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CONTEXTS

SYSTEMIC DESIGN ASSOCIATION

Contra-Innovation: Expanding the innovation imperative in the context of futuring, defuturing and fictioning

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Abstract

This paper critically reflects on the problematic relationship between design innovation and design defuturing. Design innovation is broadly understood as a field of knowledge, a mode of organising research around design and a form of design practice linked to dominant and colonising fictions of technology and progress. Design defuturing foregrounds the complex dialectical relation between creation and destruction, emphasising that every form of design futuring also acts to erase other futures. Design innovation has been one of the primary ways "defuturing" agendas gained operative (political) power historically and in the present. So situated, design innovation is structurally elemental to, and circumscribed by, its subordination to the economy and culture of "acceleration." Several critiques of innovation that emerge from within the systemic thinking discourse do well in engaging the questions of knowledge and learning. However, these systemic readings remain relatively underdeveloped in terms of their politics, failing to consider the ontological propensity of what gets brought into being as it either futures or defutures. By looking at three broader fictions of innovation of the U.S., China, and Cuba in relation to the question of defuturing, we question the fictions that connect design innovation to reductionist accounts of progress. We also propose a framework in which "fictioning" (second-order) can enable a way of speculating upon "contra-innovation," i.e., innovation to counter innovation that defutures. So positioned, contra-innovation undercuts the notion of innovation posited with an affirmative value and exposes it as a contested domain of action.

Keywords: defuturing, fictioning, design innovation, systems innovation, acceleration, development, ontological design

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Introduction: Innovation, defuturing, fictioning

Much has been written on the relationship between design innovation, fictions of progress and affirmative futures. Nevertheless, a critical exploration of how design, innovation and fictions of progress often relate in problematic ways to take away or erase particular futures is long overdue. Simply put, actions of creation (production) are always accompanied by acts of destruction, e.g., as with extractivism. The majority of discourses around innovation remain completely inattentive to this dialectical relation. Instead, echoing the often-cited statement by Schumpeter (1994 (1942), pp. 82-83) celebrating the link between innovation and the "storms of winds of creative destruction" that lead to out-competing existing and established products, the focus is on a celebration of the new and what is futured.

Fry (2020) identifies the process through which design acts to take away futures as "design defuturing" and suggests how an understanding of defuturing–as a historical phenomenon and mode of inquiry–enables a radically different framework to explore the relationship between design, progress, and the notion of futures. On the one hand, to look at design innovation as a form of defuturing requires a confrontation and critique of faulty foundations of thought that overemphasises what is futured at the cost of negating what is defutured, in which cultural stories(fictions) of design, production, and progress are embedded (Fry, 2020). On the other hand, as will be encountered within the argument posed in this paper, the defuturing framework enables a way of speculating upon "contra-innovation," i.e., innovation to counter innovation that defutures. So positioned "contra-innovation" undercuts the notion of innovation posited with an affirmative value and exposes it as a contested domain of action.

Defuturing has been recognised as an intrinsic condition of modern development that can be seen as a series of contradictions that gradually become impossible to steer within the limits of capitalism (Dilnot, 2020). First, what follows from this perspective is a call to strategically acknowledge that the future is as behind as well as before us, i.e., as the pre-determined. It is that which the past and the present are thrown into. Climate change is a clear example of this notion—where greenhouse gas emissions amass from the past and present with impact continually arriving from the future. The future is never empty to be filled with the output of the "newly" designed and produced but already colonised by what has been designed in the past. Second, the defuturing history of innovation makes clear that the dominant paradigm of innovation is very good at bringing things into being and very bad at comprehending futuring and defuturing consequences—the design of the automobile and the internet are two obvious examples. Design's agency as related to innovation processes does not arise from design mobilised with a clear understanding of its consequences. On the contrary, often, this agency arises from its power as an "unrecognised structural inscription" (Fry, 2020, p.3). So positioned, questions related to design innovation appear as ontological, meaning that they are questions of what design does in the way it acts within the context of time (Fry, 2020). Placing innovation within a defuturing framework speaks to how this process is inseparable from the broader question of epistemic and economic power. Considered in this light, fictions of innovation are, at the same time, fictions that tell of the processes of defuturing.

Moreover, the omittance of the defuturing axis within innovation studies owes much to the ways in which they too often focus on design innovation processes, in the context of specific institutional and organisational settings, as opposed to recognising the centrality of the processes of design in bringing forth everyday life worlds. Design innovation studies, understood broadly as a field of knowledge and a mode of organising research around innovation processes, have made profound advances in their ability to map out the complex dynamics of economic growth and society. These advances have influenced how these processes could be better integrated to create new products and technological systems that could cater for the needs projected by markets. Nevertheless, the efforts remain insufficient in mapping the broader relational conditions through which these processes emerge, particularly the links between complex systems of colonising power relations and the market.

Midgley and Lindhult (2021) have demonstrated how innovation studies have significantly expanded considering the "systemic complexity of innovation." Early innovation models framed within the limits of a single organisation have now developed into more interactive systems and networked-based alternatives (Kline, 1985; Lundvall, 1988). "Technology push" models, i.e., models that posit a one-way invention of technology that leads to all subsequent activities, have been replaced by systems integration and networking models (Rothwell, 1992, p. 236). New paradigms in innovation management, such as "open innovation," promote distributed innovation processes (Chesbrough, 2003). The shift in the 1980s to more complex participatory, horizontal ways of understanding innovation has led to a questioning of "value" in innovation networks and what it can mean outside the context of "economic value." For example, discussions on "service innovation" challenge the technology and product-centric view where services are identified as an add-on to the product, positing services as something that emerges in the interaction between the server and the served (Vargo & Lusch, 2008, 2004). "Responsible Innovation" foregrounds the term "responsible" to highlight the significant challenges of democratic governance in relation to innovation practices and to prompt discussion on the need to critically interrogate established ways scientific innovation is invoked and formalised as emancipatory within policy (Stilgoe, Owen & Macnaghten, 2020). These considerations have, in turn, enabled design innovation to be explored in the context of knowledge frameworks and methodological pluralism (Midgley & Lindhult, 2021). However, most of these studies focus on geopolitical contexts in highly developed economies that influence the normative criteria used to measure innovation related to progress and development.

Recent arguments presented by Russel and Vinsel (2016, 2020) suggest how an absence of a critical politics has enabled buzzwords like "creative destruction" and "disruptive innovation" to take centre stage in the innovation industry. They draw attention to how universities invest many dollars in innovation centres where innovation is equated to an ideology that effectively promotes change for change's sake. The "new" becomes a proxy for any form of value discussion. An economics of innovation developed within a Schumpeterian legacy sees capitalism as a system that produces endless variety in new ideas, firms, and technologies created by entrepreneurs and innovation research groups (Russel & Vinsel, 2016). To understand Schumpeter, one must grasp the difference between the "capitalist system" (for him, an operational mechanism) and the "capitalist order" (the civilisation and institutions

that capitalism upholds) (Fry, 2011, p. 40). Consumers and governments then make selections within this variety. Some selections are successfully propagated and developed into new organisations, products and technologies that provide the basis for future investments and the production of further variety. With reference to "disruptive moments" that lead to transitions, Loorbach (2021) identifies the "path dependency" mentioned above as the "innovation trap." He indicates how such a "path dependency" once set in place leads to more of the same, i.e., finding solutions to market problems through alternative markets, and reformist in nature, not transformative.

The aforementioned telos of development attached to the "new" is bonded to defuturing and destruction of what it designates as "underdeveloped." The telos of development attached to the "new" prohibits a re-directive evaluation from a "post development perspective," i.e., a perspective that recognises that the "catch-up" premises of "underdevelopment" never arrive within the linear narratives of development. In this manner, innovation becomes synonymous with acts of erasure and, therefore, the production of forgetting. Russel and Vinsel (2016, 2020) remind us how fictions revolving around technological innovation enable these processes of erasure.

Fictions and facts of innovation narrated through figures such as Eli Whitney and Henry Ford exemplify how the production of the new is equated to being modern. American modernity—in its fragmented and contradictory specificities—was deeply implicated in the growth and global expansion of defuturing. Here the relationship between industrial modernisation, technology and colonialism got mythologised as the opening of the West, the advancement of technology, the coming of progress, and the establishment of civilisation. The story of the USA decades prior to the civil war (1861-1865) emerges as a systems story, the story of the American system of manufacture. The military, the arms industry and the American system of manufacture was the paradigmatic driver of innovation that set the immediate and long-term ground for innovation and a modern system of industrial production predicated upon the futuring of defuturing. The consequences of this are the formation of a techno-instrumental ontology. This goes to the essence of technology as Gestell (enframing) as nothing technical (Heidegger, 1971). Enframing links the notions of design, innovation, and systems, as a mode of frame-setting and ordering. The effects of this productivist frame-setting have been profound, especially as this way of being technological was, and still is, universalised and instrumentalised by progressivist techno cultures (Fry, 2020, p. 72). This will be shortly seen in three historico-fictions of innovation: the USA, China and Cuba.

Thinking fiction

The word fiction has a complex history and a fluid future. Etymologically, "fiction" comes from the Latin fictionem, a fashioning from the meaning of fingere to shape, form, devise; and also, from fictilis, made of clay, a factor (maker) or moulder (evident in the seventeenth-century English usage of fictor as sculptor). By the thirteenth century, there was the word ficcion (French) meaning invention, fabrication; then two centuries later, ficcioun is an invention of the mind. By the sixteenth century, this meaning extended to prose works created by the imagination and then in the seventeenth (English), fictum means deception, fiction. In contrast, the meaning of design is modern, with its origins in the sixteenth-century middle-French, desseign. (Fry, 2022, p. 11). Fiction can longer be seen as other than fact. There are an increasing number of ways that fiction prefigures fact in design, invention, and innovation. Certainly, in the context of technology, if it can be imagined, there is a good chance at some point in time, it will be realised. Equally, and increasingly, the ideological construction of reality (by the state, as in Russia and China by propaganda; and by political demi-gods like, for example, Donald Trump in the USA) has created an ontological rupture of what are taken to be competing realities between what is taken to be real. Thus, a divide between perceptual and empirical reality is opening. This is not new. Sigmund Freud (*The Future of an Illusion*, 1964); Maurice Merleau-Ponty (*The Primacy of Perception*, 1964); Alfred Schutz and Thomas Luckman (*The Structure of Lifeworlds*, 1974), and Jean Baudrillard (*The Ecstasy of Communication*, 1988) are a few of the many that alluded to this condition early on. People have always filtered perception through imagination and taken what they see to be real (Castoriadis, 1997, p. 223). What is new is the scale and the amplification of ideological and socially constructed realities by mediators of "the new" via technologies such as social media.

More specifically, the reader will find that throughout this text, the term "fiction" appears to relate to three meanings. In one sense, the term fiction relates to the broader cultural narratives of everyday common sense and categories of truth that, in turn, influence the normative categories through which notions around innovation, progress and the new are understood within design-related discussions. The second use of the terms relates to how "design fictions" are used methodologically in innovation labs to link the logic of produced designs (truths) and common sense. Conversely, truths produced in the contexts mentioned above often create problematic forward-feeding loops between design and markets. This process contributes in catastrophic ways to further accentuate crisis and disruption, which inevitably become profitable for the creation of new markets at the expense of erasing and taking away the future of many forms of life on the planet. However, fictioning can provide speculative projections of consequences over time that invites rigorous critical analysis. By implication, this action extends the timeframe in which innovation is conducted and undermines innovation based on the production of redundancy that is often style based and thus generative of waste.

The third meaning recognises the arrival and agency of Second-order Design Fiction (SoDF) (Fry, 2022, Perera, 2021). It is informed by the principle of the observation of observation drawn from second-order cybernetics and points towards a specific method. First, the created fiction is based on the narrativisation of what can be observed when engaging the

situated conditions of a specific design problem in which the compound relational complexity of the problem cannot be taken as sufficiently recognised and registered. Second, this narrative is treated as an object requiring critical interrogative observation and analysis. Third, the information gained from action two is used to set up a critical framework to better engage the problem. This approach is very different from the modes of design fiction that project claimed or speculative solutions to a problem. It also recognises that mainstream innovation, as productive of creation and destruction, is almost always problem generative because of under-explored consequences. Thus, Second-order Design Fiction is proposed as an evaluative means of the futuring or defuturing agency of the object of innovation.

Three innovation fictions, reframed with a focus on defuturing

Three innovation stories from three parts of the world that, in turn, relate differently to becoming modern. The first two tell of two systems; both were created mainly in the mid-nineteenth century by the same causal force: the will to power. The first fiction is about the United States of America decades prior to the Civil War (1861-1865). The second fiction is about China. In both cases, the focus is on industrial modernisation. The third innovation fiction takes place in the mid of 20th-century Cuba, depicting a different system. Its focus is still on the questions of design, industry, and modernisation, but the relation between innovation and power is different. Instead of the will to power, one finds a will to survive. Design, innovation, and defuturing as processes appear in these fictions as embedded in the process of bringing about worlds. In each case, these histories were generative of fictions of nations(myths) and their struggle to become modern in some way. The U.S. example was leadership in technical innovation being one of the foundational claims to "American exceptionalism"; The Chinese example prefigured the fiction of "catch-up" development -– this was to be overtaken by a series of ideological transformations in which modern communist China created a capitalist industrial infrastructure in a politically communist state with an intent to gain power and recognition driving an ever-faster pace of acceleration. Cuba created itself as a global model of innovation by bricolage and a mode of social and economic survival.

1. Made in America: American system of manufacture[1]

Prior to the unification of the nation in 1776, colonisation centred on the development of specific areas of settlement. The burgeoning nation had neither the means nor a population of sufficient size to colonise itself. Three specific linked problems were deemed in need of resolution by the colonisers: the resistance of Native Americans, the lack of connection between colonised areas, especially between the East and the West, and notwithstanding the rate of immigration, a labour force insufficient in size to power the economy of the fully colonised nation. Driven by the political will to power to overcome these problems, two agents of transformation were united: the Army and technology. Between 1818 and 1825, the U.S. Army was reformed, and this process was embedded in the 400-page manual setting out the General Regulations for the Army (O'Connell, 1985, as cited in Smith, 1985, pp. 88-90).

[1] This account draws on (Fry, 2020, pp. 59-88).

Effectively, it provided a management system for every aspect of military life, from warfare to accounting, from information flow to dress conduct, to rules and procedures. At the same time, the Army became directly connected to the economy and civil society, specifically through the part played by the Corps of Engineers, which was formed in 1779, and the U.S. Army Ordnance Department, which was created in 1815. For example, Army Engineers managed the construction of the railroad system established between 1827 and the 1850s. During this period, thousands of Native Americans were killed of an already decimated population by a relatively small military force.[2]

For such action to be possible, a small force of soldiers needed an enormous amount of firepower – this is where the Ordinance Department comes into the picture. It set the performance standards, drove metallurgy research, and advanced design testing, and established the demand for the U.S. small arms industry established in the Northeast of the nation (Smith, 1985). As such, it had close relations with what were to become the famous arms manufacturers of the period, like Remington, Sharp and Colt. Most significantly, it adopted and promoted the production method developed by engineer entrepreneurs such as Eli Whitney and Samuel Colt that became known as the "American system of manufacture". The essence of the system was the use of precision component machining to establish the interchangeability of parts. This became the most essential element of modern manufacturing and mass production (Fry, 2020: 59-88). This method drew the attention of the world in the World Great Exhibition in Crystal Palace in London in 1851, where Samuel Colt presented his .36 Revolver. It was viewed by industry at large as an engineering sensation.

The American Civil War created a massive demand for weapons, and the arms industry took full advantage. However, unsurprisingly after the war, there was a slump. The result was the arms industry turning the knowledge and skills gained into designing and producing other products. Existing machines just had to be retooled. These products included sewing machines, typewriters, and locks able to be deadlocked. All these products had inter-changeable components similar in size and complexity to those in weapons.

There was also one other technology, larger but based on the same kind of system of technology—farm machines. Just as the railroad opened the West, the design and manufacture of this machinery—harvesters, reapers, rakes, ploughs, drillers, planters, all opened up the prairies of the mid-West to early forms of industrialised agriculture. The transportation of food produced in volume, in turn, supported rapid urbanisation and increased migration. Systems innovation also provided the basis of the advancement of the industrial society- the best known of these being "in-line assembly" introduced into

[2] Maybury-Lewis (2002) has highlighted how these deaths need to be seen in the context of the genocide of the native peoples of the Americas where between 1492 and 1600 it has been estimates 90% died from violence and introduced diseases—this represents more than 55 million deaths.

automobile production by Henry Ford in 1913. “In-line assembly” was inspired by a system of disassembling animal carcases hanging from a moving overhead rail in slaughterhouses in the mid-west at the turn of the century. But it depended upon the assembly of interchangeable parts by a low-skilled workforce trained to do one, or a few, functions from their position on the line.

2. China unmade: System after system[3]

In precisely the same period that the U.S. was in turmoil, so was China. Then, as now, the nation was the largest in the world with a fast-growing population of just over 400 million people, with borders that extended to Tsarist Russia, Outer and Inner Mongolia. The Qing Dynasty had ruled China since the seventeenth century, and it was a continuation of the same Confucian socio-cultural order of preceding dynasties. Vast numbers of people were making demands for land. There was significant social unrest and dysfunction.

The British East India Company came to China to buy tea. Rather than bring empty ships from India, they were laden with opium. By 1830 opium addiction had become a massive problem for the government and society. It was causing widespread social dysfunction. As a result, the Chinese government ended the monopoly of the British East India Company. Nevertheless, by that time, vast amounts of opium were being smuggled into the country. In 1838, because of the worsening situation, the emperor sent officials to Guangzhou to arrest Chinese opium dealers. The action “backfired,” and the British government dispatched troops from India to liberate the city – this prompted a war that started in 1839.

The firepower of the British Navy inflicted massive damage on Chinese coastal settlements. By 1842 significant concessions were made through “The Treaty of Nanking.” It reinstated the opium trade and gave the British favourable trade tariffs and other economic and diplomatic benefits. Then in 1856, the Second Opium War started. Again, it ended in defeat. For China, the Opium Wars were not just a military disaster but also an economic one. For China, they were considered globally humiliating and created a deep, long-lasting wound to national pride. Above all, they exposed that China was not militarily and technologically modern. Effectively showing it could not defend itself from any external aggressor of substance. Ruling officials recognised that if China was going to be able to defend itself from external aggressive powers, it had to acquire Western military technology. This meant the creation of a modern arms industry, which resulted, in turn: in creating systems of hiring foreign experts, buying foreign machinery, gaining new knowledge, training Chinese workers with new skills, and building shipyards and arsenals.

[3] This account draws on (Kalantidou & Fry, 2015: pp. 12-36).

All of this action went counter to the conservative Confucian worldview of the nation's ruling elite—it heralded the coming of another age: the modern. The government saw modernity as a path to the nation's future. To this end, in 1861, it initiated a "self-strengthening" reform movement that sought to both retain and abandon values drawn from the past. Its focus: learning about and adopting Western scientific and technical knowledge on weapons, machines, manufacturing methods and training, but managed by traditional means. Foreign experts were hired, shipyards and arsenals were built, and educational institutions were established.

The introduced production system failed. Very few workers had been inducted into a designed and systemised industrial means of production and its work ethic. Equally, the organisational structure of the workplace was based on Confucian methods of administration that undermined imported methods, plus some of the hired experts lacked expertise.[4] At a fundamental level, the implications of modernity were not grasped. Reducing it to a system of machines, industrial processes, the industrial workplace, and modern technical and scientific knowledge assured failure. But viewed from Europe, China appeared to have modern warships, large, well-trained armies well equipped with modern weapons, and would undoubtedly crush the expected aggression that was to come from Japan. The actual result of the conflict was the reverse. The better organisation, training, tactics, and equipment of the Japanese overwhelmed the opposition from the Chinese. The Qing Dynasty suffered another massive humiliating defeat in this war of 1894-1895. More painful lessons were learnt. It was not until the death in 1976 of Mao Zedong – Chairman of the Chinese Communist Party, leader of the Chinese revolutionaries, and founder of the People's Republic of China in 1949—that rapid industrialisation started.

3. Cuba unmade/remade: Unsystematic systems of survival

Innovation takes on a different meaning within the long history of change in Cuba, marked by conquests, revolutions, and multiple crises of economic, social and political order. In the mid-twentieth century, Cuba became a site of resistance against various forms of power exercised by North America that impeached the autonomy of Cuba. In the 1959 Revolution, Fidel Castro, with the support of the Soviet Union, attempted to change the organisation around production and design and reframe these processes within communist politics. The unrest brought about by the revolution disrupted the function of the Cuban economy. Unemployment soared, and private investment plummeted. The situation was worsened by falling prices of sugar, tobacco, and other staples of the Cuban export market. At the time, the Cuban minister of industries, Ernesto Che Guevara, requested workers to build their machinery at the first national reunion of production (Rognoli & Oroza, 2015). The NAIR (National Association of Innovators and Rationalizers) was politically prompted to help formulate a different agenda around innovation. Moreover, this response to disruption/destruction was framed as a form of reformulating the image of the island rather

[4] Kennedy (1978) provides a lengthy description of this situation.

than as a response to a defeat (Chavez, 2005; Bustamante & Lambe, 2019). As a result, factories and households all became sites of invention where social relations to technology were gradually reformulated.

Rognoli & Oroza (2015) identifies this process as the first wave of an alternative system of innovation in Cuba that, in turn, laid a framework for exploring an alternative relationship between the concepts of innovation, design, and market. Mainly the 1958 Agrarian Reform Law drove many to explore new forms of collective urban agriculture to ensure the daily ability to sustain themselves as a community (O'Connor, 1968). As such, "peoples farming" was not an ideologically enforced act (in contrast to the collective farms in the Soviet Union) but rather a social act that emerged as a pragmatic mode of engaging the disruptive crisis. The expropriation and collectivisation of land, which gained massive support from the rural masses, became a precondition for accelerating the economy that helped consolidate the new government's power and resulted in an organised framework to utilise Cuban soil (O'Connor, 1968, p. 217).

In 1991 with the collapse of the Soviet Union came the second wave of economic disruption. Cuba lost support from the Soviet Union; there was a massive loss of oil imports and massive shortages of goods in the country. The government declared this a "special period" and resorted to extreme rationing of goods. The post-soviet period is marked by an engagement and dialogue with global networks and Cuba's opening up to neoliberal markets. The opening to the global cultural industry enabled a better discussion of marginalised themes and introduced a new market logic for the Cuban cultural industries (Fernandes, 2020; Chavez, 2005). In 1993, a new law allowed the establishment of businesses dedicated to making and tinkering (Oroza, 2009). Since no new material/objects came to the island, the Cubans were forced to work with the materials and objects at hand. Less material and objects were thrown away; everything was evaluated for potential value to become something else. The Cuban free education system has already set up the framework for social capital, enhancing a general level of knowledge around systems such as engineering, medicine, and agriculture. Since everyone was affected by the crisis, all the professions, i.e., medical doctors, homemakers, athletes, and architects, had to work together to rethink the design of their everyday world.

Many assembled artefacts were produced in this period. A washing machine engine welded to a boat propeller became a makeshift fan. Stoves ran on diesel from trucks. Satellite dishes were made from garbage cans and trays. Metal chairs were converted to meat grills. Cars with sealed bottoms were used as boats. Since vehicles were scarce, Cubans illegally converted bicycles to makeshift motorcycles, and large boxes welded to trucks became buses. Old plastic containers were converted into toys by parents. With limited access to the global internet, Cubans used the state-run intranet to develop platforms such as SNet to connect local communities and the Cuban version of Wikipedia EcuRed (Fernandes, 2020). Oroza (2009) and Marder (2015) emphasise how industrial products were dissected in ways that enable an examination and questioning of the very premises of industrial culture and the closed exclusionary character of some industrial objects. This innovation process always relied on a form of dismantling an object's identity to learn its working, which led to re-makings.

The focus was on constant re-solving for solutions, and inventing became a way in which people could go on with their everyday lives (Chavez, 2005, p. 8). Cuban industrial culture became one of dissection and repair. The assembly and disassembly relation were no longer meant to nudge toward one future at the cost of erasing other possible futures. Innovation was indeed something that was a constant during the massive socio-political disruptions in Cuba. Nevertheless, the term within this fiction is far from its connotations in the U.S. and China fiction on the "will to power." It is also different from the western individualist terms of entrepreneurism or the Chinese make-over capitalism. Invention becomes far more embedded in a collective struggle, a resistance against defuturing.

There are three important conclusions drawn from the brief innovation fictions outlined here. First, The Story of the USA created the narrative that drove the global model of mass production and, thereafter, mass consumption that became the engine of massive use of extracted materials, carbon-based energy, and industrial and consumer waste. It put in place the design and innovation for a way of life based on delivering and defending consumerism. As such, it established the foundation of acceleration and systematic defuturing. This history gave birth to a fiction of heroic colonial (*de facto* genocidal) conquest, the wildness of the "wild west," fed the narrative of "American exceptionalism," and established a cultural romance with the machine celebrated in the poetry of Walt Whitman. Second, after over a century of failing to work with introduced innovation systems to economically modernise the nation, China adopted the U.S.-authored model and globally increased the speed of its acceleration. In doing so, the nation placed itself in direct competition with the USA and set in motion a reconfiguration of the global order. The fiction of China is the liberation of the masses layered upon a regime of complete social control and oppression for some. At the same time, it correspondingly increased the dynamic of defuturing. The clash of the "will to power" of the ideologies of these two nations has the potential to take defuturing to a higher and even more disastrous level. Third, Cuba, for a moment, provided a model of adaptive contra-innovation, grown out of adversity. Its importance goes unrecognised. Indeed, there was a crudity to what was produced. Still, in many ways, the form of design and innovation in Cuba that lasted for an undervalued, undeveloped, and corrupted moment could look more like the coming future than China and the USA. Unless futuring overtakes defuturing, life, as known, has no future. Here is the meta-narrative of all second-order design fictions.

Development, acceleration, and erasure of *other* innovation fictions

More than anything else, the historico-fictions we have outlined broadly suggest that innovation, rather than having an independent status as a process, is deeply entangled in broader socio-economic power relations, affecting the framework of technological relations. The values of innovation depend entirely on the values of the broader systems in which the process is embedded. In the current conjuncture, the dominant discourse of innovation – its theory and practice – is attached to technology in ways that speak to market ends. Innovation is linked to technological relations that measure increased production output and reduced costs. Robotics is a clear example; unlike live labour, they can run continuously with just an occasional break for maintenance. The innovation ideal here is one of ever-increasing systems performance and unit output at a constantly lowering and diminishing capitalisation cost. All these forms of innovation can be driven by an imperative: medical, environmental, defence, communication, agricultural, construction, and so on. However, they all share an overarching goal: to power economic growth in conditions that have the propensity to slow it. Innovation so characterised is a fundamental element of acceleration and is equally a fundamental element of defuturing.

Acceleration retrospectively has been employed as a re-reading and re-coding of two historical discourses: Marxism and Euro-modern global development. The dialectical materialism of Marxism was predicated on a theory of stages of development of modes of production from the slave to the feudal to the capitalist. Each stage, through the development of its means of production and mode of accumulation, created the conditions of contestation, out of which the next mode of production would arrive (Brewer, 1980). Thus, a negative critique of the condition of capital by Marx was equally viewed by him as exposing the dynamics of social dissatisfaction, alienation, and working-class unrest to accelerate its demise and replacement by the next mode of production: communism. Here one finds the convergence between Marxism and contemporary Nick Land-inspired accelerationists (Techno-utopians and supporters of singularity), viewing capitalism as the means to accelerate the arrival of a desired future.

Neo-Marxism does not have a single agreed-upon theoretical foundation, although there is an adherence to some form of social and economic liberation and freedom. In one direction, it is expressed in the import of a Marxist ethos to the broad domain of critical theory. However, in a more political form, it has retained the objective of pursuing social equality in conditions of hegemonic capitalism, which has pragmatically brought it into a convergent relation to liberalism. Hereafter the objective is to attain autonomy of the individual over their conditions of life, which implies a continued struggle for freedom. Yet this struggle, while acknowledging oppressed classes, does not posit the agent of change with class struggle or any "idealist solution" (O'Hagan, 2015). The struggle can be a path to greater or lesser inequity, as the adaptive story of Cuba went some way to show.

Euro-modern global development commenced in the early 1950s and was based on accelerated modernisation, underscored by the induction of particular populations into subaltern positions within the expansion of global capitalism. This process was led by the newly formed United Nations and its ideology of world development. Central to this development thesis was the designation of "undeveloped" nations as "underdeveloped" and thus in need of being developed economically, politically, and culturally.[5] "Development" thus became the mechanism of acceleration of change, cultural erasure, and neocolonialisation. The most overt and aggressive expression of this development model appeared in 1965 with the publication of Rostow's *Stages of Economic Development*. By the 1970s, it became a subject of sustained criticism from different perspectives that exposed the creation of conditions of dependence (Cockcroft, Frank & Johnson, 1972) and unequal development (Amiin, 1975). The fundamental flaw in this "catch-up" model of development was that, as mentioned earlier, it ignored that the developing countries or contexts were not static, waiting to be caught up with, but instead were following their own development trajectories. The current post-development discourse identifies this problematic link between innovation and development as a form of colonisation by other means (Klein & Morreo, 2019).

However, accelerationism as a broader cultural process and politics takes the problematic dynamics of innovation to a more aggressive level. It posits the market as a self-correcting system. Unlike the discourse of development, its institutions, theory, and practitioners do not act with a shred of humanist idealism. Accelerationism, so formulated, intends to overcome any obstruction that resists unrestrained capitalist development in the belief that capitalism unrestrained has an inherent capability to turn any crisis into an opportunity. Attaining this state of domination was the fundamental aim of classical economics (c.f. David Ricardo and Adam Smith), realised along with the accompanying objective of "free trade" laissez-faire liberalism. To date, what has arrived has been a weak and partial version of acceleration, lacking a projected vision and a ruthless application of power no matter the cost environmentally, socially, culturally, and psychologically. Anything that obstructs is destroyed without remorse. So characterised acceleration has been articulated and promoted as a myth to become a fact through "hyperstitions" by the wayward philosopher Nick Land (2021).[6] while this view occupies a marginal position, its agency should not be ignored because it constitutes a dangerous position even when moderated, as evinced in, for example, the convergence of the Alt-right, QAnon, racism as a way of finding a new politics and opens the way for the imposed rule of political, social and economic dictatorship.

Design fiction, as understood in a mainstream design and research context, has become part of the accelerationist status quo rather than being able to engage the conditions of defuturing

[5] The term "underdevelopment" emerges from the 1950s United Nations classification that posited a framework where "development" was seen as a necessary condition to become modern. Hence "developed" contexts became exemplary of the direction that progress should happen. Yet "undeveloped" as proposed here refers to a way of framing the conditions in which people exist in these "othered" contexts, their cosmologies that cannot be reduced to the developed vs. underdeveloped progress narrative.

[6] This is fiction that functions causally to bring about their own futures and after entry into a cultural system act to strengthen positive runaway feedback loops within the system (Ex: feedback loops between design and markets).

brought forth via innovation critically. The boundary between their critical function and their function as a "hyperstition" has been increasingly blurred in recent years, mainly due to the underdeveloped ways in which "design", "speculation," and "futures" are understood within the design fictioning process. Design, as often understood within these fictioning practices, is often limited to how it is defined within the profession; inherently, this is a position of marginality and has limited transformative agency. The futures they conceptualise, propose, and narrate are almost always disarticulated from the complexity and those futures already present, unfolding and disconnected from counter forces and futures of difference. Imagination as a common form of appeal that appears in design fiction is often disarticulated from its worldly placement geoculturally and techno semiotically. Dominantly the address to imagination has dislocated it from cosmologies of difference. Notions of imagination are universalised, and the plurality of its form flattened. (Fry 2022, p. 22; Tonkinwise, 2014).

Most speculative practices give the future an independent voice, whereas the future cannot be experienced as independent of the present. We do not existentially occupy the same present while the future may have unrealised potential, defuturing events of the past and the present qualitatively diminish it (Fry, 2022, p.10). So positioned, the innovation produced through these fictions are not substantial frameworks or systems that enable better tackling of meta-socio-cultural problems but rather often technological products and services that degenerate into gizmos (Fry 2022, p. 13). Design fiction's failure to grasp the ontological designing of instrumentalism displays what Carl Schmitt (1986) described as "political romanticism," positing agency within transformative action conceived and deployed from an egocentrically constructed fictional view of the world. Design fiction is intrinsically apolitical in this sense. Nevertheless, what is required of design fictioning processes in the context of defuturing is explicitly political in the sense that it needs to contest futures.

Contra-innovation, in lieu of a conclusion

Besides the way contra-innovation has been registered so far, it can also be understood and employed in three additional ways. It could first be positioned in relation to second-order fictioning as a method of modelling and imagining the compound complexity of defuturing processes so as to redirect or overcome them. Second-order Design Fictions present a way out of the replicating defuturing to which the structurally ontological condition of modernised being is bonded to and which the dominant commodity overdetermined mode of innovation serves. By implication, this means seeing, thinking, and imagining innovation otherwise. So framed, the "contra" in contra-innovation is not a reference to a counter project or a counter fiction, but instead a framework, an invitation for engaging the "othered." Second, it can act in the service of sustainment, i.e., the fundamental condition that enables life itself to continue, actualised as a secular belief that can bridge political, religious, cultural and social differences and a proto practice that enables materialising a technology that is futural. Lastly, it can make present, communicate, and enable engagement with the multiple technological cosmologies and potentially bring new cosmo-technologies into being.

The slippage between futuring and defuturing is a fine one so often predicated upon the exercise of a refined ethical judgement. Second-order Design Fictions, placed in this context, can be cast as a projection, narrativisation and interrogation of the futural consequences of design rather than prototyping the form, function, and immediate impacts (Fry, 2022, p. 20). SoDF, as observation of a some-thing in the world, is generative of a fiction responding to that thing that itself becomes an object of critical observation – this to engage the some-thing by design – is a practice of imagination. As such, SoDF is not bonded to prototypes as technology. SoDFs take on a different scale attached to projects, structures, and environments rather than products, services, and technology (Fry, 2022, p. 18). Prototypes are presented as objects of pluralistic expansions of meaning as they have been extended to embrace any kind of examination of material and immaterial objects of projection and reflection. What needs to be emphasised is that contextually and politically framed fiction is a critical practice. As such, it is an agent of bringing the agency of redirection into being that cuts across the telos of the imaginaries of mainstream capitalist innovation, be they technocentric mechanisms of expanding dependencies, as defuturing agents of environmental, social, communicative, or cultural ecologies or simply seductive conduits of the production of waste to propel consumerism ever faster. Contra-innovation can bring to presence other ways of seeing, using, and creating technologies that are more fundamentally futural as well as ways of living and making that are more convivial.

Finally, an argument *against* acceleration and *for* contra-innovation must be put in place. The merit and rhetorical power of any argument by itself, devoid of a plan for enaction, will not prevail over the unavoidable circumstances created by the momentum of defuturing. Crudely put, the cruel truth is "contra-innovate or die." This is the imperative that stands before the currently dominant mode of innovation and acceleration.

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