularity and multitude.[4]

May this incantation soothe our burning tongues so that our words dance in ecstasy.

On Decoloniality

Decoloniality is the theory and practice of delinking from Western hegemony and Euro/US-centric systems of governance. Decoloniality is defiance against the West’s political, economic, cultural, and epistemic (relating to knowledge and its validation) domination.

The term emerged from South America in the 1990s, yet decoloniality is as old as colonization, as people have been resisting the hostage of their lands-bodies-minds-dreams ever



Tabita Rezaire, *PREMIUM CONNECT*, 2017. Video still.



since. From the time sovereignty was first impeded, salvation ordained, then genocide inflicted, and indigenous knowledge condemned, there have been guardians of the ancient ways of living and being. From the seeds that were kept, from the seeds that were planted in insubordination, we sprout to continue the missions of protection, emancipation, and retrieval. Thus decoloniality is not a mere thinking but a radical doing; it is a call answered to “delink from that overall structure of knowledge in order to engage in an epistemic reconstitution,” and recover from the violence of Western ideology.^[5]

It is not to be confounded with postcolonialism, as some of us are still waiting for the postcolony—not merely waiting but fighting, imagining, and creating the path toward political, economic, cultural, epistemic, and aesthetic liberation. Indeed, although colonialism per se has legally ended, its living legacy is ubiquitous in contemporary societies. This is coloniality.

Coloniality is the colonial matrix of power that has been integrated and assimilated into the postcolonial social order. Coloniality in pair with modernity is the foundation of Western ideology, which has been used to legitimize its hegemonic domination.

The coloniality of power manifests as a set of hierarchies that define and organize social relationships between people, territories, and knowledge, with everything non-Western deemed irrelevant, illegitimate, or inferior.^[6] Inherited from the colonial enterprise, those hierarchies still rule our collective cognitive understanding today, namely the institutionalized hierarchies between people according to race, ethnicity, social class, gender, sexual preference, religious belief, body, and neurological abilities—with the urban, white, able bodied, financially comfortable, heterosexual cis man at the top of this hierarchy, making all alternatives to that fictional, historically fabricated “norm” somehow deviant and consequently inferior. In 2019, this is the world we live in, where being black, Indigenous, trans, homeless, Muslim, refugee, a sex worker, and/or disabled under coloniality means your life is less valued, to the point where your existence becomes a threat and thus undeserving of the same rights and access, let alone the same respect or compassion.

Our bodies are disposable, only valuable to be used or abused, and our existences dehumanized, demonized, not meant to be lived. Yet we dare to thrive.

As the underlying logic of all Western modern/colonial imperialisms, coloniality also maintains a hierarchy of cultures, with European / North American cultures appearing to be the

Decolonial Healing

pinnacle of modern civilization—thus, justifying the hierarchy between systems of knowledge, with the West’s Christian, then secular, and now scientific paradigms as the sole source of legitimate knowledge.[7]

The Western world, granting itself the monopoly on truth and objectivity, designed its supremacy by rendering all other knowledge systems illegitimate, vehemently showing contempt for African and Indigenous knowledge. Disdainfully labeled as “archaic,” “primitive,” “naïve,” “underdeveloped,” at best exotic or good enough to entertain, non-Western knowledge systems still apply this stigma, as this demeaning rhetoric keeps being disseminated through formal education and mass media. We live under the tyranny of logic, rationality, and dogmatic science.

Our histories, sciences, contributions are erased, delegitimized, exploited, or appropriated. Yet in our flesh and breath remains the wisdoms of our elders.

The Wound

Here is the land of the wound.

We hurt.
We hurt.

Repeat until it doesn’t mean anything anymore.
Repeat until we can’t feel it anywhere anymore.
Repeat until we stop spreading our hurts everywhere.

Coloniality affects us in all aspects of our lives, conditioning the way we think, feel, move, speak, dream, listen, desire, share, and learn; the way we love, who and what we love, and under which conditions. We are under siege, trapped in the colonial matrix of power. All wounded. All of us. All wounding. All of us.

Shame. Anger. Pain. Humiliation. Low self-esteem. Anxiety. Fatigue. Restlessness. Addiction. Stress. Depression. Precarity.

Loneliness. Disconnection... So do the symptoms of coloniality make themselves at home in our beings, in our siblings.

“When the world around is still sweating from yesterday’s fever,” said a friend to me.

Despite the waves of decolonization of the Americas, Africa, and Asia, coloniality survived, and we are sweating streams. This is why decoloniality is as necessary today as it was then if we are to thrive—all thrive.

Decoloniality is fighting the struggle against the West’s control of our options of emancipation. This disobedient living scheme is devising tools to confront and dismantle the institutionalized oppressive system we live in and suffer from: white supremacist-capitalist-imperialist-cis-heteronormative-patriarchy.

Decoloniality is a path for the retrieval of justice, a radical emancipation of the mind, body, and soul from the subordination to coloniality.

Decoloniality is a path toward healing.

On Healing

The wound is the land of healing.

To overcome the disconnection to ourselves, to each other, to the earth and the universe mandated by coloniality, the healing we require is not solely physical nor mental but emotional, political, historical, technological, and spiritual.

Healing as Transforming

Healing is transformation, it’s becoming, it’s blooming, it’s being home and whole within oneself in order to be home and whole within our worlds.

Healing is necessary to transform, grow, and realize one’s full potential. To exist beyond pain, beyond trauma, beyond historical and political narratives, to become the spirits that we are.[8]

Healing as Unlearning

How can you be at peace with what and who you are when the world tells you that you are not worthy? To overcome that inner voice that says *I’m not enough* is a struggle of resilience.[9] This is our work against coloniality.

We have internalized so many toxic and harmful mechanisms of being and living; to not reproduce how these mechanisms have wounded us, we need to unlearn them and let them go.

Decolonial Healing

Often the way we are, the way we behave, the way we talk to each other and ourselves is dreadful—that's because we have been taught to be as such, and because it's frightening for many of us to change and to break those automatic patterns by which we are wired. And possibly because we have come to define ourselves by our suffering, healing can also be terrifying. The unlearning we need is beyond historical narratives, but also on an emotional level—how do we deal with our emotions, how do we react when we are emotionally triggered, how do we communicate our pains? We must let go of what no longer serves us to make space within ourselves, our communities, our world for different patterns, perspectives, understandings, information. We need the courage and grace to walk the journey of self-respect, self-love, and self-compassion. When you operate at the vibrational frequency of love, then hurtful patterns, negative thoughts, doubts, and fear-based behaviors won't reach you; they'll just slide off you because you're up there. That's unlearning, and that's healing.[10]

Healing as Aligning

Healing means aligning. It means aligning with source, with your own rhythm, with your destiny and your vision. Often we are afraid. We're full of fears, full of doubts, full of insecurities, and we're unable to manifest our vision because we are broken inside. When you're broken, you give birth to broken dreams. So healing is to allow a flow of infinite creative energy to move through you, with you, and for it to work as you. How can you be yourself, a body in service of the infinite? By aligning with soul. That's what healing is for me, right now.[11]

Healing as Listening

I believe sound birthed the universe. Literally. That sound is the creative force behind our manifested reality. Thus from the cosmic primal sound, all material form—as in matter—was birthed and still keeps birthing. Everything has a vibratory frequency, even if inaudible, and this is the result of the primal sound, which set creation into motion. We are “only” sonic residues from our cosmic sonic beginnings. The human pursuit is then to find that sound and resound in that sound, so as to vibrate in unison with the vibratory frequency of infinity. This is the ultimate healing.

Healing is overcoming transgenerational trauma, is reprogramming DNA memory, is raising vibrational frequency,

is shifting consciousness, is living from heart, is dancing until exhaustion, is disciplining the mind, is taking responsibility, is trusting intuition, is honoring our ancestors and descendants, is companionate loving, is listening to soul while holding each other's hands on the journey.

So that we may be whole, home, safe, enough, cared for, full, and loved as intended.

I am loved
I am loving
I am love
I am loved
I am loving
I am love
I am loved
I am loving
I am love
I am loved
I am loving
I am love

Repeat until you smile inside.
Repeat until you believe it.
Repeat again.

If decoloniality sets the relationship between the self and the world, healing reveals the inner relationship between one's finite and infinite self.

Decolonial healing is a praxis of love in service of collective consciousness and liberation. It is a remembrance and honoring of the land, the heart, each other, and the wisdoms of those who listened to the unheard song.

Decolonial Trinity: Technology, Spirituality, and the Erotic

There are infinite rivers in which decolonial healing can flow, to nourish the soil of our hearts so we can bloom into who we were designed to be. One of these streams is concerned with information. How do we receive information? How do we share information? What type of information is disseminated? Through which channels? For whom to consume? At what cost?

We are constantly in communication with our surroundings whether we are conscious of it or not. Our relationship with our environments—both of the inner and outer lands—determine

our sense of well-being; therefore, information networks are fundamental to our lives, as they allow us to access, store, transmit, and manipulate information to communicate and connect with the world. Yet our capacity for connection has been conditioned by coloniality. This is why it is crucial to examine the information and communication technologies (ICTs) made available to us (or hidden from us) to connect with ourselves, each other, the earth, and the cosmos, and investigate whether a technology becomes another layer of oppression or a potential tool for emancipation.

What is a technology? One definition of technology is the application of scientific knowledge for practical purpose.^[12] Here the tension lies within “scientific knowledge,” as the hierarchy between systems of knowledge imposed by coloniality considers only Western rationalist, logical, “proven” knowledge as scientific. When you detach from these racist biases and allow other cultures of science to exist, then the meaning and scope of what technology can be expands radically. We have much to retrieve in terms of connectivity.

This retrieval is the intention behind this decolonial trinity celebrating technology, spirituality, and the erotic—which has become a vehicle through which I learn and teach, guiding my political, technological, and spiritual journey, while giving my work a multidimensional grounding.^[13] Examining networks of information in the context of domination, this trinity creates conversations between electronic, spiritual, and organic realms, where various information interfaces reveal a multitude of knowledge portals. Whether through the internet, ancestor communication, DNA, intuition, atomic communication, teacher plants, sound, water, or the womb, the routes of knowledge migration are infinite, and we have access to a database as vast and profound as we allow ourselves to be.

The present offering investigates the cybernetics spaces where the organic, technological, and spiritual worlds connect, to encourage a poetics and politics of epistemic reconstruction against manufactured amnesia. How can we use biological or spiritual systems to fuel technological processes of information, control, and governance?

As electronic information and communication technologies become preponderant in Western lifestyles—rebranded “global” to further implement Western domination under the guise of a “natural” syncretism—we urgently need to understand the cultural, political, and environmental forces that have shaped them.

The mythology of modernity is one we need to dissect if we are to evaluate ICTs.

The ideology of modernity—as the mutation of the imperial-colonial systems of oppressions—allowed the Western world to place control over subjectivity, philosophy, science, and the production of knowledge under its authority. The ethos of modernity credits only European cultures with producing information technologies. While they claim fulfillment through the “ultra-connected smart-life” ideal, it certainly feels we have reached a limit—not to say the pinnacle of disconnection. The tragedy of these imperial global designs couldn’t be more evident than in the case of the internet.

Our beloved internet, as wonderful as it can be, is a central dispositif of coloniality. The internet is a consciously constructed space where repression, control, and surveillance create and move capital to profit Western powers at the expense of the rest of the world.

Geared toward the erasure of all non-Western narratives, the web promotes occidental supremacy, brainwashes its users, whitewashes information, and is an active tool of propaganda and censorship. The machine of coloniality carefully crafted our dependency on this technology built not to control land, as in the colonial days, but to influence and monitor our minds, desires, beliefs, lifestyles, and consumer behaviors, through algorithmic processes, seeking to transform us into the updated colonial subject: a consumer and producer of data.

This is called “electronic colonialism.”

Electronic colonialism is the domination and control of digital technologies by the West to maintain and expand their hegemonic power over the rest of the world. The author Ziauddin Sardar warned us in 1995: “The West urgently needs new places to conquer. When they do not actually exist, they must be created. Enter cyberspace.”

Electronic colonialism is one of the many ways colonial domination survived after its defeat. While settler colonialism was the policy and practice of acquiring, controlling, occupying, and economically exploiting land and labor—which by the way is still a thing, it is just called capitalism now—electronic colonialism seeks to influence and control the mind through the digital device. It also operates by sustaining the dependency of former colonized countries on the West, by the importation of hardware, software, engineers, know-how, and information protocols. These create a set foreign norms, values, and expectations that alter and marginalize local cultures, languages, habits, values, and lifestyles in favor of US/Eurocentric knowledge.

Decolonial Healing

Many countries in the Global South have become “electronic colonies” that are force fed information generated by the Western world. Under the guise of globalization, the information revolution has become a vehicle for cultural Westernization.

The internet is exploitative, oppressive, exclusionary, classist, patriarchal, racist, homophobic, transphobic, fatphobic, coercive, and manipulative. The internet reproduces the West’s offline racial, economical, political, and cultural violence and domination, legitimized behind the idea of modernity and techno-logical advancement.

The perpetrators of slavery and colonialism tried (and still try) to defend and justify themselves with the civilizing mission rhetoric—“We brought culture and modernity to the savages”—pretending their new trade routes were connecting to the new world. In reality all they did was to steal land, massacre indigenous population, exploit resources and workforce to increase the wealth of the empires. Same story with the internet: multimedia giants claim, we are connecting people to each other, while underneath they steal and exploit our data, our free labor to increase the wealth and power of their media empires.[14]

The relationship between the internet and colonialism doesn’t stop there. Looking at the submarine fiber-optic cables that carry and transfer our digital data—embodying the physicality of the internet—it is striking to realize that these cables are layered onto former colonial shipping routes.[15] The fiber-optic cables network initially followed the routes of the All Red Line, the copper telegraph network connecting most colonies of the British Empire. Thus, the architecture of the internet itself echoes colonial architecture and geographies.



Tabita Rezaire, *Deep Down Tidal*, 2017. Video still.

Once again, the sea bottom becomes the interface of painful yet celebrated modernity. Could the violence of the internet—inflicted upon Africa and commonly on black and Indigenous people—lie in its physical architecture?

As our data traverse these histories, these waters in which some of our ancestors have rebelled, given birth, drowned, or

carried with them their sacred sciences and chants to other lands, we may also be given an opportunity to cleanse these routes.

From Atlantis, to the “middle passage,” or refuge seekers presently drowning in the Mediterranean, the ocean abyss carries pains, lost histories, and memories, simultaneously providing the global infrastructure for our current telecommunication system. Yet our waters do not only carry loss: our waters are fertile grounds, which have known many stories; remember, they came before Columbus.[16]

The tales of haunting spirits, forgotten songs, and ancient navigations of our oceans can still reach us as water remembers. If only we listen. The research of Masaru Emoto suggests that water has the ability to memorize and copy information, disseminating it through its streams.[17] Water is a technology of information and communication. The most ancient hard drive.

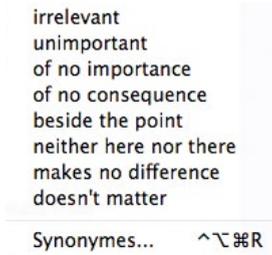
Water has long been understood as an interface for communication between the material and the spiritual worlds. Throughout the African continent, the Americas, and their diasporas are cultures who still revere water as a conscious force. Inhabited by water spirits, mermaids, sea serpents, and now submarine cables, water has always been used as a vehicle for knowledge transmission. The sciences of water, from libations, sacred baths, water offerings, and water healings, all harness the technological power of water. The resonance is beautiful: that both our digital network of information and spiritual communication networks have used water as a connective tissue. Our transoceanic networks of communication are vast and fertile; and abounding are the cosmological, spiritual, political, and technological entangled narratives sprung from water.

Opening to the worlds unseen, be they quantum or spiritual, allows us to expand our understanding and potential for connection. Within the immaterial planes of existence are subtle networks in which data flow: networks anchored in a mind-body-spirit consciousness that has been employed for millennia.

If our knowledge of the material world is scarce or counterfeit, what about the knowledge of the Unseen?

As I was searching for a synonym for the word “immaterial,” the synonym function in Microsoft Word gave the options shown below.

Decolonial Healing



Synonyms for the word "immaterial," Microsoft Word, 2019. Screenshot.

This is coloniality at work, enforcing the supremacy of materiality. It may come as no surprise the synonyms offered for the word colonial:



Synonyms for the word "colonial," Microsoft Word, 2019. Screenshot.

The violence of language echoes in our mind-heart-womb and affects the vibration of our thoughts, speech, and actions. It is crucial to retrieve meaning from words, which have been co-opted by the matrix of power, to deliver our tongues.

In the spacetime of these pages, I would like to honor the power and wisdom of the immaterial, the intangible, the unseen, and the ethereal realms, where profound knowledge is encoded, waiting to be revealed.

The ancestral practice of divination is one that bridges the material and immaterial worlds, by decoding omens as messages from the subconscious or world of spirits.

Divination is the art of accessing unknown information—the future, the hidden, and the past. A divination system is a science based on an extensive body of knowledge, allowing to interpret cryptic messages. Divination methods differ, but all follow precise procedures to retrieve otherwise inaccessible information.^[18]

Divination is a technology of information and communication, which has been used throughout all cultures and is still practiced in most regions today, in different degrees of institutionalization, to resolve personal or collective issues. These analog algorithmic processes, which have been looked

down on by the West as superstition, may well share a lineage with our sacred computing sciences.

The digital revolution, contrary to the Eurocentric-biased thinking, might find some roots in African spirituality. Significant research in ethno-mathematics attributes the origin of binary mathematics, which is the functioning principle of computing sciences, to African divination systems, like the Ifá system of the Yoruba people of East Africa. This spiritual oracle uses a binary protocol of self-generated four- or eight-bit occurrences to reveal the unknown.

Ifá is the traditional spiritual system of the Yoruba people. It is the repository of Yoruba knowledge. Ifá divination is the technology to access this information. It is told that the practice was given by the god Olodumare to allow communication with the divine when needed. Through the intermediary of a babalawo (initiated priest), Ifá divination uses a complex binary protocol to obtain an odu—an octogram holding divine guidance—by throwing 16 seashells. There are 256 primary odus (from all possible shell combinations), which encodes the oral body of knowledge containing all Yoruba science, cosmology, metaphysics, medicine, and wisdom in poetic form.[19]

Poetry has long been used as a cryptic vessel for guarding the mysteries of life. In African cultures the cosmological story of creation commonly contains different layers of understanding for different stages of initiation. The story on the surface may seem naïve or fantastic in its attributes, yet what often escapes outsiders or noninitiates is the deeper meaning hidden and encoded in metaphors. As the level of consciousness develops through rigorous initiation processes, the same smilingly simple stories unfold in cycles into complex storages for the secret sciences of creation. Hence a poem, proverb, tale, or story was often the preferred format to store, protect, and safeguard profound knowledge, as it allowed the depth of its wisdom to be accessed only by those with keys to unlock the cryptic art of storytelling and metaphor.

The research of Ron Eglash made apparent the contribution of Ifá divination in the development of the binary code theory of Gottfried Wilhelm Leibniz, which is the basis of all digital circuits found in computers, mobile phones, mp3s, and electronic appliances.[20]

That the thousands-of-years-old binary system of Ifá, the premise of the binary code theory, spread from Africa to the

rest of world is far removed from the Eurocentric genealogy of science and all the fear-based assumptions surrounding African spiritualities.

This knowledge migration started in the twelfth century when the Almoravids invaded the Ghana Empire and got exposed to African divination systems. The Moors assimilated the methods of divination and spread the practice through their empire. When the Spanish translator Ugo of Santalla translated a divination treatise from Arabic to Latin, divination sciences—known as geomancy—were taken up by the occultist elites of France and Spain.

In the thirteenth century, the study of geomancy inspired the philosopher Raymond Lull to develop his complex “logic machine,” and from Lull’s research, Leibniz develop the modern binary code in the seventeenth century, which would become the foundation of computing science. Thus, through the dissemination of Ifá’s divinatory binary system, the binary code essential to every digital circuit was born.[21]

In the rewriting of history lies potent healing, as by transforming the way the past was recorded, we reconfigure the present and open up new potentials for what can be dreamed for our future.[22] And so the infinite cycle of life continues. From birth to death and rebirth, so unfolds the circular cycle of life. Each of these stages is in conversations. This is one of the fundamental teachings of African spiritualities. The dead are not dead; they speak to us “in the trembling of the trees,” “in a woman’s breast,” and “in the moaning rock.”[23]

Ancestor communication is a technology of information and communication, enabling cosmic downloads, as the ancestors act as the intermediaries between the living and the source.

We are praising our ancestors because also, what they provide for us is a divine record of consciousness. They are the divine internet. If we are trying to draw on our own personal files, within the memory of our own computer, then our access to information is limited. If we take that same computer and connect to the internet, a whole different thing happens. It’s the same computer, but now it’s connected to the internet.

The analogy is that we are the computer. That if we try to rely on our own brain to come up with all the answers

that we are dealing with on a daily basis—especially in a world of oppression like this, in a world of unfairness like this, in a world of injustice like this, in a world where we see things being destroyed that we care about—then we are indeed lost, because all we have is our one lifetime. When we draw upon the lifetimes of our ancestors, it's like our computer is now connected to divine internet.[24]

As interfaces between the spirit world and ourselves, ancestors provide us with an information network to connect and listen to the voices that sing all around us.

As the Senegalese writer Birago Diop beautifully writes in his poem *Souffles*:

Ecoute plus souvent,
Les choses que les êtres.
La voix du feu s'entend, Entends la voix de l'eau. Ecoute
dans le vent
Le buisson en sanglot:
C'est le souffle des ancêtres.

(Listen to things
More often than beings,
Hear the voice of fire,
Hear the voice of water.
Listen in the wind,
To the bush that is sighing:
This is the breathing of ancestors.)[25]

And everywhere, in everything, if we pause to listen and open ourselves to the subtle energies we'll hear,

The breathing of the dead who are not really dead,
Of the dead who are not really gone,
Of the dead now no more in the earth.[26]

And they will tell stories, and they will sing songs, and they will guide our steps, for they have walked the path we are walking.

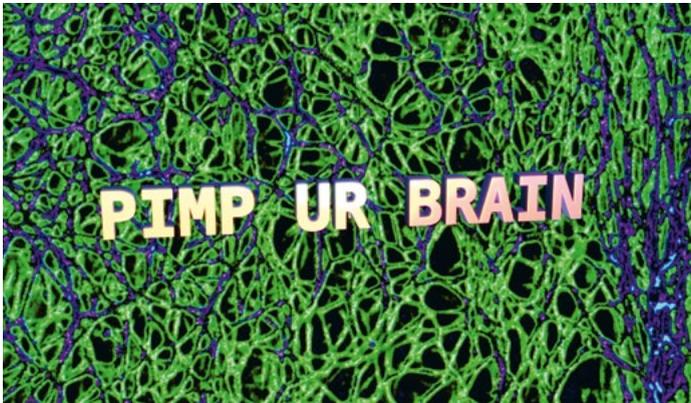
May we remember our ancestors; may we remember their names.

As they may use liaison interfaces to send their messages, there is nothing that doesn't speak. Plants speak. Humanity's relationship with plants is indivisible from its survival. They have been the guardians of our lives and allies of our growth, as we depend on their photosynthetic ability. Our intimate and

Decolonial Healing

intricate relationships with the plant kingdom go beyond solidarity in survival. There exists a deep collaboration and extensive information networks between all life forms, and people have learned from the vegetal world, communicating with plants since time immemorial, considering them the living beings that they are. Only Western modernity separated human life from other life forms, to legitimize their exploitation.

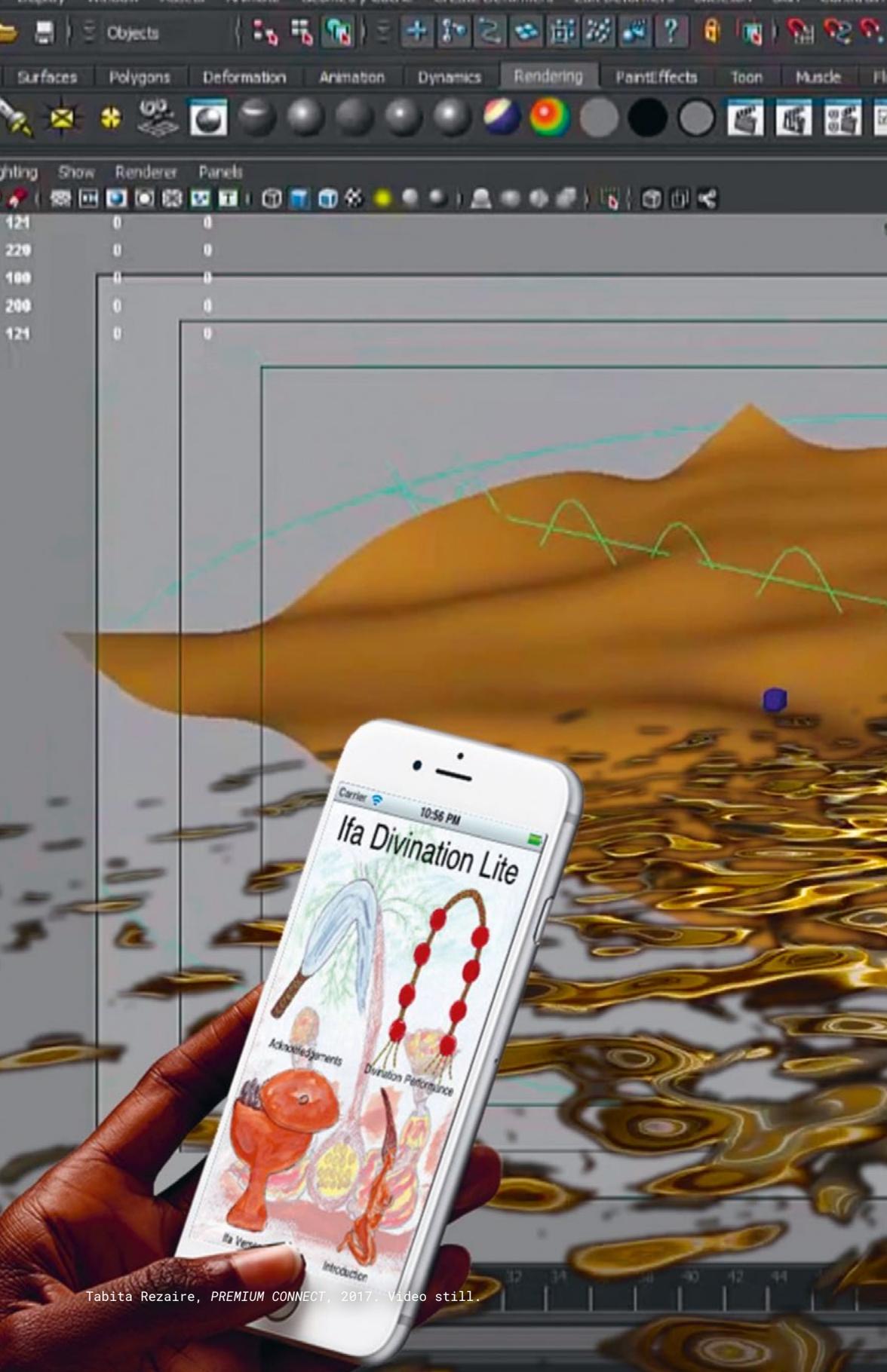
Certain plants also work as portals into different awareness of reality. Entheogens—sometimes called teacher plants—are families of plants that contain psychoactive substances, which once ingested induce an altered state of consciousness. Traditionally used in African, Asian, and Indigenous spiritualities and modes of governance to access information to guide their communities, teacher plants can bestow visions, cleansing, detoxifying, and guidance for healing and spiritual evolution.



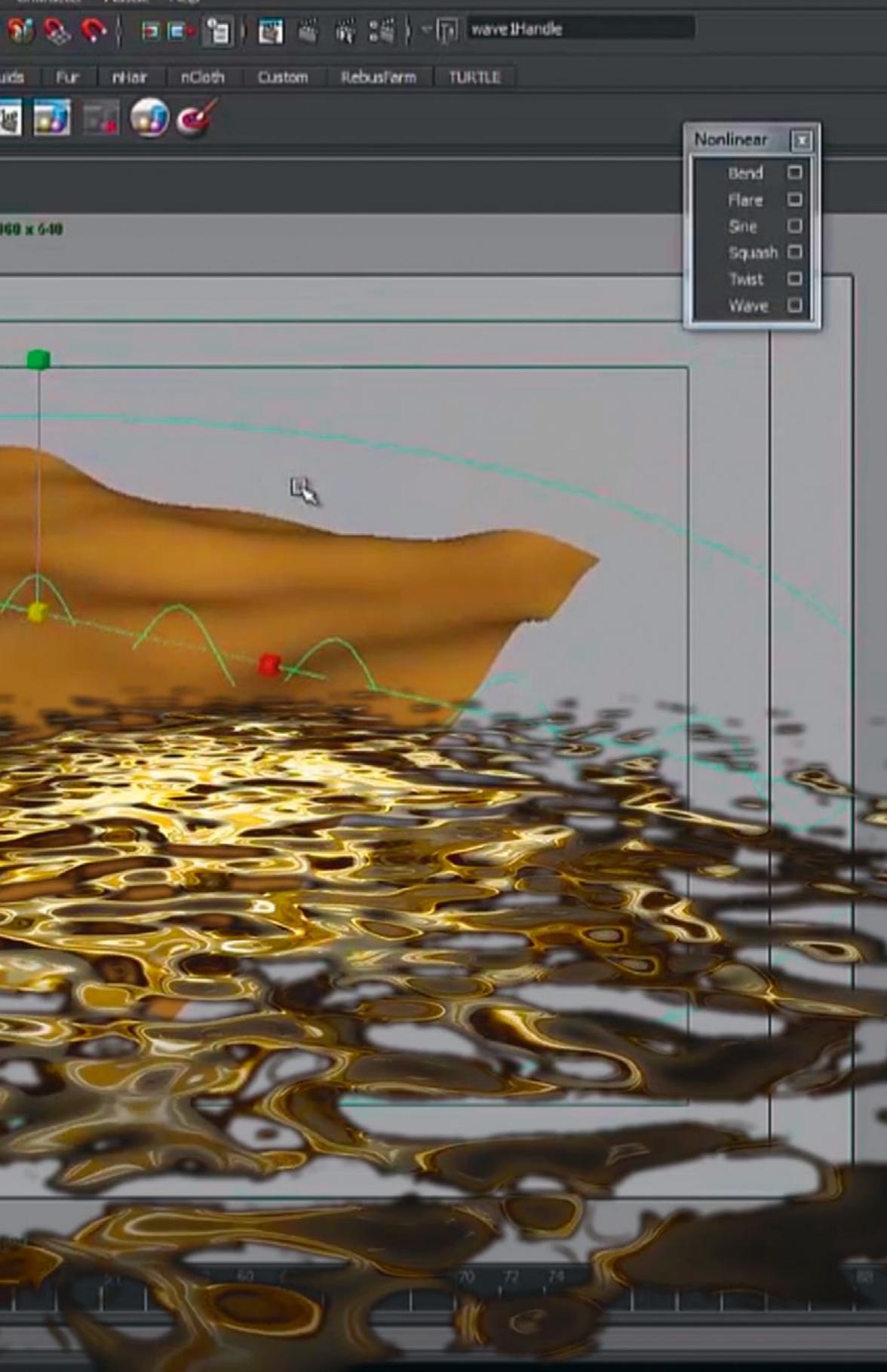
Tabita Rezaire, *PREMIUM CONNECT*, 2017. Video still.

Under the guidance of plants, we are able to access another dimension, a vegetal reality, where we experience the subtle layers of existence.^[27]

Plants also communicate among themselves. What has been dubbed the “wood wide web” is an extensive network of underground fungi (mycorrhizal fungi) that connects individual plants together from their roots into a network and allows them to share information and resources with each other; in exchange, the fungi gets sugar from the plants.^[28] The fungi network acts as an interface for plants to transfer water, carbon, and nutrients, which creates a solidarity network between plants, as those growing in more favorable conditions can transfer resources to plants with less supply. Just like with the internet, however, where the network can foster beautiful support systems while upholding violence, the Earth’s “natural internet” is not always benevolent. Indeed, the mycorrhizal



Tabita Rezaire, PREMIUM CONNECT, 2017. Video still.



wave | Handle

Lids Fur nHair nCloth Custom RebusFarm TURTLE

- Nonlinear
- Bend
 - Flare
 - Sne
 - Squash
 - Twist
 - Wave

160 x 640

60 70 72 74

network can also be used by plants to spread toxic chemicals through the network to sabotage the growth of certain neighboring plants.

Vegetal or spiritual technologies of information and communication are not inherently less harmful than electronic ICTs, and their use is not to be romanticized. All technologies are tools that can be used to uplift or damage, depending on their user and usage. It is our responsibility to understand the complexity of the eco-politico-spiritual systems that support them, in order to identify their potential to hurt or heal.

From fiber-optic cables to water and plants, information interface is infinite. We too are an interface.

The human body is powerful. So powerful. We are a technology of information and communication, able to access, store, transmit, and operate information through our own inner data centers. This biotech runs on our life force, a subtle yet fierce energy: the erotic energy. The erotic energy is our infinite creative potential. It is the energy of awareness, as the potential that resides within us to be aware of our infinity. Analogous to kundalini, qi, chi, umbilini, tummo in different traditions, this energy is the essence of consciousness and can manifest the experience of infinity into our material reality.

The erotic is our inner fire, our fuel, from which and with which we create in harmony with creation. Because it is so potent, the teaching of the erotic has been repressed as a strategy for mass alienation. As Audre Lorde taught in "The Uses of the Erotic":

The erotic is a resource within each of us that lies in a deeply female and spiritual plane, firmly rooted in the power of our unexpressed or unrecognized feeling. In order to perpetuate itself, every oppression must corrupt or distort those various sources of power within the culture of the oppressed that can provide energy for change. For women, this has meant a suppression of the erotic as a considered source of power and information within our lives.^[29]

This is spiritual warfare concealed as political oppression. The apparatus of coloniality knows that our most powerful resource is our relationship with the creative energy of creation, so its mission has been to demean and condemn its wisdom. Each one of us is infinite and creative in potential but limited by our state of consciousness in this material reality. Our labor as agent of decolonial healing is to raise our vibrational frequency so that our level of consciousness

Decolonial Healing

awakens the seat of the erotic energy within us. Once awakened, we can harness this source of power and information and bridge the border between our finite self and infinite self. There lies the potential for personal and collective transformation and liberation.

The body is like an instrument that is playing inner sounds, our body's symphony or personal vibrational frequency, which is determined by the frequencies of our thoughts, intentions, words, and conditions. We can tune our beings like an instrument to (re)establish the balance and harmony of our organic-cosmic symphony using various sound-based technologies, like chanting, recitation, music, dance, trans work, sound bath. Sound changes the frequencies of your brain, igniting different endocrine/nervous functions, which change our states of consciousness.



Tabita Rezaire, *Sugar Walls Teardom*, 2016. Video still.

Learning the inner engineering of our body, we can unlock the reservoir of erotic energy and self-access different dimensions of reality to become a vessel for the cosmic flow of information. This biohacking praxis is resistance against the matrix that limits our experience of reality. As many before us, in celebration we reclaim the knowledge of the erotic "in our language, our history, our dancing, our loving, our work, our lives."[\[30\]](#)

The erotic is a teacher, a teacher of transformational teachings. Audre Lorde describes the erotic as "the deepest life force, a force which moves us toward living in a fundamental way."[\[31\]](#) This fundamental way is life under the guidance of the soul.

Our soul bodies contain the whole universe, the whole of spacetime. We are literally made of spacetime. When we truly access ourselves through the erotic, we access that cosmos database. Then we are connected to everything that has been,

is, and will ever be. It was using this network that telepathy was once widespread. Our communication with plants, the soil, the wind, water, fire, and spirits also uses these channels once our bodies become the information interface that they are. We need to awaken to the subtleties of our different knowledge centers, as we don't receive or share the same information from the womb, heart, brain, or chin.

There is nothing that is not creation in motion. Any interface is fertile for spirit because spirit is everywhere, just waiting to be revealed to itself. The flow of spirit breathes in everything. It is in us; it is us. "Reality acquires its depth, and becomes the truth only by opening up to the expandable dimensions of the surreal," wrote Léopold Sédar Senghor.[32] As real and surreal as we are, as our world is, if we are to reach political liberation, we need to anchor our struggles in the spiritual. The integration of social justice with spiritual practice is indispensable for us to access our heart power and grow the visions of our collective destiny.

The dichotomy between the spiritual and the political is also false, resulting from an incomplete attention to our erotic knowledge. For the bridge which connects them is formed by the erotic—the sensual—those physical, emotional and psychic expressions of what is deepest and strongest and richest within each of us, being shared: the passions of love, in its deepest meanings.[33]

If our time has been called "the information age," it seems that the edification of contemporary civilization has promulgated epic proportions of ignorance. This manufactured amnesia has removed us from our soul, breeding disconnection, injustice, and a materiality-centric fear-based reality. To this civilizational despair, modern technology appears like an answer to the angst of the Western world. Yet its longing to connect produced the least genuine forms of connection. How are we complicit in the institutional violence that our technologies reproduce? As we engage in the struggle for epistemic delinking, we remember that our responsibility, as in response-ability, our ability to respond to a situation, is the seed of our liberation.

Beyond the frenetic drive for growth motivated by profit and the insatiable thirst of capitalism are other worlds: worlds we dream, worlds we draw, worlds we sing. Worlds where visions are real, where flowers speak, and water heals. Worlds we download and upload into manifested reality.

Decolonial Healing

We walk on the ground of the visions of those who dreamed before us. May our walk keep clearing the path for those who will grow from our seeds, so they continue the labor of love. We have technologies that nurture collective growth. We have within ourselves, within our worlds, beings, the codes for our emancipation, in 1s and 0s, in DNA helices and unheard songs. These soul-aligning technologies are our apparatus of decolonial healing.

May we thank and protect the land we are walking on, honor our ancestors for the wisdoms they have preserved and the seeds they have planted.

As we channel the songs's teachings, we water the buds of our revolutions.

So that we may find the courage and grace to be vulnerable and honest in our loving.

May our hearts open to receive infinity.

So be it. So it is.

This text was first published in *The SAGE Handbook of Media and Migration*, ed. Kevin Smets et al. (Thousand Oaks: SAGE Publications Ltd., 2019), 29–44.

[1] This text is based on a public lecture first given in 2016 at the CairoTronica Conference in Egypt, followed by presentations at the Royal Academy, The Hague (2016); Willem de Kooning Academy, Rotterdam (2016); Ramapo College of New Jersey (2017); Utrecht University (2017); Brighton Digital Festival (2017); Parsons Paris (2017); Kunsthal Aarhus (2018); and Sesc Belenzinho, São Paulo (2018).

[2] Today I sing from Cayenne in French Guyana, one of my ancestral lands, a land in the Amazon that is legally (still) a part of France. To this day French Guyana is the only territory on the South American continent not to be independent. So we keep singing.

[3] Tabita Rezaire in Eleanor Ford, "Artist Profile: Tabita Rezaire," *Rhizome*, February 1, 2018, <http://rhizome.org/editorial/2018/feb/01/artist-profile-tabita-rezaire/>.

[4] Responsibility as response-ability. What is our ability to respond to any given circumstances?

[5] Walter Mignolo, "Interview with Walter Mignolo: Activism, Trajectory, and Key Concepts," *Critical Legal Thinking*, January 23, 2017, <http://criticallegalthinking.com/2017/01/23/interview-walter-mignolo-activism-trajectory-key-concepts/>.

[6] The term "coloniality of power" was, for example, conceptualized by Anibal Quijano, *Coloniality of Power, Eurocentrism, and Latin America* (Durham, NC: Duke University Press, 2000), and later developed by Walter Mignolo, *Local Histories/Global Designs: Coloniality, Subaltern Knowledges and Border Thinking* (Princeton, NJ: Princeton University Press, 2000); Walter Mignolo, *The Darker Side of Western Modernity: Global Futures, Decolonial Options* (Durham, NC: Duke University Press, 2011); and Walter Mignolo and Catherine E. Walsh, *On Decoloniality: Concepts, Analytics, Praxis* (Durham, NC: Duke University Press, 2018).

- [7] Mignolo, "Interview with Walter Mignolo."
- [8] Rezaire, in Hatty Nestor, "Tabita Rezaire: 'Reclamation Allowed Me to Glow into My Blackness, Womanhood and Queerness,'" *Studio International*, January 31, 2018, <https://www.studiointernational.com/index.php/tabita-rezaire-interview>.
- [9] Rezaire, in Alex King, "Feel Like a Cyber Slave? Meet Tabita Rezaire, Healer of Souls," *Huck*, February 1, 2018, <https://www.huckmag.com/art-and-culture/decolonising-the-internet-artist-tabita-rezaire/>.
- [10] Rezaire, in Jack Radley, "We Carry a Lot in Our Wombs: An Interview with Tabita Rezaire," *BerlinArtLink*, January 13, 2018, <http://www.berlinartlink.com/2018/01/13/truth-we-carry-a-lot-in-our-wombs-an-interview-with-tabita-rezaire/>.
- [11] Rezaire, in Brandon Stosuy, "On the Infinite Flow of Creative Energy: An Interview with Artist Tabita Rezaire," *Creative Independent*, May 17, 2018, <https://thecreativeindependent.com/people/visual-artist-and-healer-tabita-rezaire-on-the-infinite-flow-of-creative-energy/>.
- [12] *Apple Dictionary*, s.v., "technology."
- [13] The number three is of great importance in many cultures and cosmologies around the world. It is a generative number that fosters creation, resurrection, and transformation as it overcomes oneness and duality.
- [14] Excerpted from Tabita Rezaire, *Deep Down Tidal*, short film, 18:44, 2017, <https://vimeo.com/248887185>.
- [15] Nicole Starosielski, *The Undersea Network* (Durham, NC: Duke University Press, 2015).
- [16] In reference to the book *They Came before Columbus*, by Ivan Van Sertima (New York: Random House, 1976), which relates the ancient navigation of Africa to the Americas and the possible African origins of the Olmecs civilization.
- [17] Masaru Emoto, *The Hidden Messages in Water* (New York: Atria Books, 2005).
- [18] Excerpted from Tabita Rezaire, *Premium Connect*, short film, 13:04, 2017, <https://vimeo.com/247826259>.
- [19] Excerpted from Rezaire, *Premium Connect*.
- [20] Ron Eglash, *African Fractals: Modern Computing and Indigenous Design* (New Brunswick, NJ: Rutgers University Press, 1999).
- [21] Excerpted from Rezaire, *Premium Connect*.
- [22] It is important to stress that Ifá divination's relationship with computing science does not make it suddenly more worthy. It is said that by healing yourself, you heal the seven generations before you and the seven generations coming after you.
- [23] Birago Diop, "Les souffles," in *Leurres et lueurs* (Paris: Présence africaine, 1960). Translated from the French.
- [24] Excerpted from Rezaire, *Premium Connect*.
- [25] Diop, "Les souffles."
- [26] Diop, "Les souffles."
- [27] Roy Ascott speaks of the three VRs: vegetal reality (accessed and regulated through entheogens), virtual reality (accessed through a computer interface), and vindicated reality (our material reality accessed through the senses and regulated by the laws of physics). Ascott, "Moistmedia, Technoetics and the Three VRs," in *ISEA 2000 ACTES Proceedings* (Issy-Les Moulineaux: ART3000, 2000), http://www.isea-archives.org/docs/2000/proceedings/ISEA2000_proceedings.pdf.

Decolonial Healing

[28] It is interesting to note that the fungi are said to colonize the roots of the tree.

[29] Audre Lorde, "The Uses of the Erotic: The Erotic as Power," in *Sister Outsider* (Berkeley, CA: Crossing Press, 1984), 87.

[30] Lorde, "Uses of the Erotic," 89.

[31] Cited in Claudia Tate, "Conversations with Audre Lorde," in *Black Women Writers at Work*, edited by Claudia Tate (New York: Continuum, 1983), 99.

[32] L. S. Senghor, *Liberté 1. Négritude et humanisme* (Paris: Le seuil, 1964), 245. Translated from the French by the author.

[33] Lorde, "Uses of the Erotic," 89.

Larry Achiampong
Larry Achiampong & David Blandy
Sénomé Koffi Agbodjinou,
L’Africaine d’architecture
Younes Baba-Ali
Joni Brenner, Nothando Bhebhe
& Scott Hazelhurst
Tegan Bristow
Tegan Bristow, Alex Coelho,
Russel Hlongwane & João Roxo
Kombo Chapfika
Joshua Chiundiza
CUSS Group
Milumbe Haimbe
Olalekan Jeyifous & Wale Lawal
Wanuri Kahiu
Isaac Kariuki
Francois Knoetze
Maurice Mbikayi
DK Osseo-Asare & Yasmine Abbas,
Agbogbloshe Makerspace
Platform (AMP)
Marcus Neustetter
Tabita Rezaire
The Nest Collective
Minnette Vári

Larry Achiampong

Larry Achiampong, *Pan African Flag for the Relic Travellers' Alliance*, 2018. Polyester with cotton appliqués, each 208 × 310 cm. Courtesy of the artist and Copperfield London.

Exhibited at ZKM | Karlsruhe.

Pan African Flag for the Relic Travellers' Alliance (2018) forms part of a multidisciplinary project, *Relic Traveller* (2017), which manifests in performance, audio, moving image, and prose. Centered within themes related to Afrofuturism, *Relic Traveller* builds upon a postcolonial perspective informed by technology, agency, and the body, and narratives of migration. This speculative project considers the current social and political climate of our time, especially the rise of nationalism within the global West. Meanwhile, the African Union's Pan African passport program established in 2016 points toward the potential opening of borders across a unified African continent in the future.

The work includes several flags that highlight African diasporic identity. The design of each flag features 54 stars that represent the 54 countries of Africa, while the colors green, black, and red reflect its land, its people, and the struggles the continent has endured, respectively. The field of yellow gold represents a new day and prosperity. Configured into symbols and forms, these pan-African colors suggest community, motion, squadron, and the human figure in ascension.



Larry Achiampong, *Pan African Flag for the Relic Travellers' Alliance (Ascension)*, 2018, and *Pan African Flag for the Relic Travellers' Alliance (Squadron)*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.



Larry Achiampong, *Pan African Flag for the Relic Travellers' Alliance (Motion)*, 2018.

Larry Achiampong & David Blandy

Larry Achiampong & David Blandy, *Finding Fanon, Part One*, 2015. Video, color, sound, 15:22 min. Supported by Arts Council England, courtesy the artists.

Larry Achiampong & David Blandy, *Finding Fanon, Part Two*, 2015. Video, color, sound, 9:13 min. Commissioned by Brighton Digital Festival, supported by National Lottery Funds through Arts Council England, produced by Artsadmin, courtesy the artists.

Larry Achiampong & David Blandy, *Finding Fanon, Part Three*, 2016/2017. Video, color, sound, 15:03 min. Supported by Arts Council England and Wysing Arts Centre, courtesy the artists.

Larry Achiampong & David Blandy, *FF Gaiden: Delete*, 2018. Video, color, sound, 33:09 min. Commissioned by Praksis Oslo, Norway, in collaboration with Mennisker i Limbo (People in Limbo), in partnership with PNEK, Atelier Nord, and Notam, courtesy the artists.

Exhibited at ZKM | Karlsruhe.

In their collaborative artworks Larry Achiampong and David Blandy explore in depth social configurations and roles, and engage with memory used as a means of remembering the past and with their own identities and histories. Video animation is their medium for investigating identity as a fiction. The popular computer game *Grand Theft Auto V* serves as the setting. Based on the theories of Frantz Fanon, a radical humanist and trailblazing theorist of postcolonialism in the twentieth century, in their series *Finding Fanon*, the artists examine immigration, exploitation, race, and colonialism via the ideas of Fanon. In the virtual world of the computer game, the avatars Achiampong and Blandy interrogate the promises of globalization and new technologies. Their film project *FF Gaiden: Delete* from 2018 was developed in collaboration with migrants who do not possess valid papers. Mirroring this state, the avatars of two migrants navigate the virtual world without expressing emotions or the drama of their situation. The subtle aesthetics refrains from all judgmental commentary and challenges each and every viewer to develop their own position and response to the precarious and painful reality of refugees.



Larry Achiampong & David Blandy, *Finding Fanon, Part Three*, 2016/2017



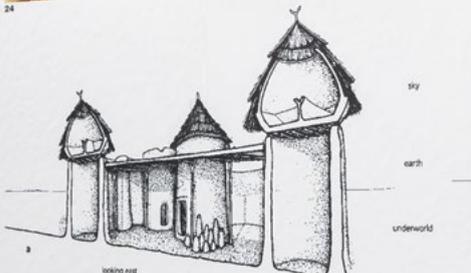
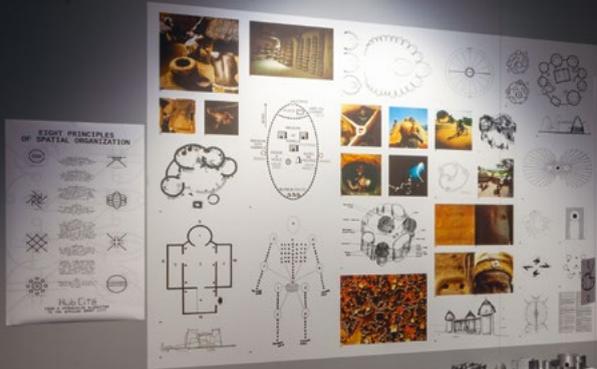
Larry Achiampong & David Blandy, *FF Gaiden: Delete*, 2018.

Sénamé Koffi Agbodjinou, L'Africaine d'architecture

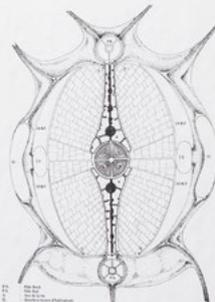
Sénamé Koffi Agbodjinou, L'Africaine d'architecture, *HubCités Africaines*, 2018. Mixed-media installation, dimensions variable. Commissioned by ZKM | Karlsruhe, courtesy Sénamé Koffi Agbodjinou, L'Africaine d'architecture.

Exibited at ZKM | Karlsruhe.

The rapid growth of urban agglomerations in Africa confronts city planners with unprecedented challenges. Futuristic smart city designs, however, do not offer any solution because they are based on Western models and urban planning. The concept of *HubCités Africaines* was developed by the architect and anthropologist Sénamé Koffi Agbodjinou and is a prestage of co-city or sharing city models on a pan-African scale. The Togolese city of Lomé functions as a technological experimental laboratory, which is covered by a network of innovation centers based on the principles of an African village, where joint decision making, sharing of things, local needs, and the initiation of young people have priority. The project also conducts research on adapting the principles of the organization of space to the architectural requirements of sub-Saharan Africa, taking into account traditional African living and production modes. As a convinced defender of the "digital vernacular," the embedding of digital practices in local crafts traditions, Sénamé Koffi Agbodjinou is convinced of the structural similarity between the ethics and working methods of hackers and values of African societies.

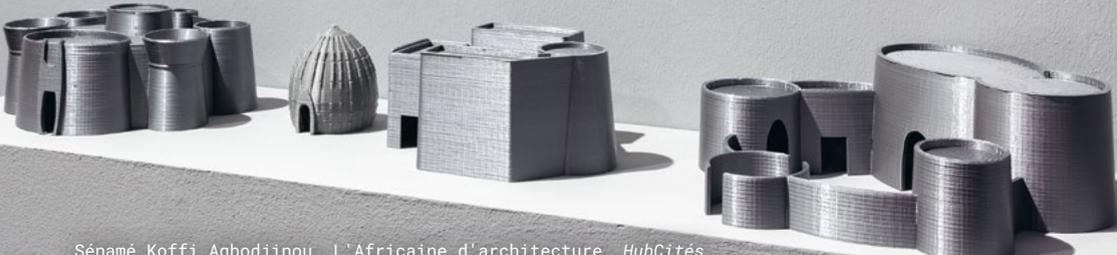


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Senamé Koffi Agbodjinou, L'Africaine d'architecture, HubCités Africaines, 2018. Installation views, ZKM | Karlsruhe (DE), 2018.

Younes Baba-Ali

Younes Baba-Ali, *Call for Prayer–Morse*, 2011.
Sound installation. Courtesy the artist.

Exhibited at Wits Art Museum, Johannesburg.

Younes Baba-Ali, *Everything Is a Border*, 2018.
Mixed-media installation, barbed and electrical wire,
camera, sound. Commissioned by ZKM | Karlsruhe,
courtesy the artist.

Exhibited at ZKM | Karlsruhe.

Younes Baba-Ali's works, which frequently employ site-specific interventions, coerce the viewer into destabilizing confrontations with political, societal, and ecological questions.

Call for Prayer–Morse is a sound installation consisting of a megaphone in public space. The megaphone, a format that is known for mass communication, broadcasts the omnipresent Muslim call for prayer in morse code. Five times a day, timed according to its specific geographic location, the call sounds as an alert signal, warning against the dangers of proselytizing while problematizing the relationship between religious practice and the absence of spiritual experience.

Everything Is a Border, conceived by Younes Baba-Ali for the ZKM, established a fenced-off space in the exhibition that was extremely present and yet inaccessible. The installation, consisting of an electric fence, was designed by the artist in collaboration with a South African security company, which monitored the installation from a distance during the exhibition using a camera and intervened via audio announcements in the event of any misbehavior by the exhibition visitors. The simultaneous location of the work in Johannesburg and Karlsruhe deflected the usual direction of the Western gaze and confronted the viewer physically with the effects of physical boundaries and digital surveillance. The questioning of the role of digital security and surveillance technologies was both a reference to current migration flows and a disruption of imaginaries that equate the digital with unbounded virtual data flows.



Younes Baba-Ali, *Call for Prayer - Morse*, 2011. Installation view, Wits Art Museum, Johannesburg (SA), 2018.



Younes Baba-Ali, *Everything Is a Border*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.

Joni Brenner, Nothando Bhebhe & Scott Hazelhurst

Joni Brenner, Nothando Bhebhe & Scott Hazelhurst,
Marigold Beads: The Genomic Admixture Necklace, 2018.
Beads, cotton thread. Collection Scott Hazelhurst.

Exibited at Wits Art Museum, Johannesburg and
ZKM | Karlsruhe.

This design by Marigold Beads, the Zimbabwean beadwork co-operative, in collaboration with artist Joni Brenner and scientist Scott Hazelhurst, has only been made three times. This complex and specific pattern was generated by computer software using data from the South African Human Genome Programme. The data is a visualization of the genetic diversity of various human populations used by scientists to try to understand populations' history. Knowledge of the genetic variation or heterogeneity of the population is an important baseline when trying to locate the genetic factors implicated in diseases.

The scientific visualization of this information was translated by Nothando Bhebhe into rows of different colored beads producing a Marigold necklace loosely legible to scientists working on the South African Human Genome Programme.



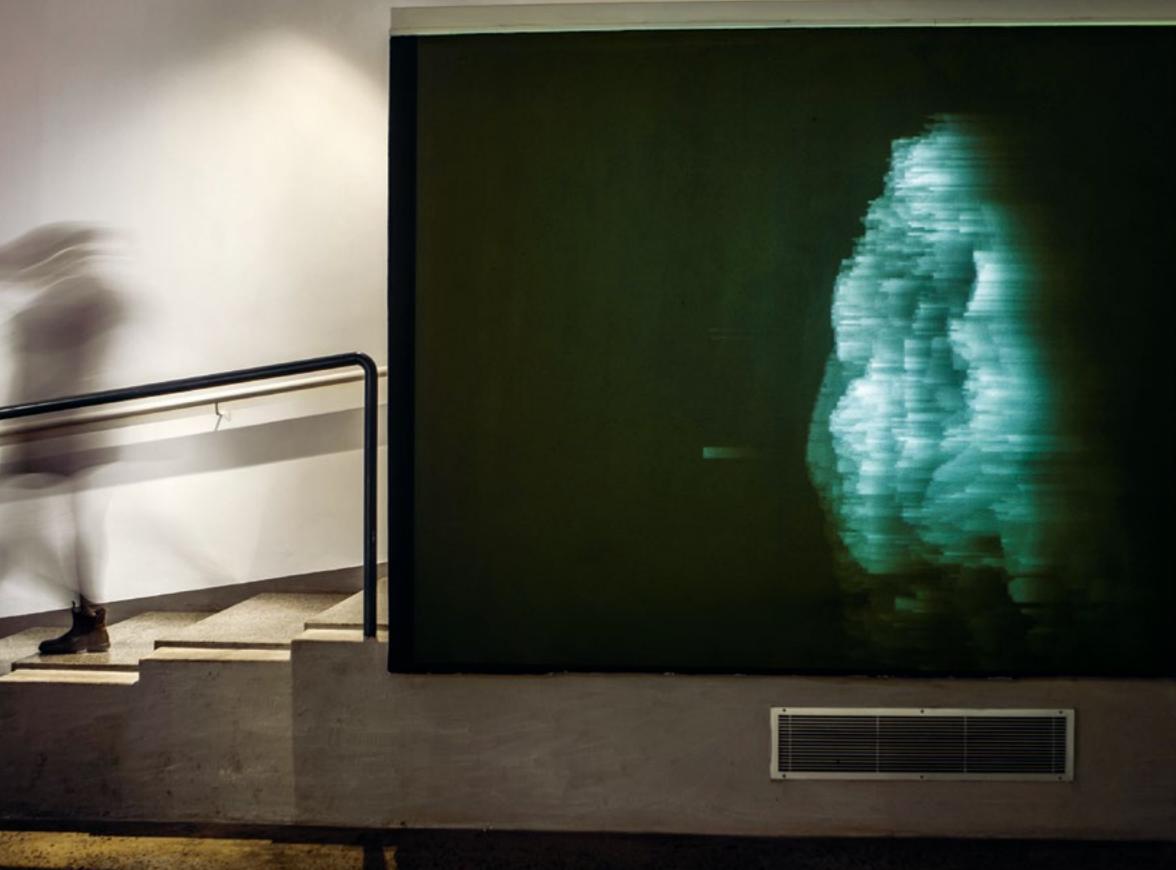
Joni Brenner, Nothando Bhebhe & Scott Hazelhurst,
Marigold Beads: The Genomic Admixture Necklace, 2018.

Tegan Bristow

Tegan Bristow, *CHALK VISION*, 2008. Interactive media installation. Courtesy the artist.

Exibited at Wits Art Museum, Johannesburg.

Are we looking at the computer or is the computer looking at us? *CHALK VISION* was made more than ten years ago by the artist, curator, and theoretician Tegan Bristow to explore the rapid increase in motion surveillance and motion capture technologies. Today we are used to the camera of the computer recording us. Yet do we fully understand the implications of being recorded by passive machines that endlessly collect every click, like, and post? Can we even grasp what our digital data bodies look like and what they are and will be used for? In the installation the motion of the audience in the exhibition is detected by a camera and represented as an image of white chalk dust on a black ground. The soft capture and delayed motion of this piece makes a ghost of our bodies. A data ghost.



Tegan Bristow, *CHALK VISION*, 2008. Installation views, Wits Art Museum, Johannesburg (SA), 2018.

Tegan Bristow, Alex Coelho, Russel Hlongwane & João Roxo

Tegan Bristow, Alex Coelho, Russel Hlongwane, João Roxo,
Towards a Vocabulary for Vernacular Algorithms, 2018.
Mixed-media installation. Courtesy the artists.

Exibited at Wits Art Museum, Johannesburg and
ZKM | Karlsruhe.

Towards a Vocabulary for Vernacular Algorithms is the first work to come out of a new artistic research project by Tegan Bristow, Alex Coelho, Russel Hlongwane, and João Roxo. Working out of Durban, Johannesburg, and Maputo, they explore collectively how vernacular and traditional knowledge contributes to rethinking technology as culturally driven and egalitarian.

A Vocabulary for Vernacular Algorithms investigates the mathematical and algorithmic forms in beadwork and weaving practices from KwaZulu and Mozambique. Bringing together traditional, embodied coding practices and seemingly abstract digital code challenges the notion that all binary pattern making originates in the West. The installation incorporates traditional pieces of KwaZulu beadwork and *The Genomic Admixture Necklace*. The latter is a collaboration between the artist Joni Brenner and Nothando Bhebhe at the Zimbabwean beadwork cooperative Marigold Beads. The complex pattern of the piece is based on scientific visualizations of genetic population data from the South African Human Genome Programme.



Tegan Bristow, Alex Coelho, Russel Hlongwane, João Roxo, *Towards a Vocabulary for Vernacular Algorithms*, 2018. Installation views, ZKM | Karlsruhe (DE), 2018.

Kombo Chapfika

Kombo Chapfika, *Borderlands*, 2018. Interactive video installation, color, sound. Commissioned by Wits Art Museum, courtesy the artist.

Exibited at Wits Art Museum, Johannesburg and ZKM | Karlsruhe.

Kombo Chapfika is a largely self-taught Zimbabwean multidisciplinary artist. His work employs African and Western pop iconography as well as surreal figurative elements. This hybrid visual language, according to the artist, evokes the immense potential and current dire straits of Zimbabwe, and Africa at large. The aesthetic of his work echoes his position as a contemporary African artist participating in the ongoing cultural churning, mutation, and discarding brought on by globalization. *Borderlands* comprises a network of ancestral bodies and words. The immersive projection digitally recreates Iboga-induced visual and auditory hallucinations. Iboga is a psychoactive tree root that has been used for centuries. Transcendental experiences, such as direct communion with ancestors and spirits, which are associated with its ingestion, are an important part of the Gabonese Bwiti religion. *Borderlands* renders such experiences digitally and thus traces the boundaries between immersive technologies, mind-altering substances, and the desire for spiritual transcendence and belonging under conditions of technological ubiquity.



Kombo Chapfika, *Borderlands*, 2018. Installation views, Wits Art Museum, Johannesburg (SA), 2018.

Joshua Chiundiza

Joshua Chiundiza, *Bones and Dual Tones*, 2018. Interactive sound installation using found objects, dimensions variable. Commissioned by Fak'ugesi Festival, courtesy the artist.

Exibited at the Fak'ugesi Festival, Johannesburg and ZKM | Karlsruhe.

Joshua Chiundiza's work was developed in 2018 during a residency at the Fak'ugesi Festival in Johannesburg. *Bones and Dual Tones* digitizes and thus reimagines Zimbabwe's most important traditional instrument, the mbira. In Shona culture in southern Africa, the mbira facilitates communication with the higher spirit world of the ancestors. The installation transmits messages from the ancestors via reversed, digitized mbira tones. During a performance in Johannesburg, where the piece was first shown, Chiundiza collaborated with a sangoma (traditional spiritual healer) to interpret the digital messages. This experiment demonstrates that the artist's digital reconstruction of the mbira goes beyond the immediately accessible sound and make-up of the instrument. For the artist, reconstructing the mbira is to transpose the power of ancient African practices to a thoroughly digitized world.



Joshua Chiundiza, *Bones and Dual Tones*, 2018. Installation views, Fak'ugesi Festival, Johannesburg (SA), 2018.

CUSS Group

CUSS Group, *Fully Automated Luxury Influencer Episode 1*, 2017/2018. Video, color, sound, 6:06 min.
Courtesy CUSS Group.

CUSS Group, *Fully Automated Luxury Influencer Episode 2*, 2017/2018. Video, color, sound, 4:50 min.
Courtesy CUSS Group.

CUSS Group, *Fully Automated Luxury Influencer Episode 3*, 2017/2018. Video, color, sound, 2:33 min.
Courtesy CUSS Group.

CUSS Group, *Fire 2 Fire*, 2015–2018. Video, color, sound, 2:27 min. Courtesy CUSS Group.

Exibited at ZKM | Karlsruhe.

The CUSS Group is a collective of artists with an international network who in their works respond to the super-hybridity of media, consumption, technology, and digital developments in daily life and urban life, globalization, and youth culture in postcolonial South Africa. The spectrum of their activities ranges from founding a Web TV initiative to online publications, digital art, and curated projects in offbeat spaces.

Their video *Fully Automated Luxury Influencer* plays in a fictional Johannesburg of 2018, a place of extremes bearing the indelible stamp of late capitalism. The work's three episodes address the impact of influencer culture and, using the metaphor of a parasite, in surreal settings point to various facets of the economization of the individual and the blurring of the distinction between the real and virtual reality.

In *Fire 2 Fire* the viewer is put into the trance state of "mind illumination." The screen is overloaded with a chaotic collection of keywords and image fragments and overlaid by a radiant holographic filter. Both works fluctuate between the two options of giving in to the suggestive worlds of images or exercising one's own intrinsic creative potential, which results in the agency to become aware and confront prevailing social conditions.

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RESOLVE



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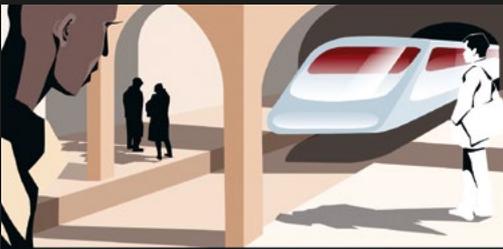
Milumbe Haimbe

Milumbe Haimbe, *Ananiya Calling: 2100 to Mainland Earth*, 2018. Video, color, sound, 3:15 min. Courtesy the artist.

Milumbe Haimbe, *The Revolutionist*, 2013-2016. Digital comic. Courtesy the artist.

Exibited at ZKM | Karlsruhe.

Ananiya Calling is a visual work in progress that utilizes a wide range of media including illustration, text, animation, video editing, comic book art, internet, and 3D modeling. With its worldbuilding combined with science fiction, the project seeks to contribute to debates on transculturality and identity by placing a young black woman at the center of a hyper-futuristic or transcendent world: Ananiya, a seventeen-year-old black female who works as an agent in the Covert Operations Division of a resistance movement. The resistance group calls itself the Army for the Restoration of Womanhood and fights against the corporate government that has introduced sex robots capable of replacing the need for female humans. Through her Weblog and in the video, *Ananiya Calling: 2100 to Mainland Earth*, Ananiya, who lives in a space habitat in the year 2100, has found a way of communicating with us here on Earth in the present day.



Olalekan Jeyifous & Wale Lawal

Olalekan Jeyifous & Wale Lawal, *Mad Horse City–Offline: Surulere Shopping Center*, 2018. Video animation, color, sound, 4:02 min. Courtesy the artists.

Olalekan Jeyifous & Wale Lawal, *Mad Horse City–Òminírà: Lé·hìn Mákòkò*, 2018. Video animation, color, sound, 4:46 min. Courtesy the artists.

Olalekan Jeyifous & Wale Lawal, *Mad Horse City–Dreamscape: Mushin (Single Room Occupany)*, 2018. Video animation, color, sound, 5:16 min. Courtesy the artists.

Exibited at ZKM | Karlsruhe.

In his work, the Nigerian-born artist and architect Olalekan Jeyifous addresses future urban development and especially in urban agglomerations designated megacities. Using fictional futuristic urban landscapes, he explores ways to productively exploit certain practices in so-called dysfunctional slums—such as reuse, sustainability, and self-organization. *Mad Horse City*, a series of animated videos created in collaboration with the Nigerian writer and publisher Oluwale Lawal, speculates on the development of both city and society into the distant future. It is set in Lagos, Nigeria, in the year 2115. The stories of the inhabitants of this futuristic solar punk vision are narrated in three “moments,” *Offline*, *Òminírà* [Autonomy], and *Dreamscape*, where such issues as class affiliation, poverty, social injustice, and in particular inequalities with regard to the availability of digital resources are addressed. The status quo is “being online,” whilst “being offline” is illegal. It is from this dynamic that scenarios of social order, control, surveillance, and social resistance that determine the virtual and physical places in Africa are imagined.



Olalekan Jeyifous & Wale Lawal, *Mad Horse City* - Òminirá:
Lé·hìn Mákòkò, 2018.

Wanuri Kahiu

Wanuri Kahiu, *Pumzi*, 2009. Video, color, sound, 21 min. Produced by Simon Hansen, Hanna Slazeck (Inspired Minority Pictures), supported by Focus Features, Goethe Institut, KCDF, courtesy Inspired Minority Films and the artist.

Exibited at ZKM | Karlsruhe.

Pumzi, which means “breath” in Swahili, was released in 2009 by Kenyan film director Wanuri Kahiu. *Pumzi* is considered the first Kenyan science fiction short film—more specifically, postapocalyptic sci-fi. The film is representative of speculative African productions that think critically about the continent’s future after potentially irreversible climate change. Africa will likely be one of the principal victims of climate change, and has already suffered greatly from the devastating effects of industrial development and global capitalism. *Pumzi* takes place at an indeterminate future date in East Africa, 35 years after the Third World War, fought over access to water. A nuclear disaster has rendered the surface of the Earth completely inhospitable, all forms of life on the planet having been destroyed. However, one community led by a totalitarian council named the Maitu—“mother” in Kikuyu—has managed to survive underground.



Wanuri Kahiu, *Pumzi*, 2009.

Isaac Kariuki

Isaac Kariuki, *Weaponise the Internet*, 2017. Print, dibond, 4-part, each 60 × 40 cm. Courtesy the artist.

Exibited at ZKM | Karlsruhe.

Isaac Kariuki investigates online representations of black and queer bodies to understand how the internet models identities and identifications. He uses speculation to highlight power structures and strategies of empowerment and how these powers can be subverted. He is the founder of the magazine *Diaspora Drama*, which focuses on black artists' digital practices.

Weaponise the Internet explores the effects of digitization in East Africa as the work combines tropes associated with Africa's interaction with the technological boom of the 2000s, such as cell-phone hacking and fraud. In Kenya, the exploitative monopoly created by one very large mobile service provider signals the growing danger to free speech and access to basic communication tools. *Weaponise the Internet* is a series of portraits of a fictional East Africa-based hacker collective made up of young hijabi women taking control and morphing a piece of equipment that was not made for them. A hijabi hacker collective could "weaponize" their access to computers and the internet to oppose threats to their livelihood.



Isaac Kariuki, *Weaponise the Internet*, 2017.

Francois Knoetze

Francois Knoetze, *Core Dump*, 2018. Mixed-media installation. Commissioned by Kër Thiossane, Wits Art Museum, and ZKM | Karlsruhe, courtesy the artist.

Featuring in Dakar:

Bamba Diagne (Actor), Anton Scholtz (Camera/Cinematography), Caydon van Eck (Sound Design)

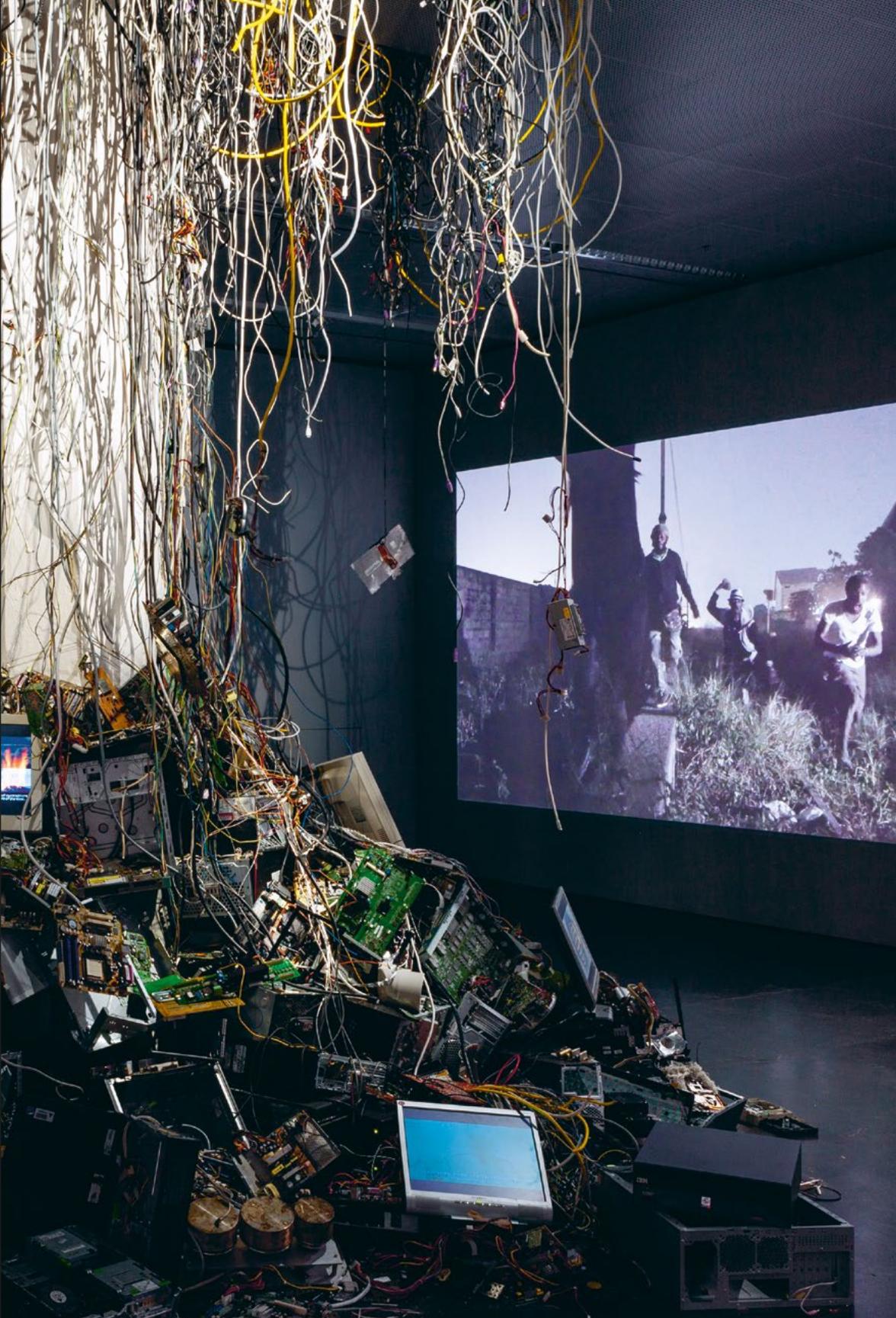
Featuring in Kinshasa:

Mukwa Sankiala (Actor), Marcus Neustetter (Extra), Amy Louise Wilson (Production manager, Actor), Andy Koch (Camera), Viktoria von Pidoll (Assistance)

Exhibited at Kër Thiossane, Dakar, Wits Art Museum, Johannesburg and ZKM | Karlsruhe.

Core Dump explores the place of screens in global and localized politics and history. It critically interrogates the global forces that connect Senegal, the Democratic Republic of Congo, China, Silicon Valley, and Western Europe and looks specifically at the contradiction between Silicon Valley's techno-utopianism and its extractive and exploitative relationship to Africa. The project comprises a series of performances, projection-mapping video installations, and interviews that draw on audiovisual archives, early African cinema, and daily life in the cities of Kinshasa and Dakar. These two cities represent the points of origin for the extraction of minerals used in the production of technology, and the end points at which certain African countries become dumping grounds for electronic waste from Europe and the USA, which is then often repaired, repurposed, and reused.

Francois Knoetze highlights the connections between social history and material culture. He scrutinizes the life cycle of consumer objects, which he reactivates once they have turned into waste. By conferring on them the status of zombies, he blurs the dividing lines between humans and objects, fiction and reality, past, present, and future.



Francois Khoetze, *Core Dump Karlsruhe*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.

Maurice Mbikayi

Maurice Mbikayi, *Billisme Ya Sika*, 2018. Computer keys, found clothes and hat, knit crochet thread, mannequin, 170 × 50 × 65 cm. Courtesy ARTCO Gallery and the artist.

Maurice Mbikayi, *Mask of Heterotopia 1*, 2018. C-Print, 104 × 154 × 5 cm, framed. Courtesy ARTCO Gallery and the artist.

Maurice Mbikayi, *Fractals 2*, 2018. Cable, wood, 7-part, 50 × 50 cm, 40 × 40 cm, 2 × 30 × 30 cm, 2 × 25 × 25 cm, 15 × 15 cm. Courtesy the artist.

Exhibited at ZKM | Karlsruhe.

In his wide-ranging artistic practice Maurice Mbikayi explores, from an African perspective, the influence that technology exerts on society. The human body and its clothed shell play a central role in his works. He uses components from discarded technologies as a means of artistic expression. The resulting works are complex and critical commentaries on the exploitation of African raw materials by Western countries for the production of digital technologies, while at the same time making a statement opposing industrialized nations' practice of disposing of their electronic waste in Africa. Mbikayi's wearable sculpture *Billisme Ya Sika*—a costume that consists of computer keys—makes reference to *Le Billisme*, the Léopoldville (today Kinshasa)-based, 1950s youth subculture, which in turn was inspired by westerns and whose idol was Buffalo Bill. The resulting fashion trend served as a means of resistance for Congolese youth. Mbikayi transfers this popular culture of protest to today's society with its technological and environmental crises. In contrast, his series of work *Fractals 2* points to the close connection between sociocultural practices and mathematics on the African continent, which remains apparent into the digital age.



Maurice Mbikayi, *Billismé Ya Sika*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.

**DK Osseo-Asare & Yasmine Abbas,
Agbogbloshie Makerspace Platform (AMP)**

DK Osseo-Asare & Yasmine Abbas, Agbogbloshie Makerspace Platform (AMP), *Spacecraft_ZKM*, 2018. Mixed-media installation, 282.50 × 300 × 550 cm. Commissioned by ZKM | Karlsruhe, courtesy AMP.

Exhibited at Kër Thioossane, Dakar, and ZKM | Karlsruhe.

Yasmine Abbas and DK Osseo-Asare are co-founders of the Agbogbloshie Makerspace Platform (AMP) in Ghana, a pan-African joint project that has been developed in the vicinity of the Agbogbloshie electronic waste dump in the district of the same name in the metropolis of Accra. AMP combines the practical know-how of local makers in the informal sector with the technical knowledge of students and young professionals in the fields of natural sciences, technology, engineering, art, and mathematics. The *AMP Spacecraft* represent alternative architectures, which as mobile, incremental, low-cost, and open-source kiosks invite to the imagination of different prototypical usage scenarios.

Within the framework of *Digital Imaginaries*, different "Spacecrafts" were implemented in Dakar and the in Karlsruhe. With the aim of establishing a transfer of know-how between Ghanaian makers and local craftsmen and workshop participants at the respective exhibition venues, the kiosks were designed in different configurations and thus adapted to the needs of the context surrounding them. While in Dakar the *Spacecraft_KT* was used as a satellite of the FabLab Defko Ak Niép in public space; the *Spacecraft_ZKM* exhibited indoors contained the prototype of a smart canopy, or "Scanopy," device, to collect air quality data and explore opportunities to amplify environmental sensing in data-scarce regions.



DK Osseo-Asare & Yasmine Abbas, Agbogbloshie Makerspace Platform (AMP), *Spacecraft_KT*, 2018. Installation view, Afropixel #6, Mon super kilomètre / URBI, Gueule Tapée, Dakar (SN), 2018.



DK Osseo-Asare & Yasmine Abbas, Agbogbloshie Makerspace Platform (AMP), *Spacecraft_ZKM*, 2018. Installation view, ZKM | Karlsruhe (DE), 2018.

Marcus Neustetter

Marcus Neustetter, *Lead the Way*, 2018. 3-part performance and mixed-media installation. Commissioned by Kër Thiossane, Wits Art Museum, and ZKM | Karlsruhe, courtesy the artist.

Performance and installation at Kër Thiossane in dialogue with: Lamine Kora Kouyaté and Fatou Cissé

Installation at Wits Art Museum in dialogue with: Lebogang Mashile, Prophet JD, and Mantala Nkoatse

Performance and installation at ZKM in dialogue with: Nino Alonso and Mira Hirtz

Exhibited at Kër Thiossane, Dakar, Wits Art Museum, Johannesburg and ZKM | Karlsruhe.

The artist, cultural activist, and producer Marcus Neustetter often works in his multidisciplinary practice with light and shadows to evoke imaginary landscapes shaped by colonial histories and contemporary cultural frictions and displacements.

Lead the Way is a triptych consisting of collaborative performances and installations in Dakar, Johannesburg, and Karlsruhe that were created in the context of *Digital Imaginaries* at the three project venues. The immersive shadowscape of the multimedia installations, which in Dakar and Karlsruhe consist of the audio-visual remains of the performance that was presented for hours in the exhibition space earlier, is inhabited by ritual objects, Chinese consumer electronic junk, the bodies of the exhibition visitors, as well as those of the artist and the dancers, musicians and poets with whom Marcus Neustetter has collaborated. In Johannesburg, the installation was created in response to a number of ritual objects from the collections of classical African art located in the Wits Art Museum. Neustetter's installations implicate space, body, and objects in the artist's struggle to make sense of conflicting white subjectivities in contemporary, post-colonial, digitally mediated settings. The techno-poetic reference to the path of South Africa's dysfunctional satellite Sumbandila, which can be precisely located and yet circles the earth lost in orbit, forms the connecting link in the changing imaginary territories of the three installations. The English translation of Sumbandila, the official name of the satellite, which comes from the language of the South African Vanda ethnic group, is "Lead the Way."



Marcus Neustetter, *Lead the Way - Speculative Scapes*.
Installation view, ZKM | Karlsruhe (DE), 2018.



Marcus Neustetter, *Lead the Way - Embedded Conjecture*.
Installation view, Wits Art Museum (SA), 2018.

Tabita Rezaire

Tabita Rezaire, *Afro Cyber Resistance*, 2014.
Video, color, sound, 18:26 min.

Exhibited at Kër Thioossane, Dakar, and ZKM | Karlsruhe.

Tabita Rezaire, *Le Conseil des Etoiles*, 2018.
Collective star gazing.

Held at Kër Thioossane.

Tabita Rezaire, *PREMIUM CONNECT*, 2017.
Video installation, color, sound, 13:04 min.

Exhibited at Wits Art Museum, Johannesburg.

Tabita Rezaire, *The Song Of The Spheres*, 2018.
Mixed-media installation, Senegalese matts, copper,
sound, 16:16 min, dimensions variable.
Commissioned by ZKM | Karlsruhe.

Exhibited at ZKM | Karlsruhe.

All artworks courtesy the artist and Goodman Gallery,
Johannesburg.

Media artist Tabita Rezaire describes herself as an agent of healing. In its combination of physical and spiritual knowledge, she sees her practice as digital healing activism, which engages with the effects of racism, colonialism, and heteronormativity on identity, technology, sexuality, health, and spirituality.

In her video essay *Afro Cyber Resistance* Rezaire examines the internet art practices in South Africa as a manifestation of cultural dissent from Western hegemony. The aim of the work is to create awareness of the stereotyped representations of African bodies and cultures on the internet, and to develop forms of media activist resistance, especially online.

PREMIUM CONNECT is a study of information and communication technologies (ICT), exploring African divination systems, the fungi underworld, ancestors communication, and quantum physics to (re)think our information conduits. The work embraces the idea that ICT acts as a mirror of the organic world, capable of healing or poisoning depending on its usage and users. Contrary to Eurocentric-biased thinking, the work investigates the roots of our information super highway in African spirituality and links the birth of computing sciences to African divination systems.

The sound installation *The Song of the Spheres*, conceived for the ZKM, is based on Tabita Rezaire's performance *Le Conseil des Etoiles* during the Afropixel Festival in Dakar. During a collective nocturnal stargazing event, the artist invited the audience to meditate together on astrophysical knowledge, cosmologies, planetary acoustics, and mythologies.

The Nest Collective

The Nest Collective, *We Need Prayers: This One Went To Market*, 2018. Video, color, sound, 4:53 min. Courtesy The Nest Collective.

Exhibited at ZKM | Karlsruhe.

The Nest Collective is a multidisciplinary arts collective from Nairobi that works in film, fashion, music, literature, and visual arts. In its productions The Nest Collective explores the social upheavals in Kenya and the challenge to traditional roles posed by modern ideas of identity. In 2014 the Nest Collective became known through its anthology of short films *Stories of Our Lives* about LGBT life in Kenya, which in the meantime has screened in over eighty countries and won numerous awards.

The series of short films *We Need Prayers* is dedicated to the city of Nairobi and spotlights the dysfunction confronting many of its citizens—harassed inhabitants, hip-hop artists, and millennials perpetually blogging, vlogging, and posting videos on social media. The episode *This One Went To Market* is about a young Kenyan artist who hatches a plan to take over the international art world with Afrofuturist artworks, which are specifically devised to appeal to the aesthetic expectations of a Western audience. Afrofuturism is a literary and cultural movement, which in its quest for a future for Africa addresses themes and aspirations of Africans and the African diaspora in counter-narratives characterized by techno-culture and science fiction.



The Nest Collective, *We Need Prayers: This One Went To Market*, 2018.

Minnette Vári

Minnette Vári, *Lux Aeterna*, 2017. Virtual reality tiltbrush installation. Developed with support of the Centre for the Less Good Idea, courtesy the artist.

Exhibited at Wits Art Museum, Johannesburg.

The installation offers a deeply immersive experience of drawing with light in the dense darkness of a virtual three-dimensional world. The thicket is inhabited by three figures that are tracings of the artists captured movements in space. Those gray boulders are alive inside; they go underground. And there are cryptic messages woven into and around the work. The piece carries a sense of urgency and of foreboding but mainly of wonder. *Lux Aeterna* (eternal light) is a tribute to our truest impulse. To explore. To forge new ways. To find meaning.



Minnette Vári, *Lux Aeterna*, 2017. Installation views, Wits Art Museum (SA), 2018.

Workshops and Events

February 26–March 13, 2018

***Dakar Typo Remix Makers*, workshop with Fabien Cornut, Laurent Malys, Daniel Sciboz and the team of the FabLab Defko Ak Niép, Afropixel #6, Kër Thiossane, Dakar (SN)**

May 1–5, 2018

***Images, écrans et réalité virtuelle* [Images, Screens and Virtual Reality], workshop with Gareth Steele, Rick Treweek, Kombo Chapfika, and Tegan Bristow, in cooperation with Fak’ugesi African Digital Innovation Festival, Johannesburg (SA), Afropixel #6, Sup’lmax, Dakar (SN)**

May 5–10, 2018

***Spacecraft_KT. Fabrication d’un fablab mobile* [*Spacecraft_KT. Fabrication of a mobile fab lab*], workshop with Yasmine Abbas & DK Osseo-Asare, Afropixel #6, Kër Thiossane, Dakar (SN)**

May 6–7, 2018

Échanges sur les imaginaires numériques en Afrique [Exchanges on digital imaginaries in Africa], conference with Yasmine Abbas, Sénamé Koffi Agbodinou, Younes Baba-Ali, Mamadou Diallo, Amah Edoh, Oulimata Gueye, Francois Knoetze, Tahini Nadim, Marcus Neustetter, Thomas Hervé Mboa Nkoudou, DK Osseo-Assare, Fiona Rankin-Smith, Tabita Rezaire, Denis Roio aka Jaromil, Judith Rottenburg, Richard Rottenburg, Daniel Sciboz, Moussa Sissoko, Joseph Tonda, Michel Wahome, Philipp Ziegler, Afropixel #6 Festival, Faculté des Sciences et Technologies de l’Education et de la Formation (FASTEF), Dakar (SN)

May 8, 2018

***Arts et métiers du numérique au Sénégal: Le fablab* [Digital arts and crafts in Senegal: The FabLab], public debate with Yasmine Abbas & DK Osseo-Asare, Sénamé Koffi Agbodjinou, Oulimata Gueye, Ibrahima Guisse, Laurent Malys, and Cécile Ndiaye, moderated by Thomas Hervé Mboa Nkoudou and Daniel Sciboz, Afropixel #6, Kër Thiossane, Dakar (SN)**

May 9, 2018

***Décoloniser internet, une utopie?* [Decolonizing the internet, a utopia?], public debate with Yasmine Abbas & DK Osseo-Asare, Sylviane Diop, Francois Knoetze, Tabita Rezaire, Denis Roio, aka Jaromil, and Joseph Tonda, moderated by Mamadou Diallo and Oulimata Gueye, Afropixel #6, Kër Thiossane, Dakar (SN)**

August 2, 2018

***Pattern Phinda Code, from Beadwork to Coding*, workshop with Tegan Bristow, Wits Art Museum, Johannesburg (SA)**

Workshops and Events

August 18 and September 8, 2018

It's Alive! AR Workshop, Workshop with The Coloured Cube, Wits Art Museum, Johannesburg (SA)

August–September 2018

African Fractals & WAM Research, Digital Arts Course, conceptualized and supervised by Tegan Bristow, Wits School of Arts, Johannesburg (SA).

September 6, 2018

Fak'ugesi Talks: Premonition and Digital Imaginaries, public debate with Keith Breckenridge, Tegan Bristow, Mathilde Buenerd, Joshua Chiundiza, Abhiyan Humane, Marc Lee, Yara Mekawei, Nkhensani Mkhari, Sarah Nuttall, Fiona Rankin-Smith, Richard Rottenburg, and Anoop Saxena, Fak'ugesi African Digital Innovation Festival, Johannesburg (SA)

November 17, 2018

Talks with Tegan Bristow, Mamadou Diallo, Francois Knoetze, Marion Louisgrand Sylla, Marcus Neustetter, and Jamal Nxedlana, moderated by Julien McHardy and Oulimata Gueye, OpenHUB, ZKM | Karlsruhe (DE)

November 17, 2018

NO FAQ: Artistic Research, Postcolonial Utopias, Digital Culture and You., workshop with Yasmine Abbas & DK Osseo-Asare, Gameli Adzaho, and Nicholas Tali (Agbogloboshie Makerspace Platform), Fanny Kranz, and students of the Faculty of Architecture at KIT, ZKM | Karlsruhe (DE)

November 18, 2018

Tangana (It's hot!), Maker's Brunch, public presentations with Agbogloboshie Makerspace Platform (GH), Defko Ak Niép (SN), Tshimologong Digital Innovation Precinct (SA), Woelab (TG), and the Karlsruhe initiatives Entropia e.V., FabLab, OK Lab Karlsruhe, OpenHUB, ZKM | Karlsruhe (DE)

November 18, 2018

From Beadwork to Coding: Vernacular Algorithms, workshop with Tegan Bristow, OpenHUB, ZKM | Karlsruhe (DE)

November 21, 2018

Collective Data between Accra and Karlsruhe, public presentation with Gameli Adzaho and Nicholas Tali (Agbogloboshie Makerspace Platform) as well as OK Lab Karlsruhe, ZKM | Karlsruhe (DE)

Biographies

Yasmine Abbas is an architect and strategic designer. Her research explores mobility, digital culture, and augmented place-making, with her current focus being on fabricating atmospheres, generative mapping, cartography, and the computational design of ambiance. She is the author of *Le néo-nomadism: Mobilités. Partage. Transformations identitaires et urbaines* (2011), and coeditor of *Digital Technologies of the Self* (Y. Abbas and F. Dervin, 2009). Together with DK Osseo-Assare she founded Agbogloboshie Makerspace Platform (AMP), which won the Smart Cities Urban Innovation Award for Citizen Engagement in the Le Monde 2020 World Urban Innovation Challenge. Abbas has worked in multicultural environments in Europe, North America, the Middle East, Africa, and Asia. She lives and works between Central Pennsylvania (US) and Paris (FR).

Larry Achiampong works as an artist, whose solo and collaborative projects employ imagery, aural and visual archives, live performance and sound to explore ideas surrounding class, cross-cultural and post-digital identity. He gained a BA in Fine Art Mixed Media at the University of Westminster in 2005 and an MA in Sculpture at the Slade School of Fine Art in 2008. He has been a tutor on the Photography MA program at the Royal College of Art since 2016, and currently serves on the Board of Trustees at INIVA (Institute of International Visual Arts) and The Elephant Trust. Achiampong has presented projects within the UK and abroad including at Tate Britain/Modern, London; The Institute for Creative Arts, Cape Town (SA); and the 57th Venice Biennale, Venice (IT). He lives and works in Essex and London (UK).

Sénamé Koffi Agbodjinou is an architect and anthropologist, the creator of the collaborative research platform L'Africaine d'architecture, which works on the idea of “rooted modernity” with the ambition to provide the conceptual means of an architectural alternative that values the canons, dynamics, and resources that are owed to the social environment. He leads WoeLabs (African Spaces of Technological Democracy), a network of atypical places that make it possible to pool intelligences and mix different populations while adopting practices with low environmental impact, and he also mentors a community of about thirty young boarders, copartners of the local collaboratives and bootstrapped businesses of the #SiliconVilla program. Koffi currently lives and works between Lomé (TG), and Paris (FR).

Bethlehem Anteneh is an architect and a game-thinking expert focusing on environmental transformation—how we can use and understand it. She specializes in the possibilities arising from analogue–digital spaces and their game-thinking overlap to design frameworks that elevate human perception, experience, and the problem-solving instinct. In this field, she has worked by conducting workshops, presenting talks, and designing platforms with partners and organizations internationally in more than 25 countries in Africa and Europe. Currently, she is the Game-Thinking Lead on the project “Enter Africa–Gamify Your City Future!” for the Goethe Institut. She has cofounded an international gamification network called Chewata-Awaqi and is a founding member of the Ethiopian Games Association. She lives and works in Addis Ababa (ET).

Biographies

Younes Baba-Ali makes unconventional, intelligent, and critical art, mostly in public spaces or places not commonly known to art practice. As an artist-chemist he measures and mixes technology, objects, sound, video, and photography with political, social, and ecological issues. Born in 1986 in Oujda (MA), he graduated from l'Ecole Supérieure des Arts Décoratifs de Strasbourg (FR) in 2008, and from l'Ecole Supérieure d'Art d'Aix-en-Provence (FR) in 2011. He was awarded the Dak'Art 2012 Léopold Sédar Senghor prize and won the Brussels ArtContest 2014 Boghossian prize. His works are represented in various collections including the Kanal-Centre Pompidou in Brussels and Mu.ZEE, Ostend (BE). Baba-Ali lives and works in Casablanca (MA) and Brussels (BE).

Nothando Bhebhe is a long-standing member of the Marigold beadwork co-operative (www.marigoldbeads.com) based in Bulawayo (ZW).

David Blandy has established his terrain through a series of investigations into the cultural forces that inform and influence him; in recent works he examines human consciousness within the digital world. His works slip between performance and video, reality and construct, using references sampled from the wide, disparate sources that provide his (and our own) individualist sense of self. Blandy also has a collaborative practice with artist Larry Achiampong. He is represented by Seventeen Gallery, London, and his films are distributed by LUX, London. Blandy lives and works in Brighton and London (UK).

Joni Brenner, born in Zimbabwe, is a visual artist and lecturer in the division of Interdisciplinary Arts and Culture Studies at Wits University (University of the Witswatersrand), Johannesburg (SA).

Tegan Bristow is an artist and developer of interactive digital media in installations, performance, screen-based, and online media. She is a senior lecturer in Interactive Digital Media at the Wits School of the Arts, Johannesburg (SA), and Director of the Fak'ugesi African Digital Innovation Festival since 2016. Bristow specializes in African art, culture, and technology and is the editor of the *Ellipses Journal for Creative Research*. In 2017 she completed a PhD on *Decoloniality and Actional Methodologies in Art and Cultural Practices in African Cultures of Technology* at the Centre for Interdisciplinary Arts at the University of Plymouth (UK). In 2015 she curated the Post African Futures exhibition at the Goodman Gallery in Johannesburg. Bristow currently lives and works in Johannesburg.

Manuel Bürger designs communication, mainly for cultural institutions. The Laboratory of Manuel Bürger has been in charge of the transmediale festival in Berlin since 2012 and also designed the visual identity for the HeK (House of Electronic Arts) Basel. In 2009 he designed the highly acclaimed book *Digital Folklore: To Computer Users, with Love and Respect*. In 2020, Bürger designed the identity of the German Pavilion at the 17th Venice Architecture Biennale (Project 2038) as well as the look of the Riga International Biennial of Contemporary Art in Latvia (RIBOCA). He teaches at Burg Giebichenstein in Halle (DE) and at ETH Zurich (CH). Bürger lives and works in Berlin (DE).

Biographies

Kombo Chapfika is a multidisciplinary artist. His work centers on social commentary, and reconciling the seemingly disparate elements of his upbringing in Zimbabwe with his experiences in America, where he studied and worked. His recent body of work is based on the notion of Afrofuturism, creating a new identity informed by both the past and the present, African and Western culture. Chapfika has exhibited widely in Zimbabwe, South Africa, USA, and Germany. He currently lives and works in Harare (ZW).

Joshua Chiundiza is an audiovisual artist, emcee, and DJ. His work explores the sonic, visual, spiritual, and social aspects of his Chewa, Shona, and Nguni heritage, taking the form of music/sound recordings and performances, video art and performance art installations. He is the co-founder of The Monkey Nuts, an experimental art collective based in Harare, Zimbabwe. As a musician, Chiundiza has performed alongside renowned artists like De La Soul, Georgia Anne Muldrow, Akala, and The Avenor. In 2018, he was artist-in-residence at the Fak’ugesi African Digital Innovation Residency in Johannesburg. Chiundiza currently lives in Harare, where he works from his Studio Husikisiki.

Cuss Group is a Johannesburg-based art collective. Formed in 2011, the group uses video, installations, and performance to explore the commercial, cultural, and technological forces that shape the complex realities of postapartheid South Africa. As one of the first local art collectives to focus on digital technologies, they have shown their work widely in Europe, offering hyperreal, politically charged visions of contemporary (un)reality. CUSS was founded by Ravi Govender, Jamal Nxedlana, and Zamani Xolo. Over time the collective has expanded to include Lex Trickett and Christopher McMichael.

Bubblegum Club, which is associated with the Cuss Group, is a platform for youth culture, fashion, music, and visual art in South Africa that balances on the nexus between arts and urban consumer fetishes. Divided into an online magazine and a “content production studio,” it forms a bridge between institutional spaces, which represent access and privilege, and innovative, interdisciplinary artists.

Mehdi Derfoufi is associate professor of cultural and media studies at the University of Paris 8, a researcher at the university Laboratoire d’Etudes de Genre et de Sexualités (LEGS), as well as a member of the Observatoire des Mondes Numériques en Sciences Humaines (OMNSH). He holds a PhD in film studies. His research interests include gender and race representations in the media (cinema, video games, TV series) and postcolonial theory. Derfoufi currently lives and works in Saint-Denis (Greater Paris, FR).

Mamadou Diallo is a contributing editor of *Chimurenga*, a contributor to Dakar-based Wolof news site *Lu Defu Waxu* and a PhD candidate at the Department of Middle Eastern, South Asian and African Studies at Columbia University, New York City. Between 2010 and 2019, he mostly wrote on artistic practices in Dakar (SN), and political and cultural histories of postcolonial West Africa. He is now conducting research on the secular from the vantage point of Senegalese laïcité.

Biographies

Sunny Dolat is an independent fashion curator, cultural producer, and creative director who works independently as well as in The Nest Collective, which he co-founded. He centers his practice on making unapologetic statements about the beauty and dignity of black skin, through works such as the video art piece *When We Are/When We Are Not*, which meditates on black death, grief, silence, and resilience, and the fashion book *Not African Enough*, a voyage into contemporary Kenyan fashion and exploration of wider issues regarding Africa's place in global cultural debate and dialogues. In 2019, he curated and performed *In Their Finest Robes, The Children Shall Return*, an expansive fashion installation and ritual staged on the shores of São Tomé and Príncipe, for the N'GOLÁ Biennial of Arts and Culture. Dolat currently lives and works in Nairobi (KE).

Amal Hassan Fadlalla is a professor of Women's Studies, Anthropology, and Afro-American and African Studies at the University of Michigan, Ann Arbor. Her research interests and teaching focus on global issues and perspectives related to gender, health, reproduction, diaspora, transnationalism, population, development, and human rights and humanitarianism. She holds BSc and master's degrees in Anthropology from the University of Khartoum (SD), and a PhD from Northwestern University, Evanston, IL (US). She is the author of *Branding Humanity: Competing Narratives of Rights, Violence and Global Citizenship* (2019) and *Embodying Honor: Fertility, Foreignness, and Regeneration in Eastern Sudan* (2007). She is also the coeditor of the book *Gendered Insecurities, Health and Development in Africa* (2012), and the *Humanity Journal Issue Human Rights and Humanitarianism in Africa* (2016). She lives between Sudan and the USA.

Oulimata Gueye is a Senegalese and French art critic and curator, who has been studying the impact of digital technology in Africa. She explores the potential of (science) fiction, literature, contemporary art, popular culture, and micropolitics to develop critical analysis and alternative positions. Gueye uses the concept of "Afrocyberfeminisms" to investigate the place of genre and race in technologies. From 1998 to 2011, Gueye cohosted numerous international multidisciplinary artistic events. She holds a master's in Cultural Management and studied Art and Language at the École des Hautes Études en Sciences Sociales, Paris. She co-curated the exhibition *Digital Imaginaries—Africas in Production* at ZKM | Karlsruhe and the Afropixel #6 Festival. Gueye currently lives and works in Paris (FR).

Milumbe Haimbe is a painter and digital illustrator. She was educated at the Copperbelt University in Kitwe, Zambia, and graduated with a bachelor's degree in architecture, and obtained her master's degree of Fine Arts from the Oslo National Academy of the Arts in Norway. Drawing on a background of painting, her art practices are based in digital illustration, including sequential art as an intermedial process that combines and integrates illustrations and written texts into narratives. Her interests are related to intercultural issues, focusing on the forms of representation of cultural minorities within the context of popular media.

Biographies

Scott Hazelhurst is professor of bioinformatics in the School of Electrical and Information Engineering, and the Sydney Brenner Institute of Molecular Bioscience at Wits University (University of the Witwatersrand), Johannesburg (SA).

Russel Hlongwane is a cultural producer and creative industries consultant. His area of interest is in heritage, tradition, and modernity in South Africa and Africa as a broader frame. He engages with these themes through the fields of design, visual cultures, urbanity, technology, writing, and more recently through film, and works with a broad range of arts organizations, including Arterial Network, the Performing Arts Network of South Africa, KZNSA Gallery, and ASSITEJ. Hlongwane cofounded Onexus Music Business, a music business education company, and also established a lean consultancy, Cultural & Creative Commerce. He currently lives and works in Durban (SA).

Enrico Ilie gained a PhD in social and cultural anthropology from the University of Halle, Germany. After holding positions as assistant professor at the University of Halle and Ahfad University for Women, Sudan, he is currently an academic staff member at the Institute of African Studies at Leipzig University and a member of the Law, Organization, Science and Technology (LOST) Research Group. He was Urgent Anthropology Fellow: Sudan at The British Museum / Royal Anthropological Institute, London (2016–2018), and in 2019, he worked as postdoctoral researcher in a project of the Institute of Development Studies, University of Sussex, Brighton (UK). Currently, he leads a research team studying gold mining in Sudan's border regions, as part of Rift Valley Institute's X-Border Local Research Network.

Olalekan Jeyifous received a BArch. from Cornell University, New York, and is a Brooklyn-based artist/designer, whose work reimagines social spaces around issues, which explore the relationship between architecture, community, and the environment. His work has been exhibited at venues such as the Studio Museum in Harlem, the MoMA, the Vitra Design Museum, and the Guggenheim in Bilbao, Spain. He was recently named one of the 2020 Emerging Voices by the Architectural League of New York. Jeyifous has spent over a decade creating large-scale artworks for a variety of public spaces. His banner wrap for the Corcoran Garage in Durham, North Carolina (US), received the Americans for the Arts Public Art Network Year in Review Award in 2019. He also created a 50ft-tall sculpture for the 2017 Coachella Valley Music and Arts Festival, and four large sculptures for Public Square in downtown Cleveland, Ohio (US).

Mwenya B. Kabwe is an award-winning theater maker, arts educator, and facilitator of creative processes. She has a master's degree in Theatre and Performance with a focus on theater making from the University of Cape Town, where she was a lecturer in the Drama Department. Her interests include contemporary African theater and performance, migration, immersive and site-specific performance, African futurism, as well as collaborative and interdisciplinary creative practices. Her publications include *Performing Africa Differently: A re-imagining of Adrienne Kennedy's Funnyhouse of Negro* (2013) and *Mobility, Migration and "Migritude" in Afrocartography: Traces of Places and All Points in Between* (2015). She currently

Biographies

teaches at the Market Theatre Laboratory in Johannesburg (SA) and is a PhD candidate at the Centre for Theatre, Dance and Performance Studies in Cape Town (SA). She lives and works in Johannesburg (SA).

Wanuri Kahiu is a filmmaker, speaker, and science-fiction writer. Her short award-winning science fiction film *Pumzi* (2009) about futuristic Africa premiered at the Sundance Film Festival (2010) and received international acclaim. In 2018, Kahiu's award-winning film *Rafiki* was the first Kenyan film to be invited to the Cannes Film Festival and has since won multiple awards across the world. Kahiu is a cultural leader for the World Economic Forum, an advocate for Freedom of Expression, and an AFROBUBBLEGUM activist—championing the need for the creation and curation of fun, fierce, and frivolous African art. Kahiu is currently working on adapting Octavia Butler's *Wild Seed* novel for Amazon Studios and *Once on This Island* for Disney. Kahiu was named TIME magazine's 100 Next in 2019. She lives and works in Nairobi and Mombasa (KE).

Isaac Kariuki is a visual artist and writer, working with images, video, lectures, and performance. He holds an MA from Central Saint Martins, London, with a concentration in digital art, and is the founder of Diaspora Drama—a biannual publication exploring creative people of color with overarching themes of the internet and technology. Kariuki's work centers on surveillance, borders, the black market, and internet culture. He has exhibited at the Tate Modern, Kadist, Paris, and the Kampala Art Biennale among others, and has given lectures at the Tate Britain and the Chelsea College of Arts. His writing has appeared in publications including *Dazed magazine*, *New York Magazine*, and *IN Magazine*. Kariuki lives and works between Nairobi (KE) and London (UK).

Francois Knoetze is a Cape Town-based performance artist, sculptor, and filmmaker known for his sculptural suits and experimental video art. His work highlights the connections between social history and material culture. He completed an MFA at Michaelis School of Fine Art, University of Cape Town, in 2015. That year, Knoetze was featured as one of the Mail & Guardian Newspaper's Top 200 Young South Africans. In 2016 he was the Nafasi Art Space artist-in-residence laureate (Dar es Salaam, TZ) and attended the OMI International Art Center Residency Program (New York, US) in 2017. In 2018 he participated in the *Digital Imaginaries—Africas in Production* exhibition at the ZKM | Center for Art and Media (DE). In 2019 his work was exhibited at the Centre Pompidou, Paris (FR), as part of *Cosmopolis #2*. He is a recipient of the Hivos' Digital Earth Fellowship.

Bettina Korintenberg holds a PhD in cultural studies and is head of ifa Galleries. From 2016 to 2020, she was curator at the ZKM | Karlsruhe. Her curatorial and academic practice focuses on critically interrogating digital and global media ecology and revising the history of ideas of Western-influenced modernity against the backdrop of current social and ecological transformations. She is especially interested in exploring alternative space-time configurations and forms of social collectivity through interdisciplinary and collaborative processes. In addition to her curatorial work in institutions

Biographies

and on independent projects, she is the author of various contributions to catalogues and academic volumes. Korintenberg lives and works in Stuttgart and Berlin (DE).

Siri Lamoureaux is currently a postdoctoral researcher at the University of Siegen (DE). She is also a member of the Law, Organisation, Science and Technology (LOST) group at Martin Luther University, Halle-Wittenberg (DE). She has conducted research on gender, Christianity, morality, technology, literacy, conflict, and identity with a focus on the Nuba Mountains in Sudan. Connected with her various projects are her broader theoretical interests: semiotics, pragmatic theory, cultural and linguistic translation, science and technology studies, forms of language in circulation and development, politics, and social movements. Her current research investigates new space science projects in Africa, including Sudan's first satellite and the Square Kilometer Array project.

Wale Lawal is a writer, research and consulting professional, and was recently named in the Quartz list of top African innovators. Educated at the University of Bath, the London School of Economics, and the University of Oxford (UK), Lawal is a senior researcher at Harvard Business School's Africa Research Center, a co-founder of GatePass startup, and the founder and editor-in-chief of *The Republic*, a journal of Nigerian and African affairs.

Achille Mbembe is a historian, political theorist, and public intellectual. His research fields are African history and postcolonial studies. He earned his PhD 1989 in history at the Sorbonne, Paris (FR). After having held positions between 1988 and 1992 at Columbia University and the University of Pennsylvania (US), he was visiting professor at several American universities. Between 1996 and 2000 he was executive director of CODESRIA (Council for the Development of Social Science Research in Africa) in Dakar (SN). Since 2003 Mbembe has been a research professor in history and politics at the University of the Witwatersrand in Johannesburg (SA). Amongst his recent and most prominent books are *Brutalisme* (2020), *Politiques de l'inimitié* (2016), *Critique de la raison nègre* (2013), and *Sortir de la grande nuit* (2010).

Maurice Mbikayi is an artist who works with sculptures, photographs, and performances. He interrogates the proliferation of technological commerce in the geopolitical system, and his main interests lie in the impacts of contemporary technology on humanity, resource extraction, and low-wage labor abuse. He graduated in Graphic Design and Visual Communication from the Académie des Beaux-Arts in Kinshasa (CD), and holds a MA of Fine Arts from the Michaelis School of Fine Art, Cape Town (SA). Mbikayi's work has recently been acquired by the Smithsonian Institution's National Museum of African Art, and has been exhibited at various institutions including the Urban Institute for Contemporary Arts of Michigan, the South Africa National Gallery, and the Zeitz Museum of Contemporary Art Africa (MOCAA). Mbikayi lives and works in Cape Town (SA).

Thomas Hervé Mboa Nkoudou is a social science researcher with interests in the Maker Movement in French-speaking African countries, and in scholarly communication and digital

Biographies

humanities. He works on the concepts of technocoloniality and cognitive justice and takes a critical look at digital technologies as a powerful tool of sustainable local development. Currently, he is a visiting researcher with OpenAIR (Open African Innovation Research) at the Centre for Law, Technology, and Society at the University of Ottawa, Canada. Mboa is very active in the field of Open Science and Hardware (OSH), where he coleads the AfricaOSH network. Due to his background in biochemistry, Mboa is also deeply engaged in promoting DIYbio and democratizing biotechnology in Africa. His work with DIYBio is visible through his own biohackerspace in Cameroon: the Mboalab. He lives and works in Yaoundé (KM).

Julien McHardy is a para-academic, designer, curator, editor, and publisher—making exhibitions, performances, and books. His work is collaborative, crossing disciplinary and geographic boundaries in pursuit of questions, stories, and ways of working that can help to make sense of our intimately connected lives on this fragile planet. After having lived in Germany, the UK, and Belgium, he currently lives and works in Amsterdam (NL). Julien co-initiated the *Digital Imaginaries* project, co-curated the *Digital Imaginary* events in Dakar and Karlsruhe, and co-edited this publication.

The Nest Collective was founded in 2012, a multidisciplinary Kenyan arts collective working in Nairobi, which uses film, fashion, literature, visual arts, events, and music to work in the intersections between aesthetics and communities; blackness/Africanness, feminism, and queer theory; as well as design and technology, specifically located in the Kenyan experience. Sunny Dolat and Njoki Ngumi are members of The Nest Collective.

Marcus Neustetter is an artist and cultural activist. His artistic practice focuses on the intersections of art, science, and technology, and ranges from drawing, sculpture, installations, performance, and multimedia to site-specific and socially engaged interventions. Interested in working across disciplines and in practice-led research, Neustetter values process, experimentation, collaboration, and dialogue with coproducers and audience as an essential part of his practice. As artistic director, facilitator, researcher, and strategist to various creative industry areas, he finds himself building opportunities and networks that develop interests beyond his personal artistic practice. He currently moves between Johannesburg (SA) and Vienna (AT).

Njoki Ngumi is a healthcare giver and consultant, filmmaker, artist, writer, and feminist thinker. As a founding member of The Nest Collective, she has been cowriter, screenwriter, and script supervisor for most of the Nest's film works, and is expanding her filmmaking practice as codirector of the upcoming documentary work *The Feminine and the Foreign*. In addition, she coordinates the Nest's external collaborative projects, and serves as programs and strategy lead at sister company HEVA. Ngumi leads and participates in policy making and strategy, media analyses and debates, public education and dialogue, groundwork, pilots and practical interventions in the creative and other allied sectors, especially as pertains to the well-being and welfare of young people, women, LGBTQ+-identifying and gender-diverse folk, Africans, black people, and other marginalized groups. She currently lives and works in Nairobi (KE).

Biographies

Nanjala Nyabola is a writer, independent researcher, and political analyst. Her work focuses on conflict and postconflict transitions, with a focus on refugees and migration, as well as East African politics generally. Her work has appeared in numerous publications including *Foreign Policy*, *Foreign Affairs*, *Al Jazeera*, and *World Politics Review*. She is the author of *Digital Democracy*, *Analogue Politics: How the Internet Era is Transforming Kenya* and the coeditor of *Where Women Are: Gender and the 2017 Kenyan Elections*. Nanjala holds a BA in African studies and political science from the University of Birmingham (UK), an MSc in Forced Migration, and an MSc in African Studies, both from the University of Oxford, and a J.D. (Juris Doctor) from Harvard Law School (US). Nyabola is currently based in Nairobi (KE).

DK Osseo-Asare is the co-founding principal of the architecture and integrated design studio Low Design Office (LOWDO) and an assistant professor of architecture and engineering design at Pennsylvania State University, where he runs the Humanitarian Materials Lab and serves as associate director of AESEDA, the Alliance for Education, Science, Engineering and Design with Africa. His research explores material assemblies optimized for massively scalable radical resilience, and integrates synergetics, design innovation, vernacular technology, open-source urbanism, bio-digital fabrication, and architecture robots. Osseo-Asare is based between State College, Pennsylvania (US), and Tema (GH), where he coleads, together with Yasmine Abbas, the pan-African maker tech project Agbogloboshie Makerspace Platform (AMP).

Tabita Rezaire is an artist and looks at how colonial histories and their legacies affect our capacity to connect to ourselves, each other, the land, and the cosmos. She envisions network sciences—organic, electronic, and spiritual—as potential healing technologies. Through screens and collective offerings, her practice is an invitation for political resistance, social transformation, and spiritual healing. She holds a BA in economics and an MA of Research in Artist Moving Image from Central Saint Martins, London. She has shown her work internationally at Centre Pompidou Paris, MoMa New York, MASP São Paulo, Gropius Bau Berlin, ICA and Tate Modern London. Rezaire currently lives and works in Cayenne (FG), where she is birthing AMAKABA, a yoga platform.

Judith Rottenburg is a research associate at the Institute of Art and Visual Studies at the Humboldt University of Berlin and a member of the international research project “Aby Warburg’s Legacy and the Future of Iconology.” Her research concerns traveling images, forms, ideas and objects in the art histories and historiographies of Africa and Europe in the 20th and 21st centuries. From 2017 to 2020, she was a research associate at the Ludwig Maximilian University of Munich (LMU) and she conducted research on pan-African festivals and the Cultural Cold War. Previously, she was a research fellow at the German Centre for Art History in Paris and completed her PhD in 2017 at LMU, where she worked on the arts in postindependence Senegal, circa 1960–1980. Rottenburg currently lives and works in Berlin (DE).

Richard Rottenburg is research professor of science and technology studies at Wits University. Inspired by renditions of

Biographies

pragmatist social theory and the material-semiotic approach, forms of technicization are at the heart of his current work. His inquiries foreground the making of evidence and infrastructure and ask how related practices are mobilized to design and critique emergent futures. He is mainly known for his book *Far-fetched Facts* (2009), which explores new departures for the postcolonial examination of science and technology beyond the metropolises of technicization. Rottenburg currently lives and works in Johannesburg (SA) and Berlin (DE) and is the initiator of the project *Digital Imaginaries—Africas in Production*.

João Roxo is a designer and visual strategist. He is the co-founder and head of design at Anima Creative Studio. Graduated with a BA from the University of Aveiro, he completed an MFA from the Design Department at the Sandberg Instituut in Amsterdam. The final research project *The Hands That Feed You* reflects on certain dynamics of global dependency, focusing on the North-South divide. It echoes present-day situations and constructs hypothetical scenarios of emancipation, where intuition, resourcefulness, and craftsmanship become core values in revolutionary striving to reinvent mankind. João is interested in exploring new and sustainable educational models, founded on creative self-reliance. Currently he is working between Maputo (MZ) and Amsterdam (NL).

Timm Pascal Sureau is a postdoc researcher. He received his MA in social anthropology, human geography, and computer science from the Free University of Berlin in 2010, and his PhD in 2017 at the Martin Luther University Halle-Wittenberg (DE). In 2019, he joined the SFB 1171 Affective Societies in the project “Sentiments of Bureaucracies: Affective Dynamics in the Digital Transformation of German Immigration Management.” He focuses on digitalization, state formation, technicization of migration management, and political narratives of marginalization. His regions of interests are in Germany, Sudan, and South Sudan. More recently, he is doing an ethnography of programming concentrating on the digital processes by which state stability and legitimation are supported. Timm Sureau currently lives in Halle (Saale) and does research in Nürnberg (DE).

Joseph Tonda, professor of sociology at Omar Bongo in Libreville, Gabon, is a sociologist and anthropologist; a specialist of Congolese and Gabonese culture, society, and politics; and a regular visiting instructor at the École des Hautes Études en Sciences Sociales, Paris. Tonda received his PhD at the University of Grenoble and his habilitation at the EHESS. He is the author of *The Modern Sovereign: The Body of Power in Central Africa (Congo and Gabon)* (2005). In 2020 *L’impérialisme postcolonial: Critique de la société des éblouissements* (2015) and *La guérison divine en Afrique centrale (Congo, Gabon)* (2002) were translated into English. Tonda’s areas of specialization include the anthropology of religion, medicine, and the cults of the body in modern Central Africa as well as the relationship between violence, power, and the imaginary in Central Africa. Currently, he is living and working in Libreville, Gabon, at the Université Omar Bongo.

Aude Tournaye is an interdisciplinary practitioner based in Brussels. She obtained a MA in art history, archaeology, and philosophy at the VUB in Brussels (BE) after which she continued

Biographies

in criticism and curatorship at Columbia University and the Université Paris 1 Panthéon-Sorbonne. She co-produced exhibitions such as *Saout l'Mellah* (MA), the 6th Biennale de Lubumbashi (CZ). As a curator, researcher, and writer, she is a collaborator at Twenty Nine, GLUON, Limiditi and Mousse—Nomadic Arts Center. Her texts have appeared in exhibition catalogs and magazines such as *De Witte Raaf*, *Rekto:Verso*, *African Arts*, *H Art Magazine*, *Daily Wrestling | Without Negotiation* (Dakar, 2018), and *Material Insanity* (Marrakesh, 2019).

Minnette Vári is an artist. Her videos and drawings conflate self and history, examining how identity arises out of the traumatic South African past. Vári has exhibited her work internationally since the early 1990s, in solo exhibitions and in group exhibitions such as *Banquet*, ZKM | Karlsruhe (DE); *Personal Affects: Power and Poetics in Contemporary South African Art*, Museum for African Art, New York (US); the Venice Biennale (IT) in 2001 and 2007; the 10th Havana Biennale (CU) and *The Divine Comedy: Heaven, Hell and Purgatory Revisited by Contemporary African Artists*, MMK Frankfurt (DE). She lives in Johannesburg (SA).

Michel Wahome is a researcher of postcolonial science and technology in Africa. Her doctoral research is on the evolution of the digital landscape and economy in Nairobi, Kenya, and how it came to be expressed in the digital entrepreneurship imaginary of Silicon Savannah. As a researcher with the Geonet project based at Oxford Internet Institute, her analysis of digital entrepreneurship arenas expanded to include six other African cities. Currently, Michel is a research fellow at the One Ocean Hub at the University of Strathclyde, where she has shifted the subject of her research from the new relationalities and materialities produced by digital technologies to contemporary knowledges about, yet ancient relationship between, people and the ocean. She lives in Balerno (UK).

Philipp Ziegler is curator and head of the Curatorial Department at the ZKM | Center for Art and Media Karlsruhe, where he has been responsible for numerous exhibitions since 2012. Before joining the ZKM, he curated in various galleries, institutions, and art spaces. In 2013 he co-curated the ifa tour exhibition *Future Perfect: Contemporary Art from Germany*, and in 2018 he was one of the curators of the 6th Guangzhou Triennial at the Guangdong Museum of Art, Guangzhou, China. Together with Oulimata Gueye and Julien McHardy, he curated the exhibition *Digital Imaginaries—Africas in Production* at ZKM | Karlsruhe in 2018, and coedited this publication. He lives in Stuttgart (DE).

Title pages

Critique/Commerce

60/61

Marcus Neustetter, *Lead the Way – Embedded Conjecture*, 2018. Installation view, Wits Art Museum, Johannesburg (SA), 2018. Mobile phone store, Dakar (SN), 2018.

Form/Content

80/81

Binta Sylla aka „Thiat“ and Inas Dasylya, *Danse et numérique*. Performance. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018.

Results of the workshop *Images, écrans et réalité virtuelle*. Afropixel #6, Kër Thiossane, Dakar (SN), 2018.

Fragmentation/Connection

108/109

Digital Imaginaries. Installation view, ZKM | Karlsruhe (DE), 2018. Telecommunication masts, Dakar (SN), 2018.

Dystopia/Utopia

162/163

Francois Knoetze, *Core Dump Dakar*, 2018. Performance. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018. Garden Jet d'Eau, Kër Thiossane, Dakar (SN), 2018.

Progress/Tradition

190/191

Marcus Neustetter, *Lead the Way – Speculative Scapes*. Performance with Lamine Kora Kouyaté and Fatou Cissé. Afropixel #6, Kër Thiossane, Dakar (SN), May 7, 2018. Tabita Rezaire, *PREMIUM CONNECT*, 2017. Installation view, Wits Art Museum, Johannesburg (SA), 2018.

Commons/Uncommons

226/227

Setup of the installation during the workshop *Spacecraft_KT. Fabrication d'un fablab mobile*. Afropixel #6, Kër Thiossane, Dakar (SN), May 5–10, 2018. Jardin Jet d'Eau, Kër Thiossane, Dakar (SN), 2018.

Origin/Circulation

266/267

Courtyard of Defko Ak Niëp Lab. Kër Thiossane, Dakar (SN), 2018. *It's Alive! AR Workshop*. Wits Art Museum, Johannesburg (SA), August 18, 2018.

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Isaac Kariuki, *Weaponise the Internet*, 2017. Photograph.

Cover image (background) and endpapers:

Telecommunication mast, Dakar (SN), 2020.

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Larry Achiampong 349 (bottom)
Larry Achiampong & David Blandy 351
AMP 166, 169, 196/197, 200/201, 203, 204/205, 208/209
Bethlehem Anteneh 254
Dagmawi Bedilu 258/259
Boma France 219
Tegan Bristow, Alex Coelho, Russel Hlongwane, João Roxo 280, 281, 284, 285 (background)
Brooklyn Museum, Gift of Marcia and John Friede, 76.20.4. 95
Manuel Bürger 219 (background sketch)
Mandisa Buthelezi 278
CUSS Group 367
Christoph Deeg 252
Jean Depara 98, 102/103
Eiffage-Layepro 171, 173, 175
Elise Fitte-Duval 33, 34, 35, 36, 37, 38-39, 40, 41, 80, 81, 164, 165, 178, 192, 194, 206, 228, 229, 233, 234, 237, 246/247, 309, 311, 313
Funsoft 159
Milumbe Haimbe 369
Lana Haroun 133
Inspired Minority Pictures and Olalekan Jeyifous & Wale Lawal 371
Wanuri Kahi 373
Wesley Kiriniya 155 (middle)
Isaac Kariuki 475 and cover image
Kiro'o Games Studio 152, 155 (top)
Sénamé Koffi Agbodjinou and Manuel Bürger 216-227
Sénamé Koffi Agbodjinou and studio +fronczek 222/223
Leti Arts Studio 157
Mark Lewis 42, 43, 44, 45, 46/47, 60, 146, 191, 355 (top), 359, 361 (top), 363, 383 (bottom), 389
Lomay Studio 158
Emmanuel Louisgrand 166
Zivanai Matangi 267, 269, 365
Masseka Game Studio 156
Saliou Nassirou Cover image (background), endpapers
Marcus Neustetter 262, 265
Nyamakop 160

Jamal Nxedlana 70, 72/73, 76/77
picture alliance/REUTERS/THOMAS MUKOYA 114/115, 118/119
Tabita Rezaire Studio 320-339, 385 (bottom)
Patrick Schneider 128
Timm Sureau 136
The Nest Collective 65, 66, 69, 387
Ashley Walters, courtesy of Spier Arts Trust 88, 91, 92, 94
Weza Interactive Entertainment 155 (bottom)
Liz Whitter 285, 357
Christina Zartmann 61, 109, 233 (background), 234 (background), 237 (background), 249, 268
Philipp Ziegler 381 (top)
ZKM | Karlsruhe, photo: Felix Grünschloß 48, 50 (bottom), 51, 108
ZKM | Karlsruhe, photo: Tobias Wootton 49, 50 (top), 52/53, 148, 212/213, 225, 349 (top), 353, 355 (bottom), 361, 377, 379, 381 (bottom), 383 (top), 385 (top)

VG Bild-Kunst, Bonn 2021
for Larry Achiampong

The Exhibitions

***Digital Imaginaries—
Non-Aligned Utopias***—
Kër Thiossane. Villa for Art
and Multimedia, Dakar
May 7–30, 2018

Curated by
Oulimata Gueye, Julien McHardy,
Marion Louisgrand Sylla,
Daniel Sciboz

Project team
Marion Aidara, Martha Cissé,
Amayel Ndiaye, Daouda Koté,
Cyrille Essoh, Idrissa Sall

***Digital Imaginaries—Non-Aligned
Utopias*** took place at Kër
Thiossane as part of
the Afropixel #6 Festival.

Digital Imaginaries—Premonition
Wits Art Museum, Johannesburg
July 24–September 23, 2018

Curated by
Tegan Bristow, Fiona Rankin-Smith

Curatorial assistance
Kiera Crowe-Pettersson

Digital Imaginaries: Premonition
took place at the Wits Art Museum
in partnership with the Fak’ugesi
African Digital Innovation Festival.

***Digital Imaginaries—
Africas in Production***
ZKM | Center for Art and Media
Karlsruhe
November 17, 2018–March 17, 2019

Curated by
Oulimata Gueye, Julien McHardy,
Philipp Ziegler with Bettina
Korintenberg and Barbara
Kiobassa (education)

Project team
Anne Däuper, Natascha Daher,
Viktoria von Pidoll, Christina
Zartmann

Digital Imaginaries is a joined
project of Kër Thiossane in Dakar,
Senegal; Wits Art Museum in
Johannesburg, South Africa; and
ZKM | Center for Art and Media
Karlsruhe, Germany, initiated by
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Digital Imaginaries.

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The Book

***Digital Imaginaries.
African Positions Beyond Binaries***

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Kër Thiossane
villa pour l'art et le multimedia



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The two-year, three-city exhibition and research project *Digital Imaginaries* brought together artists, makers, architects, and social scientists to examine digital futures on the African continent. This book presents resulting artistic and scholarly productions alongside additional works.

The contributions in this volume deal with diverse digital phenomena: From the continued impact of toxic histories and the conflict-ridden extraction of minerals critical to the digital economy to video games, experimental architecture, the reappropriation of smart city and innovation practices, the commoning of resources, attempts to digitize voter trust, calls for digital resistance and decolonial healing, the relationships between humans and technics, utopia and dystopia, and the limits of reason. The contributions articulate imaginaries and agendas capable of staving off the domination of market interests, state surveillance, and postcolonial hegemonies. Starting from positions on the African continent and in the African diaspora, the works collated here contribute to the global struggle for more diverse and inclusive digital futures.

Edited by Richard Rottenburg, Oulimata Gueye, Julien McHardy, Philipp Ziegler for Kër Thioassane, Wits Art Museum, and ZKM | Karlsruhe, published by Kerber.



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