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# **SPACECRAFT: A Southern Interventionist Art Project**

Ralph Borland Independent Artist and Curator South Africa

#### Abstract

"SPACECRAFT" is an interventionist art project in Southern Africa. This paper by the artist situates the work in relation to currents in futures studies and design. It puts these fields in conversation with interventionist art, and demonstrates their areas of overlap: their use of objects designed to have both immediate functions for a user and communicative functions to audiences; their critical response to social issues; and their futures-oriented approaches to transformative action. The paper points to the Southern location of this project, relating this to perspectives in futures studies on non-western futures.

Keywords: Discursive Design, Futures Action Research, Guerrilla Futures, Interventionist Art.

#### Introduction

A common sight in Southern African cities<sup>1</sup> is that of 'wire artists' plying their trade in public places. These are men<sup>2</sup> who make by hand and sell largely ornamental objects in galvanised steel wire, a common hardware product. The wire-frames they make are often combined with coloured-glass beads, and depict subjects such as animals, fish, birds, flowers, cars, bicycles, and aeroplanes. These products are offered for sale to passersby – frequently to motorists at busy traffic intersections. Making and selling wire art is a means of income for these men, in a country with very low levels of formal employment.

As an artist who grew up in South Africa and Zimbabwe, and who works now in Cape Town, South Africa, my attention has been drawn to these informal artists who practice in public space. The art form itself is resourceful and ingenious – it takes a cheap and available material, that is almost two-dimensional (a line) and makes complex three-dimensional forms from it. It attracts my attention in that it's a form of public art – art which lives not in a gallery, but in the street. This chimes with contemporary art practices that seek to bring art into everyday space – such as interventionist art, explored in this paper.

Interventionist art characteristically looks for systems in society into which it can insert itself to further its ends – a tactical approach to expanding an art work's reach by using what is already there. Street wire art presents possibilities here too: through years of observation I've noticed the way that wire artists replicate each others work. Forms persist, appear and diffuse through the wire art 'scene'. Some new forms derive from popular culture, such as clown fish from *Finding Nemo*, or characters from the movie *Cars*. I imagined that this system might be able to carry my interventions, and proliferate them if successful.

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In 2013 I began engaging with street wire artists, first commissioning wire art pieces to my design to create prototypes for new forms, and then conducting workshops in which wire artists could devise their own works within a framework set out by the project. This mix of commissioning, collaborating and co-designing, with the work we make shown on exhibition, has continued. In the years since I've worked with wire artists across Southern Africa and further afield in Brazil, where they have a similar wire art scene, and exhibited work locally and in Europe and Canada.

In this paper, I'm interested in bringing the lens of futures studies to bear on this project that seeks to influence the future development of the wire art scene. I have a multi-disciplinary academic background, spanning fine art, interactive telecommunications, design critique, development and science and technology studies. My post-doctoral work at the University of Cape Town focused on North-South knowledge inequalities and advanced the idea of 'Southern agency' (Borland, Morrell, & Watson, 2018). I am an independent artist, curator and interdisciplinary knowledge worker.

In the following sections I describe my work with wire artists, locating it within interventionist art practice, and then viewing it through the lenses of futures and design.

#### **SPACECRAFT** as Southern Art Intervention

The two projects with which I engage with wire artists are African Robots and SPACECRAFT. African Robots focuses on the use of simple electronics to create interactive 'automatons' depicting local living creatures (Figure 1), SPACECRAFT on the production of wire-frame spaceships. This paper examines SPACECRAFT, with some reference to African Robots. The two projects collaborate: our latest work, titled Dubship I - Black Starliner is a large-scale wire art spaceship with an electro-mechanical sound system, installed in the Zeitz Museum of Contemporary African Art in Cape Town in April 2019.



An inspiration for both projects is the similarity between 'old-school' computer-graphic 'wire frame' and the hand-made three-dimensional forms produced by wire artists – often using only a single strand of wire. An aesthetic 'hook' for the project is to reinforce the congruency between something digital and something hand-made. The use of wire frame aesthetics plays on nostalgia for a past technological era – such as the 1984 *Star Wars* arcade game which uses colour wire frame graphics. The project's first subjects are the iconic ships from the original *Star Wars* movies (Figure 2).

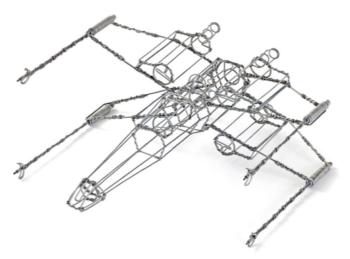


Figure 2. SPACECRAFT XW01 (2018). Photograph by SPACECRAFT

SPACECRAFT started in November 2015 in collaboration with a small group of wire artists, watching the first *Star Wars* movie and using freely available 3D models as references. We exhibited the work at street fairs and small exhibitions, and made personal sales to friends and contacts. Over time I produced graphics based on the sculptures, including T-shirts, banners and fine art screenprints, high-resolution photographs, an Instagram account @spacecraft.africa which shows the chronological development of the project, and most recently an interactive arcade game cabinet display. My intention is to set up an online store to sell the work we make.

The project has not yet succeeded in having the production and sale of these wire-frame spaceships catch on at street level. There have been isolated incidents, but not significant signs of interest from either wire artists in making more spaceships on their own account, or of street buyers in purchasing them. This is a problem partly of the design of the project – I've wanted to build the profile of the project, maintaining quality control of the quite technical work produced, and I haven't explicitly focused on trying to make it spread. All work with wire artists has been paid for – I'm conscious of the vulnerability of these subsistence artists. For wire artists to risk their own time in making complex new designs with an unknown market for them seems to not yet be realistic.

Instead our focus has been on demonstrating the idea in exhibition forums, and attracting attention through the press, which has been successful. The project has received funding, principally from our National Arts Council in South Africa, which has enabled the development and exhibition of work. There is some irony in a project which took as its inspiration the public, everyday setting for wire art as opposed to the gallery, then finding its main place in galleries and formal exhibition forums. This is perhaps part of the journey of the project, to demonstrate the project in more conventional settings, and once its attraction to a public is demonstrated, for it to trickle back to the street-level settings which inspired it – when wire artists may have a reason to imitate the designs in order to meet a demonstrated market.

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I locate *SPACECRAFT* in the field of interventionist art practice because of its engagement with a real-world, everyday phenomenon, which it makes the material of an artwork. Interventionist art has a strong engagement with 'the everyday', eschewing representation for action, and is often activist in its intentions: art for "the creative disruption of everyday life" (Thompson & Sholette, 2004). Rooted in the European Situationist art actions of the early 20th century, it follows a trajectory into activist, media-engaged art of the 1980s, '90s and 2000s, largely in Europe and the US.

The intention of *SPACECRAFT* to insert a novel material element into a system to benefit a marginal social group is a mode of interventionist art – see for example Michael Rakowitz's project *paraSITE* (1997 – ongoing) which supplies custom shelters, that attach to waste hot air ducts from buildings' heating systems, to homeless people in the US. A touch-point for *SPACECRAFT* is a series of interventionist works by the artist Cildo Meireles that responded to the restriction of information and communication in 1970s Brazil under military dictatorship. In his work 'Insertions into Ideological Circuits' (1970), Meireles identified systems in society that could carry messages critical of the establishment. He printed messages onto recyclable Coca-Cola bottles, putting them back into circulation bearing instructions for a Molotov cocktail, for example – a neat *détournement*<sup>3</sup> of the bottle (Barnitz, 2001).

I think of interventionist art as having particular application in Southern<sup>4</sup> situations such as that Meireles was operating in. The resourceful way in which interventionist art practice looks to available systems to leverage their impact to critical ends seems appropriate to parts of the world with high levels of inequality and lesser resources. Its identification with the less powerful, and its use of guerrilla tactics to direct benefits to them, while necessary everywhere, seems fitting to the history and context of the South.

The choice of *Star Wars* as subject matter for *SPACECRAFT* is tactical, and typical of some Southern approaches to power and "the [contested] trend towards the universalisation of western culture" (Sardar in Inayatullah & Boxwell, 2003, p. 251). *Star Wars* is a long-standing pop cultural phenomenon with high visibility, and a current wave of new products, whose market we might tap into. *Star Wars*' origins in the late 1970s and 1980s lent itself to the nostalgic use of digital 'wire-frame' aesthetics that fitted this wire art project. The origins of African wire art lie in the depiction of new technological elements in Southern locations, largely vehicles such as trucks and cars made by children (V&A Museum of Childhood, 2016).

In adapting this material from *Star Wars*, we produced something new: an Africanised vision of spacecraft. Appropriation and adaptation of imported material is a feature of Southern sites. One of the frames for this is the idea, proposed by the Brazilian writer Oswald de Andrade in 1928, of 'anthropophagy' – cultural cannibalism – in which imported cultural products are consumed and made part of the body of the Southern host. De Andrade's manifesto inspired the Tropicália or 'tropicalismo' artistic movement in Brazil in the 1960s, which especially in music combined local and foreign influences, the popular and avant-garde, with "a carnivalesque collective activism, one that has parallels in certain "interventionist" political art today" (Cotter, 2006). These movements aimed to identify agency rather than passivity in the consumption and use of Northern products by Southern sites, and the possibility for new forms to arise from their interaction.

One of the artworks produced by *SPACECRAFT* is a series of silkscreen posters, which depict the spacecraft against backdrops of manipulated wax-print patterns. African wax-print fabric is a leitmotif for the possibilities for 'turning around' the meaning of cultural products: while largely identified as an expression of particularly West African identity, it was designed and printed in Holland in the late 1800s, and intended for the Indonesian market as an imitation of their hand batik work. It wasn't well-received by its intended market, but was hugely popular when sold in West Africa, where the designs acquired their own local meanings, and inspired local versions of wax-print. The most desirable wax-prints today are still produced by the originating company Vlisco in the Netherlands.

This appropriation and adaptation of imported forms is one of the mechanisms by which the South survives the marginal position given it by history and geopolitics – neither capitulating nor rejecting but tactically and creatively engaging. In *SPACECRAFT*, we insert ourselves into the *Star Wars* universe as much as we bring its forms into our practice.

#### **Design and Futures**

Some overlaps between interventionist art, design and futures are already established. Interventionist art centred on the creation of new functional objects has been curated together with practical and speculative design objects in exhibitions such as *SAFE* (at the Museum of Modern Art in New York, 2005), *The Interventionists* (at the Massachusetts Museum of Contemporary Art, 2004) and *Return to Function* (at the Madison Museum of Contemporary Art, 2009). The concerns of interventionist art to communicate to audiences while equipping users intersects with areas of design similarly concerned with communication to audiences through the design of functional objects. These areas include critical design, interrogative design and design fiction; an umbrella term for these design approaches concerned with critical communication is 'discursive design', proposed by Bruce and Stephanie Tharp (2009).

Interrogative design in particular is a close cousin to interventionist art. Krzysztof Wodiczko, an artist-designer-academic whose seminal series of 'Critical Vehicles' included a cart for homeless people in 1980s New York, founded the Interrogative Design Group (IDG) at MIT. Rakowitz, a student of the IDG, exemplifies this union of design and intervention in everyday life with *paraSITE*. Stuart Candy describes interrogative design as a form of discursive design that, like interventionist art, operates "in the wild" in contrast to critical design which is often confined to the gallery (2010, p. 177). Candy has established the potential links between interventionist tactics such as détournement and futures work in his PhD thesis *The Futures of Everyday Life* (2010). Where interventionist art creates novel functional objects, it contributes, along with discursive design, to the field of 'experiential futures' outlined by Candy and others, which makes use of designed objects as props in imagined future scenarios – an area of activity in which art, design and futures intersect.

Interventionist and discursive projects across art and design fields have in common a focus on generating awareness of and discussion around social issues, more so than on the direct impact of the project on changing the immediate situation through design. For *paraSITE* for example, Rakowitz was explicit about the limits of his intervention: "it is very much an intervention that should become obsolete. These shelters should disappear like the problem should. In this case, the real designers are the policymakers" (Antonelli, 2005, p. 68). This may mean that the impact of such projects may be hard to measure – they are in harder-to-track indices such as increasing public or policy-maker awareness of an issue, often aimed at through attracting attention in the press.

Part of how *paraSITE* agitates is by presenting imaginative visions of the future, amplified by this intervention: the "relationship of these devices to the buildings" writes Rakowitz, "elicited immediate speculation about the future of the city... would these things completely take over, given the enormous number of homeless in our society? Could we wake up one morning to find these encampments engulfing buildings like ivy?" (Rakowitz, n.d.) In my work with wire artists for *SPACECRAFT*, we are presenting an image of the future of the wire art scene – now limited in scope, but showing what new products are possible in creatively applying available materials and processes. Its achievements so far have largely been in generating public awareness, through exhibitions and articles in the press, about these possibilities.

Taking a broader view of futures studies, Jose Ramos identifies the five main stages of development of the futures field: Predictive, Systemic, Critical, Participatory, and Action oriented – the latest with its "emphasis on action-oriented inquiry, associated with design, enterprise creation,

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innovation, and embodied and experiential processes" (2017, p.826). Each of these stages of development of the futures field relies on the previous stages.

The vision of the future desired by *SPACECRAFT* was of street wire artists spontaneously making and selling science-fiction spaceships made in wire-frame style, inspired by the examples produced with my input, and spreading to other artists not involved in the project. I imagined in my normal journeys around the city seeing wire artists at traffic intersections holding wire-frame spaceships up for sale, and I imagined the pleasure and interest of the public in buying these new wire art products from street vendors.

From the Predictive stand-point, this vision of the future was not realised. It may still be, through finding a different route to this vision: by first establishing a market for these products away from the street through online sales, and sales in institutions. Echoing the project's relationship to the *Star Wars* franchise, *SPACECRAFT* would be imitated by street wire artists because there is a demonstrated market for it. From the project's perspective as interventionist art, it would then have succeeded in catalysing change in the real situation.

From a Systemic perspective that acknowledges complexity and indeterminacy through the envisaging of alternative futures (and with the benefit of hindsight) this alternative future for the project could have been predicted as a route to our goal: first establish a more formal 'business' that will demonstrate success and attract imitation. Part of how this and other alternative futures for the project could have been discovered is through asking wire artists to imagine alternative futures for the project – how might they have seen the project developing? Might this have been one of the mechanisms we could have predicted?

Critical studies of futures acknowledges the influence of different cultures, perspectives, discourses, and interests on visions of the future, including "whether they were from a "developing" or "developed" world perspective" (Ramos, 2017, p.826). SPACECRAFT's depiction of Star Wars spaceships in a vernacular African wire art style inserts Africans into the fictional universe of Star Wars: the 'explanation' for these wire art depictions is that wire artists are seeing and representing space ships in their environment, as trucks and cars are already depicted – so wire artists are imagined as present in and Africanising the fictional world of Star Wars.

Ziauddin Sardar makes the claim that "the future has been colonised"; that "it is already an occupied territory whose liberation is the most pressing challenge for the people of the non-west if they are to inherit a future made in their own likeness" (Inayatullah & Boxwell, 2003, p. 247). What *SPACECRAFT* might suggest is that one mode for liberating the future is by infiltrating the hegemonic cultural products of the west through making modifications and insertions to them. This is not total liberation and substitution with completely alternative content, but it follows in the mode of Southern liberation in being tactical, adaptive and resourceful in 'infecting' the mainstream future – inserting itself into its 'ideological circuits'.

When Sardar writes about globalisation's tendency to "erode non-western, local traditions and cultural practices" (Inayatullah & Boxwell, 2003, p.251) it is worth bearing in mind that wire art, though now in part iconically 'African', is a hybrid cultural form, making use of a technology from the North, imported through colonialism and globalisation, but made to serve local forms of expression. Wire art is used by children as a way of supplying their own toys and possessing desirable technological imports, and later to make a living by adult artisans. Some forms of wire art, such as woven telephone-wire baskets made in Kwa-Zulu Natal in South Africa, involve direct substitution of plant material by wire using otherwise 'traditional' processes. In this way hybrid elements of Northern and Southern origin are woven together.

The latest SPACECRAFT work Dubship I – Black Starliner (2019) incorporates a broad swathe of technological history with a particular nod to non-western sources. It made use of the latest Virtual Reality sculpting tools, while incorporating a 'piano roll' device for driving the sound, which makes reference to both the automatic player pianos popular in the west in the 1800s, and to a much

earlier source: a design for a mechanical musical toy from the 12th century by the Islamic inventor Al Jazari, powered by a rotating drum with repositionable pegs. Al Jazari's design is acknowledged as one of the earliest instances of a programmable device – like the automaton and the piano roll, an influence on our current technological frontiers in computing (Nadarajan, 2005).

Afrofuturism, in which there is much contemporary interest, and whose themes intersect with *African Robots* and *SPACECRAFT*, presents visions of an alternative present or future in which technological pathways have been rerouted in ways appropriate to Southern settings, undermining a linear, Western concept of technological development. In complement to this mixing up of time, the fictional universe of *Star Wars* is set not in the future, but in the distant past. This implies a circularity of time in that the technology we are currently aiming for – space travel, the occupation of other planets, and so on – has already taken place. This is sympathetic to non-western concepts of time, and to the unsettling of futures for the west. As Sardar writes "for the west, the growth of Asia could mean a return to a future of a thousand years ago" (Inayatullah & Boxwell, 2003, p.258).

The Participatory futures mode, which offers "a pathway toward transformative action" through consultation and discussion, leads into the action mode that "emerges from embodied participation" (Ramos, 2017, p.827). From the perspective of the Participatory mode, *SPACECRAFT* has brought street wire artists into dialogue with diverse publics on a range of platforms. It might draw in a wider group of contributors to explore the possible futures for the project, from customers, to marketers and business advisors.

Futures Action Research – the mode with which *SPACECRAFT* seems most aligned – asks what coherence there is to be found in shared visions of the future amongst participants (Ramos, 2017). While the initial vision of the project for independent street-level production has not yet been realised, the common ground that has formed between myself as lead artist and instigator, and the wire artists I work with, is in enjoying the movement of wire art onto a range of different platforms and audiences beyond the street. The form the project has taken has responded to opportunity, and to finding out what wire artists themselves want to do. They have explicitly said that they like working on platforms which convey legitimacy for their work as art and that expand markets – in galleries, maker fairs, museums and pop-up spaces. Something for me to learn has been to challenge my romanticisation of the position of the street wire artist, and to acknowledge that a force on the project will be the desire of wire artists to move up from the street, rather than to just embrace change in their street practices.

Through participatory action processes such as collectively researching and working together, the project has made findings about wire art practices that demonstrate the complexity of both their business practices and hand-making approaches and skills. For example, one wire artist who sells his work on the street corner also receives pre-paid shipping boxes from a client in the US, to whom he sends work for sale there. The way in which wire artists conceive of three-dimensional form and how to describe it, often with a single unbroken piece of wire, indicates a complex grasp of topology, and has pointed the project towards the field of ethnomathematics, which identifies the complex mathematical principles that may be embodied in hand-made craft objects such as baskets – see for example the work of the late Paulus Gerdes, Mozambique (1999) and current proponent Ron Eglash, USA (1999).

Ramos identifies design and innovation as providing the potential for interventions he calls "seeds of change" "that can, over many years, grow to become significant change factors, leveraged for desirable long-term social change" (2017, p.824). He identifies "citizens and people from many walks of life" as having "the power to plant the seeds of change and create social innovations, alternatives, and experiments that provide new pathways and strategies that can lead to alternative and desirable futures" (2017, p.825).

Ramos' description of 'seeds of change' resonates with SPACECRAFT's co-creation of smallscale designed objects that connect 'people from many walks of life' as a means for broader .....

social transformation. *SPACECRAFT* desires to make local and small-scale change in the world, and uses "design, enterprise creation, innovation, and embodied and experiential processes" as a means to do so (Ramos, 2017, p.826). The metaphor of a seed speaks to the potential for object-based interventions, and resonates with interventionist tactics for insertions – the seed as a small, functional object that will grow and develop, following the available gaps and opportunities in a system to extend its roots and branches, and potentially bear fruit.

#### Conclusion

This paper explores *SPACECRAFT* as an example of a Southern interventionist art project that engages with an existing community of practice in an attempt to catalyse new aesthetic, social and economic possibilities, centred around the creation of new designed objects and the utilisation of existing networks to carry new material. *SPACECRAFT* has worked to spread awareness of wire art and the situation of wire artists through the exhibition of work and the attraction of interest by the press. The project indicates that possibilities for loosening the grip of the west in determining the future may involve recognising hybridity and creative appropriation as methods for 'infecting' western futures from the South.

The willingness of interventionist art to engage directly with live material, entering into everyday situations to shape outcomes, indicates that interventionist art, already overlapping with some areas of futures and design, might be a productive field for futures studies to further explore – and that futures perspectives might inform the tactics and outcomes of interventionist art. The most recent mode of futures research, Futures Action Research, seems of particularly appropriate application to this project.

One of the pivots around which all three fields described in this paper as possible frames for SPACECRAFT – interventionist art, discursive design, and futures action research – can turn is in their use of objects designed for both instrumental and communicative functions. The three fields are united by a critical take on society, in a desire for change, and a futures-oriented perspective for transformative action.

While so far unsuccessful in catalysing street-level production, the experience of new audiences and appreciation for their work on platforms away from the street has elevated wire artists' sense of the potential for their work, as well as informing audiences. My engagement with street wire artists is not just an instrumental one for the creation of new products; the products are vehicles too for interpersonal engagement, for bridging social, economic and cultural divides, as well as those between art and craft, high art and low art, and high and low technology.

The South presents the challenge of creating relevance across striking contrasts in social, economic and cultural futures. Futures Action Research may be one of the means of facilitating communication and shared objectives across divergent groups. *SPACECRAFT* mobilised art and design towards achieving its objectives, and in this paper the potential role of futures in helping to direct it is illuminated.

#### Correspondence

Ralph Borland Side Street Studios 48 Albert Road, Cape Town South Africa http://ralphborland.net E-mail: ralph.borland@gmail.com

## Notes

- 1. The author has observed this directly in Cape Town, Johannesburg and Durban in South Africa; Maputo in Mozambique; and Harare in Zimbabwe.
- 2. Women make and sell other crafts, but in the five years the author has engaged directly with wire artists in Southern Africa, he has never observed a women participating in this specific activity.
- 3. To turn around the meaning of a symbol a classic Interventionist tactic (Thompson & Sholette, 2004).
- 4. This paper uses the term Southern to describe a set of relationships that could also be referred to as that between 'western and non-western' by Sardar (Inayatullah & Boxwell, 2003), centreperiphery or metropole and periphery (Connell, 2007), or 'subaltern' in Subaltern Studies. Following Connell (2007) the term Southern is used "not to name a sharply bounded category of states or societies, but to emphasise relations", especially around authority, exclusion and inclusion, and hegemony. It refers to "an entire history of colonialism, neo-imperialism, and differential economic and social change through which large inequalities in living standards, life expectancy and access to resources are maintained" (Dados & Connell, 2012, p.13).

### References

Antonelli, P. (2005). SAFE: Design takes on risk. New York: Museum of Modern Art.

- Barnitz, J. (2001). Twentieth-century art of Latin America. Austin: University of Texas Press.
- Borland, R., Morrell, R., & Watson, V. (2018). Southern agency: Navigating local and Ggobal imperatives in climate research. *Global Environmental Politics*, 18(3), 47-65. doi:10.1162/glep\_a\_00468
- Candy, S. (2010) The futures of everyday life: Politics and the design of experiential scenarios (PhD Dissertation). Department of Political Science, University of Hawaii at Manoa. doi:10.13140/ RG.2.1.1840.0248
- Connell, R. (2007). Southern theory. Sydney: Allen & Unwin.
- Cotter, H. (2006, October 13). When a burst of sunshine swept over Brazil's art world. *New York Times*. Retrieved from https://www.nytimes.com/2006/10/13/arts/design/13trop.html
- Dados, N., & Raewyn, C. (2012). The global south. Contexts, 11(1), 12-13.
- De Andrade, O. (1928), Manifesto antropófago (Cannibalist manifesto). *Revista de Antropofagia (Cannibalist Magazine), 1*(1). São Paulo.
- Eglash, R. (1999). African fractals: Modern computing and indigenous design. New Brunswick, NJ: Rutgers University Press.
- Gerdes, P. (1999). *Geometry from Africa Mathematical and educational explorations*. Washington, DC: The Mathematical Association of America.
- Inayatullah, S., & Boxwell, G. (2003). *Islam, postmodernism and other futures: A Ziauddin Sardar reader*. London: Pluto Press.
- Nadarajan, G. (2005). Islamic automation: A reading of al-Jazari's The Book Of Knowledge Of Ingenious Mechanical Devices (1206). Paper presented at the *REFRESH* conference, First International Conference on the Media Arts, Sciences and Technologies at the Banff Center.
- Rakowitz, M. (n.d.). *Michael Rakowitz paraSITE*. Retrieved from http://michaelrakowitz.com/ parasite/
- Ramos, J. (2017). Linking Foresight and Action: Towards a Futures Action Research. In L. L. Rowell, C. D. Bruce, J. M. Shosh, & M. M. Riel (Eds). *The Palgrave international handbook of action research* (pp. 823-842). New York: Palgrave Macmillan.
- Tharp, B. M., & Tharp, S. M. (2009, January 5). The 4 fields of industrial design (No, not furniture, trans, consumer electronics, & toys). *Core77*. Retrieved from https://www.core77.com/

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posts/12232/the-4-fields-of-industrial-design-no-not-furniture-trans-consumer-electronics-toys-by-bruce-m-tharp-and-stephanie-m-tharp-12232

- Thompson, N., & Sholette, G. (2004). *The interventionists: Users' manual for the creative disruption of everyday life*. Cambridge, MA: MIT Press.
- V&A Museum of Childhood (2016). Sign observed by the author. London, UK: Victoria and Albert Museum.

Wodiczko, K. (1999). Critical vehicles. Cambridge, MA: MIT Press.

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