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Critical Artistic Media Practices (*C.A.M.P.*) are hybrid methodologies and forms of work that move beyond the models that no longer respond to the traditional challenges of globalism.

Closely linked to the development of critical maker movement and the cultures of free and open societies they explore spaces of practice that can help us to better navigate today's media infused battles for truth and knowledge.

This *C.A.M.P.* booklet and the attached folio cards act as an open educational resource to reflect upon the experiences of the *South-South Medialab Collaboration* Fellows in 2018. As an international knowledge transfer program oriented towards the independent media sectors in East-Africa and South-East Asia the *SSM-Lab 2018* program by *icebauhaus* enables participants greater opportunity to access information through mechanisms supporting freedom of expression.

Based on a variety of academic reflections, non- scientific research and thematic exploration the authors here want to contribute to the discussion of forms of collaboration and models of creative work and how people can engage in to test and move beyond models that may no longer respond to the challenges of instantaneous or simultaneous communication, borderless movement of capital, data and knowledge.

The attached *C.A.M.P.* folio is designed as learning tool to discuss and develop contemporary and critical forms of creative media development work by focusing on the intentions and working methodologies of the *SSMLAB 2018* group of media activists, and based on their responses describing very personal experiences that explore artistic, journalistic, technical, and hacktivist practices worldwide themed mainly: why it is you do what you do?

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❞ art must be destructive and constructive.

This was the summary of the 1987 'Manifesto for the Unstable Media'[1] composed by the fledgling *V2_Institute for the Unstable Media* in Den Bosch, Netherlands. Indicating a necessary proposal and highly contemporary consideration of art as a socially and technologically directed realm, this vision ultimately veers us away from an understanding of art as decoration, application or whimsy. With the ability to access and make use of virtually any type of information, developing methodologies and taking action no longer needs to be based on a historical model or consensual modus operandi. Learning by doing, experiment, trial and error becomes possible thanks to the vast knowledge resources at our disposal that allow us to predict success, targets or goals. Basically, we can computationally avoid failure, but without the potential of failure to understand our actions, methodologies and process how can we innovate? What, new hybrid forms of practice, collaboration and models of creative work can we engage in to test and move beyond models that may no longer respond to the challenges of globalism, instantaneous or simultaneous communication, borderless movement of capital, data and knowledge? What kind of spaces do we need for such forms of practice, and does the opening up of critical spaces help us to better navigate today's media and journalistic battles for truth and integrity?

1. Why it is we do what we do?

This essay takes its cues from the *South-South Media Lab* residency exchange project (*SSMLab*), initiated by the Weimar based culture and media development association *icebauhaus* in close collaboration with *iceaddis* in Ethiopia and *common room* in Indonesia. The *SSMLab* programme matches 16 media and culture practitioners from Asia and Africa with host organisations within the same region. The initiative shares common roots with Critical Making, as well as with Critical Arts and Media Practices in that new actors in media and development share the same spirit of critically and constructively re-thinking global development. Most media and development programs focus on classical media and journalism, while the *icebauhaus* approach broadens the understanding of media as a field that includes citizen journalists and blogging. More often than not, access to information – which is the task of all media – is provided through critical media practices in shrinking spaces globally. The *SSMLab* aims to introduce new formats of collaboration between media centres and media professionals and to promote constructive and peaceful media work and discourse through the initiation of new working relationships across borders in the form of an in-residence program. The participants of the in-residence-program (Fellows) engage in a critical peer-to-peer environment with a focus on open and

free media technologies. In this context, participants and their host organizations are encouraged to approach issues of press freedom and peace, media art and local cultural work in new creative, experimental and interdisciplinary ways through digital means. Looking at the work, forms of production and the more personal elements that drive such a diverse group of cultural practitioners, *SSMLab* is producing an index or toolkit of 'critical media artistic practices' related to the working methodologies of the individual residents. A critical and reflective examination of political and social problems in countries of the Global South inform their work, where creative discourse and sensitive exchange of ideas and perspectives, as opposed to violent confrontation are both lived and experienced through the opportunity to explore personal forms of media artistic practice in new host locations. The promotion of peace and reconciliation is thereby equally inseparable from the more media-technological aspects of the initiative. Regardless of their specific professional contexts, all of the exchange Fellows are involved in unique forms of creative and critical practice (whether artistic, journalistic, technical, hacktivist or otherwise).

This essay is intended as a reflection on the diversity of such practice, looking at resonances that can be found, in particular within the broadening field of Critical Making, a rapidly growing area of activity, within which a notion of critical artistic media practice creates a framework for social, cultural and political discourse that connects practice and experience between media professionals from the Global North and South.

2. Critical Making

Critical Making itself is a relatively new and somewhat broadly used term, as different practitioners use it to define different activities. While it alludes to a long tradition of critical and socially transformative practices it is now commonly used in academia in teaching and in research, but also to describe many forms of citizen-driven grassroots movements, ranging from 'DIY Citizenship' (Ratto and Boler[2]) to 'Biohactivism' (Hacketeria[3]) to 'Critical Engineering' (Weise7[4]) all of which incorporate artistic methodologies, with considerable input by artists working with technology and communications structures for socio-political transformation.

As a particularly multi-disciplinary practice bridging numerous technical and artistic realms of thought and cultural outlook that aims to engage 'North' and 'South' in new creative alliances, critical media and maker programmes such as the *SSMLab* also work to actively erase lingering digital divides, supporting practitioners in and from LDCs[5]. With a common sense of purpose, as *SSMLab* Fellow from Tanzania Victor Nyang'a noted, "giving people as much freedom as possible to create communities and associations that at the same time allow them to act independently from such groups and their associations, an absolute space of freedom for all forms of creative and critical thought can be developed". Such programmes seek to establish a level playing field in which creative and critical approaches to the challenges of rural/urban transformation and interaction on both a global, regional and local scale can developed, i.e. issues related to the global food system, indigenous and minority rights, gender equity and the empowerment of marginalised members of society,

rural access to infrastructure and public services, climate change and nature protection, land-grabbing and the effects of uncontrolled rapid urbanisation, etc.

Surveying the exchange programme Fellows, after their residencies, they were asked to respond to a series of fundamental questions oriented towards their personal directions, world views, tools and experiences that support their form of expression. Asking, for example, 'Why it is you do what you do?', we were interested to know about the choices that cultural acteurs take, how they choose from an ever increasing vocabulary of tools, processes and mediums of expression. What can we learn from new forms of work and production? How are these applied to culture, education, or knowledge development practices that are based on experience and direct forms of interaction? The debates and initiatives involving hybrid practice such as those found in the growing Maker Movement, in particular that of Critical Making have brought numerous forms of such creative practice together, especially through the linking of art, media and technology. The proposal for a 'Critical Artistic Media Practice' (*C.A.M.P.*) is rooted in such an exploration, applying critical thinking and a revitalised sense of making to process and expression, for creative, socially reflective gain. It is also an attempt to respond to the sense of drift that debates around alternative facts, fake news and computational propaganda have on establishing what may or may not be true, verifiable and unbiased. Can we look at Critical Making as a model for better understanding a critical artistic media practice? In what ways do such forms of practice exist, and where are the intersections? It is with this spirit and questions in mind that a 'Critical Artistic Media Practices' folio of basic methodologies and world views based on the experience of 16 indi-

vidual activists – the *SSMLab* Fellows – all working in the 'Global South', often in contexts where freedom of expression may be hindered, or the means to express oneself publically may bring significant personal risk, has been produced.

3. Artistic Media Practice and the Critical Maker Movement

In a recent summary paper members of the *Global Innovation Gathering*[6] (GIG) Regina Sipos, Saad Chinoy and Ricardo Ruiz examined how the use of critical thinking can have impact in a technological practice closely rooted in, or informed by contemporary media and cultural work[7]. As a further contemporary reading of 'Critical Theory', which seeks to critique traditional culture and (in particular Western) society[8], rather than just simply analysing or describing it, Critical Making and its related practices seek to press for transformative, positive social change. Chinoy, himself a *SSMLab* Fellow from Singapore with a passion for coffee, technology, and open source philosophy, works as a publisher, conceptualizing tech solutions for a digital publishing company. He volunteers globally, bringing open tech and Critical Making solutions together. His residency took place in Khartoum, hosted by *Andariya*, an organisation that runs a digital cultural magazine on Sudan and South Sudan in both English and Arabic.
Looking at the historical background of the maker movement itself important discourse related to media , whether media theory, media arts, or media activism seems to be missing, although implicated in practice. Where many leading 'critical makers[9]' hail from such backgrounds, similarly we see *SSMLab* Fellows such as Chinoy and his colleagues examining

the societal impacts that can be achieved in the kinds of places their key activities take place, namely makerspaces through their work at the intersection of art, media and making. The direction taken by most of the *SSMLab* Fellows offers critical thinking, often using artistic methodologies as a way to rethink technical practices, similar to the direction taken in makerspaces. They seek to achieve a more reflective practice enabling the resources found within structures looking at them as enabling spaces, for a more "society-oriented and citizen-driven" practice. The origins of Critical Making practices lie to a large extent in scenarios such as critical technical practice, critical design and critical engineering. These all comprise cultural forms of media aesthetic and critical thought useful for the consideration of a critical artistic media practice. Indeed, in the space of Critical Making, the boundaries between an engineering practice and an artistic one are irreverently blurred, veering outside the framework of academia and into citizen based grassroots environments.

Within the rapidly evolving realm of maker practice and maker culture, academics and grassroots communities alike are starting to engage in Critical Making around the world – taking much of the historical baggage surrounding technology and media culture out of the Western realm into global regions of rapid and fundamental socio-political and economic transformation. With roots in critical design and critical engineering, such activities can help people better understand socio-technical relations and achieve more and better societal impact with their work – regardless of whether they are in a so-called 'industrial nation' or in an area with acute minimal infrastructure, for example post-conflict or post-disaster areas. Do- it-yourself activities (DIY) and maker culture

already allow for people to engage with technology outside of formal institutional contexts, and using critical thinking in DIY culture can help look beyond what may be an idealised, or in some cases elitist picture of the maker. According to artist Garnet Hertz there is a need to "reintroduce a sense of criticality back into post-2010 maker culture to un-sanitize, un-smooth and re-politicize it."[10] Critical maker culture, seen through the positions of the *SSMLab* Fellows, becomes such a socio-political pursuit. A critical artistic media practice becomes one about emancipation, empowerment, anti-establishment thinking and the sovereignty of individual, personal expression for the betterment of a community. In her reply to the *SSMLab* survey about personal methodologies, media and communications specialist Hirut Dawit, who works on the development of social and behavioural change, replied that "she believes in the power of media to change perception and social norms for better or for worse." She seeks to "use media as a channel to bring pressing issues like gender equality and human dignity to the forefront and challenge existing perceptions. It's essential to broaden our perspectives."

Critical Making is located at the intersection of hands-on making with art and academia, as both the latter spheres are able to afford a more liberal approach to the practice of making than individuals and organizations that depend on generating a surplus directly through their making. Thus, while academia explores the possibilities of communal making and makerspaces, it also questions "the maker movement" and in fact, the existence of any homogeneous group of makers. Sylvia Lindtner, Shaowen and Jeffrey Bardzell therefore refer to the variety of makerspaces around the world as a 'global assemblage'. The ontological framework of assemblages was

developed by Gilles Deleuze and Félix Guattari in 1980 and provides us with the means to understand assemblages – informal networks, movements, eco-systems – in all their systemic, interdependent social complexity, instead of analogous with the biological world. Aihwa Ong and Stephen J. Collier had defined a global assemblage as "the product of multiple de-terminations that are not reducible to a single logic. The temporality of the assemblage is emergent. […] As a composite concept, the term 'global assemblage' suggests inherent tensions: global implies broadly encompassing, seamless, and mobile; assemblage implies heterogeneous, contingent, unstable, par-tial, and situated." Based on this history of thought, Lindtner et al look at making as a global assemblage, using the concept to describe how there is no homo-geneous yet abstract global maker movement, but an assemblage made up of heterogeneous yet concrete local movements. If we want to grasp the global as-semblage of makers, we need to listen to the multi-ple stories of different makers and makerspaces. If we want to foster the global assemblage and amplify their voices globally, we need to foster exchange be-tween the different entities that together make up the assemblage.

This notion is mirrored in the *SSMLab* programme and also in the aforementioned *Global Innovation Gathering (GIG)*. While these kinds of networks are hard to grasp for those used to homogenous commu-nities with clear borderlines, their strength lies ex-actly in the 'blurry' definition of what they are: glob-al networks of tech hubs, media centres and social innovators. With strong roots in the Global South, they create meaningful connections and a platforms for cooperation between innovators and innovation spaces worldwide, and thus contributes to the co-cre-ation and adaptation of open, inclusive and sustain-able technologies. This approach to a community of practice, defined by a core of values of openness, trust and respect, not accurate borders, aiming at sustaina-ble impact instead of successful start-up exits, the sys-temic instead of linear understanding of what inno-vation is all about – creates a truly global innovative assemblage.

'Critical Art and Media Practices' are a prerequisite and simultaneously a result of innovation. Innova-tion here is not regarded as the creation of new tech-nical products and services, but as closely related to social processes, as Ricardo Ruiz Freire and Emma-nuel Costa outline in their study of socio-technical innovations promoting environmental, social and economic sustainability. They look back at the histo-ry of innovation quoting Benoît Goding who traced the term innovation to its Greek origin in the fifth century BC. "Initially, [it] had nothing to do with our current or dominant meaning of innovation as commercialized technical invention. Innovation […] was used in the context of abstract thinking – mak-ing new – as well as concrete thinking, opening new mines (sic). Innovation acquired its current meaning as a metaphorical use of this word. In the hands of ancient philosophers and writers on political consti-tutions, innovation was introducing change to the established order". This positive notion of innova-tion changed dramatically in the medieval period in Europe, which was disrupted by social innovators – or re-formers – and critical media practitioners such as Martin Luther, Huldrych Zwingli or John Calvin, but also socio-technological innovators such as Leon-ardo da Vinci. Even King Edward VI's "Proclamation against those who innovate" of 1547 could not stop this development of socio-technological innova-tion. Since the Industrial Revolution, innovation

has become an uncontestedly positive term closely linked to economic growth. Interestingly, the term technological innovation is attributed to Schumpeter's economic cycles theories – while Schumpeter in the original manuscript had used the German term Kombinationen (literally translating to 'combinations') to describe how the new comes into the world.

Social innovation which truly changes peoples' lives for the better is thus only achieved through combinations, through open collaborative practices. Open collaboration relies on trust – unless one believes in digital technologies such as digital ledgers or blockchains, which proclaim to eliminate the need for that very human feeling of trust and replace it with cryptography-based technologies that make trust superfluous. How to create trust, especially among remotely located individuals, is the big question in our times of political and social divisions. Trust within a global community requires innovation in three distinct but intertwined spheres: policy, community, and technology.

The rapid development of digital technologies since the 20th century has led to the so-called 4th Industrial Revolution – as Wikipedia, which in and of itself is one of the most prominent examples of how digital technologies influence the social and political arenas, puts it: "[The Fourth Industrial Revolution] is characterized by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres. It is marked by emerging technology breakthroughs in a number of fields, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, decentralized consensus, fifth-generation wireless technologies (5G), additive manufacturing/3D print-

ing and fully autonomous vehicles." Technology has never been disconnected from social innovation, but in our times influences the social, economic and political spheres to a degree that makes an increasing number of technologists rethink future trajectories of ever-increasing production and consumption, and instead focus on 'Computing within Limits'. The same academics who have tremendously advanced the field of Human-Computer Interaction – such as Bonnie Nardi, Bill Tomlinson, Alan Borning, Volker Wulf, Paul Dourish, or Lucy Suchman – now call for taking the same planetary limits which are obvious in sectors relying on extraction into consideration when thinking about technology. They explore "ways that new forms of computing support well-being while enabling human civilizations to live within global ecological and material limits." This concern becomes evident in initiatives such as the *SEED Network*, which seeks Solutions for Environment, Economy and Democracy, addressing interconnected problems in the political, economic and environmental systems. The *SEED Network* seeks to connect researchers, practitioners and activists in a similarly integrated fashion, following the logic that we cannot find solutions on our own, but must collaborate across the boundaries of disciplines. When one digests the broader narrative, it becomes obvious that economic degrowth, overcoming political division, mitigating climate change, and developing techniques and technologies to support these endeavours is paramount. Initiatives such as the *Tech Workers Coalition*, the *Fairwork Foundation*, or the *Platform Cooperatives* movement are a result of mostly younger academics putting their thinking into action, and make the idea of necessary innovation in three spheres – technology, community and policy – evident.

Further innovations by communities such as *Field Ready*, *r0g_agency*, or *CADUS* who respond to humanitarian and reconstruction aid needs by transforming logistics through technology, design and people in new ways are less easily captured: They explicitly do not focus on single products, but on the community innovation needed to create these products. Software and hardware alike are designed and built around users' needs, but to engage not only privileged users, new communities are required. Other examples of communities that leverage technology for social innovation are *AfricaOSH*, a community of makers, hackers, practitioners and researchers in science and technology across the African continent, the Global South and the world; *i4Policy*, an alliance of African innovation communities who develop policy visions to support governments in their efforts towards digital and economic transformation.

The communities and media organisations hosting the Fellows of the *SSMLab* exchange programme, such as *Kweeta* in Uganda, *Engage Media* in Indonesia or *Open Development* in Cambodia, are also all examples of communities putting new thoughts on work, collaboration and innovation into practice, and thereby making space – or rather, hacking the shrinking spaces for civil society activism.

In the global policy field, another example of communities uniting to bring their point across is the 'Open Letter to the G20' initiated by *Mozilla*, *Web Foundation* and *ISOC* and signed by 115 organizations calling on governments to assume responsibility, provide meaningful participation and adopt a positive, forward-looking digital agenda for the development of the internet and related technologies.

The authors are aware of and embrace the fact that none of these initiatives and communities on their own can hold tech giants accountable for their role in politics and essentially the "threat to democracy" they pose, as for example British investigative journalist Carole Cadwalladr exposes in her *TED* talk – but we see that our innovative efforts in our own spheres accumulate to really shaping and re-forming nothing less than the world. Critical Making, critical arts and media practices, in fact all critical thinking put into action, and open and trusted exchange about these actions is what is desperately needed in our times, and the *SSMLab* exchange programme contributes to exactly that least tangible, but most impactful endeavor.

4. The Space of Critical Making and Media Practices

As many elements of 'critical' practice, how making, maker spaces or the maker movement is defined is not yet final. As the V2_Manifesto states, art itself must be, and has of course always been constructive (progressive, additive, creative?) and at the same time destructive (critical, reactive, revolutionary?). This itself implies a direct linkage between hands-on making within distinct media, or communications oriented approaches. If making is defined as a hands-on creative process and maker spaces as community spaces or third places where people can make things, these have existed for a much longer time than V2_ Institute or any other contemporary space for creative and critical exchange: The American Libraries Magazine started what could be a timeline of the history of making in 1873 in New York with the *Gowanda Ladies Social Society*, which was formed to quilt, knit, sew, socialize, and talk about books.[11] That was almost 150 years ago, and rooms for making have

been parts of libraries ever since. The phenomenon we now call the maker movement, which also seeks to link long held traditional indigenous practices with new technologies, began in the early 2000's with the revival of a DIY culture increasingly linked to digital culture. The Western, or 'Global North' makerspace has its formal roots in the *Massachusetts Institute of Technology's (MIT)* Fab Labs, while the origins of spaces of 'hacktivist' experiment that are more media, tech and cultural critique oriented going back to the 1980's, may be seen at V2_ (Den Bosch, 1982) or at one of the first true 'hacker spaces' c-base (Berlin, 1995)[12] Such hubs and spaces, providing conducive learning environments, collaborative opportunities, often linking universities and grassroots art, technology and innovation spaces combined with the ability to network practices and methodologies more easily across continents has led to them become a rapidly growing phenomenon: between 2006–2016 the number of such spaces worldwide has multiplied by 14.[13]

Betsy Greer coined the term craftivism to refer to politically motivated crafting practices – contrary to making, Greer's crafting is not based on digital fabrication tools, but on criticism of existing socio-political and economic conditions through creative practices – a "tool to dismantle or contest the global tyranny of mass manufacturing". Consumers in the Global North are disconnected from the production of goods in a globalized economy, craftivism creates mindfulness of the various steps involved in making a product, and thereby many craftivists do not just learn and apply techniques, but also express a societal standpoint. Greers describes craftivism as "a way of looking at life where voicing opinions through creativity makes your voice stronger, your compassion deeper & your quest for justice more infinite".

A closer, more qualitative look at makerspaces and media labs cast by researchers such as Silvia Lindtner, Seyram Avle, Jeffrey and Shaowen Bardzell, Morgan Ames, Austin Toombs, Christopher Csikszentmihalyi, Janis Lena Meissner, Michael Ahmadi and Anne Weibert reveals similar critical insights as we have seen with "the maker movement". In practice, not every makerspace is open and inclusive; in fact, they are more often than not exclusive spaces that struggle to create inviting environments for women, senior citizens or refugees – be the makerspaces located in a capital city of a G7 country, or in the rural parts of a low-income country, or anywhere in between. With few exceptions such as the *Heart of Code in Berlin*/Germany or *MZ Baltazar* in Vienna/Austria, makerspaces are the domains of able-bodied, cis-gender males between 15 and 45 years of age; in the Global North, which dominates the discourse on "the maker movement", these men are also predominantly white. Similar to the notion of Critical Making, these discussions of openness in makerspaces have hardly reached the mainstream discussions, which are still shaped by enthusiastic visions of making as democratizing technology, improving education, turning passive consumers into empowered prosumers, encouraging citizen science, and changing the global economic system. Our challenge at this point in time thus is two-fold: not only need critical approaches to making itself be taken out of the ivory tower and theories of Critical Making put into adapted practices on local levels, also the critical examinations of making itself, of spaces and media centres and the global assemblage of activists and producers, need to be translated into tangible results.

This is exactly where programmes such as the *SSMLab* exchange make an important contribution, by walk-

ing the talk and putting theory into practice. During the *SSMLab* exchange, practitioners from different localities entered spaces in very different localities, engaged in projects and practices together with their hosts, and therefore did not only produce tangible output, but most importantly contributed to the most important global conversation to be had in times of shrinking spaces for makers, media and civil society.

5. Societal Impact of Collaborative Practice: Spaces and Residencies

The *SSMLab* exchange relies on a network of collaborating and like-mind host organisations. In the eyes of Indonesian *SSMLab* Fellow Vincent Rumahloine, who was hosted by the *iceaddis* hub in Ethiopia, creative production and the ability to overcome certain deep-rooted fears lies in the way spaces invite people to exchange views, and ultimately learn to understand each other. Such spaces, which are meant to support cultural understanding and collaboration he considers as safe spaces. Where the 'maker' or 'hacker' space may have originated in the West as a purely 'tech' oriented lab, such as the (non-public) *MIT* fablab model, the space of critical intersection is one where societal impact is as much as quality as is technical infrastructure.

Today maker spaces operate in (public) libraries, universities, privately owned spaces – some being run as community innovation hubs – now bring together hundreds of thousands of makers worldwide. This means that a number of society members are engaging in this activity, but in the sense of critical theory, do the spaces engage in changing society? It is inherent that at such adaptation, the societal impact could

be far reaching – with great potential for strengthening access to knowledge and information, especially in regions with low technical infrastructure. There are a lot of maker spaces already aiming to create communities for their members, contribute to the improvement of the lives of people, or help them understand that media and technology do not need to be elite institutions or inaccessible black boxes. Makerspaces however don't necessarily self-identify as spaces of social innovation, let alone as safe spaces to allow critical self-reflection of a particular social or political situation but some specialize in solving societal issues by engaging in activities linked to:

- **Education:** making knowledge about media, technology and access to information available for the masses through local events, workshops and online materials
- **Strengthening democracy:** they offer third places for communities and support civic engagement through notions of activism and critical thinking, unlocking grassroots capabilities
- **New models of production:** access to personalized manufacturing and rapid prototyping, mass customization practices
- **Contributing to the commons:** by open source software, hardware and peer production; making blueprints available online,
- **Innovative artefacts:** by using different (inclusive) design methods, they support the creation of socially relevant prototypes, some of which can be innovative solutions (e.g. appropriate technologies) to societal problems
- **Awareness raising on Sustainability:** by hosting repair cafes, operating as eco-fablabs or simply by allowing local manufacturing instead of long delivery routes. It is yet to be researched, what the true

societal impact of such activities might be. Currently, most solutions are not yet sustainable, long-lasting or impactful and such artefacts represent the minority of prototypes made in makerspaces. What the reasons could be will be explored in the following section.

In 2010, the participants of an Expert Meeting for New Media, Civil Society, and Environmental Sustainability, hosted by the Indonesian *SSMLab* partner organisation *commonroom foundation* drafted the 'Bandung Declaration of Open Cultures, Technologies and Ecologies' as a statement of shared values, goals and principles for sustainable and critical open cultural practices.[14] As a necessity in creating a safe space for critical media and cultural activity, in particular for the South East Asia region, the Bandung Declaration explicitly notes that there is an urgent need to actively support, encourage, promote and provide, among others "dedicated physical spaces committed to long-term and stable community-building", recognizing that "there are silent zones, isolated peoples and spaces that must be given the opportunity to be heard and become visible members of a networked community under their free will. That free culture and open artistic expression improve economic and environmental conditions, acting as catalysts of sustainable human development."

In the ensuing decade, with the evolution in defining the various forms of critical maker culture, through mechanisms such as the South South Media Lab Residencies (where both an exchange of critical practitioners as well as labs, hubs and maker spaces have emerged) we see how maker culture is now perhaps entered a mainstream – unclear whether this will have a positive or a negative impact on the practices the organisations host.

6. Critical and Transformative Making

All these emergent energies … making, creating, analysing, destroying, repairing, reconfiguring, hacking and defining spaces that can allow such activities can be considered transformative, 'Critical' in the historical definition. As such the act of Making is not new, and has been an ongoing process over centuries of mankind, ever since the invention of Neanderthal tools, the wheel, cultural artifacts and practices, to the modern day space shuttle and modes of communication. Today's networked knowledge society is catalyzing and affecting the process of Making and knowledge production in interesting ways by mediating the co-located and instantaneous access, dissemination and sharing of information amongst people across vast distances. The notion of free labour accompanying a rising participation in the gift economy of network culture, is loaded with words such as DIY, Open Knowledge, Open Data, Free & Open Source, that blurs the lines of distinction between production & consumption, labour & cultural expression, and has transcended both the puritan new left movement on one hand and the neo-liberal free market ideology on the other.

As Critical Making, and its related movements, has been receiving growing recognition, it demonstrates great potential to address concerns and provide innovative solutions at a local, citizen level where established socio-political systems fail. As the makers, and intrinsically associated critical media practitioners come into contact with distorted mass-media constructs (the blinding hysteria of 'fake news' as one example), large industries, and increasingly dysfunctional political systems they run the risk of being reduced to mundane lowest common-denominator

commodities. A critical attitude is essential to keep these movements genuine – and support cross-cultural, non-Western forms of creative interactions … even if we need to keep lessons of our open culture 'forebears' in mind using these to catalyze practices and create solutions for cultural sustainability. Such implementations could be considered a process of transformative making — or as was coined through a series of events, as Transformaking[15].

7. Righting wrongs.
Is Critical Artistic Media Practice Hacktivism?

One such 'forefather' is Richard Stallman, a leading proponent of the free software movement, and a critical thinker who staunchly identifies with the essential value of hacktivism – where the hack is rightly justified as being the ultimate form of creative tinkering. Stallman groups a range of activities that include "playfulness, cleverness, and exploration" in his notion of hacking, elevating the creative, explorative tinkerer to that of a hacktivist, people who ardently "explore the limits of what is possible, in a spirit of playful cleverness." If their activities display "playful cleverness" they have "hack value" and "playfully doing something difficult, whether useful or not, that is hacking."[16]

The hacking community developed at American universities in the 1960s and 1970s, and included a wide range of activities, from writing software, to practical jokes, to exploring the roofs and tunnels of the MIT campus. Stallman concedes however, that for him "the concept of hacking excludes wit and art as such" even though he sees the hack rightly justified as being the ultimate creative and critical activity. For Stallman

the people who began to speak of their activities as "hacking" were familiar with wit and art, but they were also doing something else, something different, for which they came up with the name "hacking". Thus, composing a funny joke or a beautiful piece of music may well involve playful cleverness, but a joke as such and a piece of music as such are not hacks, however funny or beautiful they may be. However, if the piece is a palindrome, we can say it is a hack as well as music; if the piece is vacuous, we can say it is a hack on music.

8. Misappropriations: Criticism of Maker Culture

In the subtitle of his book, "Makers", Chris Anderson calls it the The New Industrial Revolution, giving it a potentially exaggerated importance which might create expectations that are too high. The 44th President of the United States, Barack Obama used it to engage with citizens by endorsing making and hosting a Maker Faire at the White House. Making is more and more included in policies and politics. Makers were disillusioned when other institutions entered their spaces, like when the *Defense Advanced Research Projects Agency (DARPA)* gave funding to *O'Reilly Media* for its educational program[17], because the funders' agenda will more often than not have an effect on the practices. As Smith puts it, "Hacker visions and values for autonomous social innovation and critical involvement in open technology is co-opted by an agenda to educate, train and entertain people, and where the fear is that it reinforces compliance with conventional innovation agendas. Responses to this criticism point to the mainstreaming of makerspaces but gloss over the asymmetric power relations between 'partners'. In terms of innovation democracy,

the critical question becomes the conditions under which makerspace participants can really challenge, and even reshape, the agendas of sponsors and partners."[18]

As a movement, 'Making' is becoming mainstream, veering away from from its mission of critiquing social process in ways that only the sovereignty that 'Art' can instill. Examples of this have become visible e.g. when the MakerBot, "the darling of the Open Source Hardware movement" became closed-sourced[19]. Amongst others, Garnet Hertz is an opponent of this direction in the maker culture, which has become a particular, market-driven segment of do-it-yourself (DIY) while the original countercultural aspects of the DIY-movement seem to have vanished. Hertz created a front page for a fictional 'Made:' magazine, which gives some very clear examples of current problems with mainstream making. Amongst others, he points out the importance of readers staying away from any political activities (Join the Arduino Revolution but Avoid Civil Disobedience), highlights the exclusive nature of maker culture (101 DIY Gadgets for White Males) or how such innovative technology like the 3D printer is used for useless and unsustainable activities (How to Use a MakerBot to Make a Three Cent Piece o' Plastic).[20] As Hertz defined in a presentation at the FutureEverything Conference in 2014 [Hertz, Levin, McGuirk 2014], this version of maker culture is: 'makers = hackers – controversy'. When practitioners take part in predefined activities and only build seemingly life enhancing artefacts out of kits, there is little space left for creativity, speculative processes or reflection. This is precisely the space that programmes, that among other elements, focus on redefining 'north – south' creative and cultural dialogue seek to intervene in. One of the assets of a Critical Artistic Media Practice is to critique, eventually redefining the complex nature of interactions between society, industrial process, issues of true sustainability etc.

As Janis Lena Meissner states: "While the popular discourse surrounding the Maker Movement is one of democratisation and empowerment, it remains rather vague regarding who it is that gets empowered by it, why and how." Her proposed solution for reorganising Making as a public resource for different civic communities is a Portable Makerspace, recontextualising the notion of making within different local settings and existing creative practices, and looking at making through a social justice lens. She asks: Is a knitting club of elderly women not also a maker community? Is a community centre in a deprived area not also a makerspace?

9. Rethinking Making with Critical Thinking

Therefore what academics and practitioners start to see is that an alternative is needed to the Silicon Valley standardised ways used to innovate socio-technical systems. Due to their educational backgrounds, makers often use standard engineering practices and this might limit their societal impact. If innovating for society is the goal, it is required for practitioners to rethink how they innovate: reproducing industry practices has been criticized for a long time and has proven to be insufficient when it comes to societal change. Critical Making as a term was initially developed about 10 years ago by Matt Ratto, who was focused on developing innovative scholarly practice. As he and Hockema put it in FLWR PWR Tending the Walled Garden: "Critical Making is an elision

of two typically disconnected modes of engagement in the world: critical thinking,"often considered as abstract, explicit, linguistically based, internal and cognitively individualistic; and 'making,' typically understood as material, tacit, embodied, external and community-oriented." They also elaborate what they feel are the 3 iterative stages of the Critical Making process, which can be transliterated into a media oriented practice where the products and prototypes are forms of communication and social interaction:

1. Review of relevant literature and compilation of useful concepts and theories: specific ideas are identified that can be turned into material prototypes.
2. These prototypes are built together by scholars, students, and/or stakeholders. The focus here is on extending knowledge and skills in relevant technical areas and providing the means for conceptual exploration, not perfectly designed artefacts.
3. The third step is an iterative process of reconfiguration, conversation, and reflection: this step "involves wrestling with the technical prototypes, exploring the various configurations and alternative possibilities, and using them to express, critique, and/or extend relevant concepts, theories, and models."[21]

10. STEAM – Fusing Critical Engineering with Artistic Practice

Elevating the original 'playful tinkering' definition of hacking to today's extreme politically charged disruptions of media and digital environments, emerges one of the most radical forms of critical artistic media practice, that of Critical Engineering. The 'Critical Engineering Manifesto' by The *Critical Engineering Working Group* is a framework for critical engineering practice. Recognizing that engineering is "the most transformative language of our time, shaping the way we move, communicate and think", they raise 10 key and concise points regarding socio-technical issues and what steps the critical engineer can take. Examples are raising awareness about techno-political literacy, how each work of engineering engineers its user, proportional to the users dependency upon it, or that the Critical Engineer notes that written code regulates behaviour between people and the machines they interact with – by understanding this, the Critical Engineer seeks to reconstruct user constraints and social action through means of digital excavation.[22] One of the *Critical Engineering Working Group* members, Julian Oliver illustrates these points in his critical engineering and computational climate art, 'Harvest: using wind-energy to mine cryptocurrency, the earnings of which are used as a source of funding for climate-change research'[23], raising awareness on issues like climate change or the effects of cryptocurrency-mining on our environment.

In critical engineering we see two directions today: the pedagogical direction, used in engineering studies at universities, and the activist direction. In pedagogy, *critical engineering* is about incorporating critical thinking into engineering studies and the teaching process. As such it is also a prime example of the need to incorporate art into the teaching of science and technology – STEAM – as it aims to help students ask questions about engineering itself through the lens of a practice that is inherently art based. Discussions of critical thinking in problem solving, conducting experiments, ethical decision making, open-ended

design, and assessing the social impacts of technology are utilized. However, critical thinking in this case is only applied within these focused elements of engineering but not about engineering itself. In "Situation Critical: Critical Theory and Critical Thinking in Engineering Education" Claris and Riley advocate for "asking questions about the production of technology and our relationship to it: Who does engineering, and for whom? Who decides what is and is not engineering, and what ways of knowing (epistemologies) are appropriate to the discipline? Who benefits and who loses from engineering? How do social, political, cultural, and economic structures create our present understanding of scientific knowledge and the technologies we engineer based upon that knowledge?"[24]

11. South-South Media: Indigenous Action as Requisite for Critical Artistic Media Practice?

Beyond the clearly dystopian practices of the hacktivists and critical engineers, cultural emancipators, such as Brazilian media activist and cultural theorist Ricardo Ruiz seek to emphasize a more holistic form of critical artistic media practice that can not ignore indigenous forms of action and association, "I cannot imagine a critical art, media and design scenario that does not deal with relevant issues that includes peripheries, women, diaspora, intolerance, forests etc.." Noting that at the cusp of Global North and South cultures, groups such as Gia da Bahia[25] (*Environmental Interference Group*) a self-proclaimed visual arts and Samba group, that mix politics, samba, technology, chillout sessions and food in highly animated meeting experiences, traditional culture practitioners, with different colours, rhythms, ma-

terials, dances have an ability to intersect with contemporary innovation, even though they organically transform centuries of cultural tradition. Such intersections are critical practices that emphasize cultural plurality, more specifically those related to art, media and public space. Such a scenario is key to the linkage taking place within the *SSMLab* initiative, giving 'Western' or northern hemisphere based media artistic and critical maker practitioners new insights into emergent hybrid practices which can resonate with attempts at cultural emancipation, strengthening of dialogue, empowering the voice of women and other groups that have struggled to make not only their voices heard, but to have their actions taken seriously. [26]

12. In Conclusion: Relevant Domains for a Critical Artistic Media Practice

This essay argues that growing fields of practice surrounding the critical maker movement, in particular the artistic and conceptual linkages within Critical Making, are key models for discussing a Critical Artistic Media Practice (*C.A.M.P.*). Whether it is the drive to embed artistic practice into the evolution of STEAM approaches, enabling the use, development and teaching of technology both as a critical and cultural framework, or the need to eradicate cultural imperatives that still dominate global 'north – south' interaction, we see in the output of the *SSMLab* Fellows a distinct attempt at forming and defining such practice. The resulting forms of action, methodologies and world views have manifested themselves in particular through media informed elements that include:

• journalism (investigation, reportage, data driven and citizen journalism, blogging, microblogging)

- digital storytelling & media art (documentation, fiction, multimedia artwork, game, performance)
- media technologies (hardware technology for radio / audio/video / internet reception, off-grid communication, low-cost energy power provision, drones, sensors, Internet-of-Things)
- software, coding & open data (interaction with public data, mobile apps, cloud services, chat-bots)
- social hacktivism, gender equity and forms of media literacy that transcend traditional socio-political power structures (enabling marginalised groups, breaking north-south hegemonies)

These are the forms of hybridity that help define the Peer-Peer and collaborative forms of artistic media practice, that in themselves are critical and highly unstable manifestations of current social and political trends, inherent in opportunities such as the *SSMLab* exchange. Looking beyond the mainstream, never resting, always responding to the challenges that seek to challenge freedom of expression, allowing unhindered access to knowledge these emergent critical social activists, are those that we need to look to if we seek to reclaim what may be seen as a losing battle to today's populist re-interpretations of truth, fact and history. As *V2_* did in their manifesto … "WE LOVE INSTABILITY AND CHAOS, BECAUSE THEY STAND FOR PROGRESS. WE DO NOT SEE CHAOS AS SURVIVAL OF THE FITTEST, BUT AS AN ORDER WHICH IS COMPOSED OF COUNTLESS FRAGMENTARY ORDERS, WHICH DIFFER AMONG THEMSELVES AND WITHIN WHICH THE PREVAILING STATUS QUO IS ONLY A SHORT ORIENTATION POINT."[27]

Stephen Kovats and Victoria Wenzelmann
Berlin, March 2019

Footnotes

1 http://v2.nl/archive/articles/manifesto-for-the-unstable-media

2 "How social media and DIY communities have enabled new forms of political participation that emphasize doing and making rather than passive consumption." from 'DIY Citizenship.Critical Making and Social Media'. c.2014, eds. Matt Ratto and Megan Boler, ISBN: 9780262525527

3 https://www.hackteria.org/

4 https://criticalengineering.org/

5 LDC – Least Developed Country designation by the UN: https://www.un.org/development/desa/dpad/least-developed-country-category.html

6 https://www.globalinnovationgathering.org/

7 Acknowledgement and thanks: Key elements of this essay relating to the Critical Maker Movement have been co-authored by Regina Sipos, Saad Chinoy and Ricardo Ruiz in their summary "The Critical Making Movement: How using critical thinking in technological practice can make a difference", 29. December 2018 prepared for the 35th Chaos Communication Congress 27-30. December 2018, Leipzig, Germany.

8 Many readings of 'Critical Theory', based on German philosophical and interdisciplinary models mostly concentrated around the 'Frankfurt School' in the early 20th Century, i.e. https://en.wikipedia.org/wiki/Frankfurt_School

9 including figures such as the artists Garnet Hertz and Chris Csikszentmihalyi, the members of Weise7 collective who are the authors of the Critical Engineering Manifesto, or the Indonesian grassroots HONF, XXLab and Lifepatch communities.

10 G. Hertz, What is Critical Making? In: Conversations in Critical Making, Blueshift Series, CTheory Books. Accessed on 2. March 2018. http://ctheory.net/articles.aspx?id=759&fbclid=I-wAR1EVSOsz0PK6127kY9hJ8jhnZ6Zh1ZUbGEmslvvuP-P0LXd_pWf0BZWsyUU

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12 https://www.c-base.org

13 N. Lou and K. Peek, (2016). By The Numbers: The Rise Of The Makerspace. In: Popular Science, March/April 2016 issue.

14 http://www.asef.org/images/docs/840-Expert_Meeting_Declaration.pdf

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[24] L. Claris and D. Riley (2013) Situation Critical: Critical Theory and Critical Thinking in Engineering Education [Career Advisor]. In IEEE Women in Engineering Magazine, Volume:7, Issue:1, PP: 32 - 36, 2013.

[25] https://giabahia.blogspot.com/

[26] These scenarios, as media cultural practices have been brought to forefront by movements that range from #metoo to, #fridaysforfuture, or in more subtle forms, for example the attempt to remove an entry on female science fiction authors from wikipedia https://en.wikipedia.

[27] This essay is dedicated to Alex Adriaansens (1953 – 2018), co-founder of V2_Institute for the Unstable Media https://v2.nl/archive/articles/alex-adriaansens-1953-2018

Within a collaborative writing and media project the C.A.M.P editor accept different styles of citation by the authors.

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