Visualizing Uncertainty and Vulnerability

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ABSTRACT

This article considers how scientific visualizations of data represent attempts to record and predict certainty about our social, political, and economic experiences and futures. Written from the perspective of someone living in the UK's lockdown response to the global Coronavirus pandemic, the article reflects on questions of uncertainty and vulnerability which are constructed in the Government's response and experienced by the UK's population. It discusses graphs which scientists have produced to model the impact of the disease on the population, together with an artist's documentation of the data which his body produced during cancer treatment, and the philosophical notion of 'living with dying,' which the feminist philosopher Gillian Howie developed as a way to affirm vulnerability in life.

When I was first asked to write about scientific representation and architecture for this journal, I gave the editor an abstract that considered visual representations of the Anthropocenic climate emergency in relation to social and political concepts of alterity and non-life. Now, returning to work on the text during the global Coronavirus pandemic and the UK lockdown, and having experienced the virus myself (including the slow 'tail' of its symptoms recurring periodically over the past 6 weeks), visual vocabularies of life and science have a quite different psychic, physical, and planetary resonance than those we were aware of three months ago. Also, given the extremely rapid change in global circumstances, my interest in architectural and artistic visualizations of economic, material, and political resources, together with questions of life and non-life, is now defined within an entirely different time and place.

In order to reflect upon the material nature of architectural and spatiotemporal practices, my research and teaching often draw attention to the historicity of our 'nows' in relation to the 'thens' of earlier historical, artistic and scientific practices. Previously this has led me to write about the relationships between our environmental and economic crises and 17th Century philosophical critiques of difference, or the 1960s and 1970s feminist artistic and environmental activism. In a recent article, I examined the prescience of historical geopolitical images of energy use, especially Buckminster Fuller's Dymaxion maps and graphs which model energy resources and automation (Rawes, 2018b). Produced during and after WWII, Fuller's utopian global visualization of data information focuses on the promise of a post-war acceleration of energy markets. His predictions of global energy resource distribution (especially, new automation technologies that advanced the lifestyle of the modern American consumer), highlights the imbrication between the known and the unknown in western techno-scientific modeling. Fuller's maps reveal the political tensions between certainty and uncertainty, and the economic security and insecurity of a post-war society, together with the ideological belief that US-controlled energy markets would also increase social improvements globally. Dating from 1940, these global energy maps show a utopic US geopolitical envisioning of the technological and economic certainty and continuity which the rapid acceleration of fossil fuel industries could bring to the leading 'super-powers.' But, as I also argued, these projections reveal the disturbing visual vocabulary of slavery and colonial histories of racism.

By the 1950s, Fuller's visualization of the 'peaceful' distribution of resources across the major nation-states is less secure. His "World industrialization graph 1952-2000" (1952) (Figure 1), presents a far less optimistic forecast of global automation, national security, and 'intellectual and physical freedoms.' Illustrating an increased implementation of automation between 1900 and 2000, the graph's smooth upward gradient of industrialization is annotated with less positive predictions: for example, Fuller identifies a period of 'imminent global crisis for all men' in the twenty-year period of acceleration from 1952

to 1972, although he also suggests this decline in 'world peace' will be averted by 1972 when the 50% automation tipping point is reached. That year, he predicts two different speeds of automation will develop: a first, slower rate of automation that reaches 100% in the year 2000, and a second, faster rate, which is achieved around 1983. But the most striking caption (at the base of the graph) states that by the 'critical point' in 1972, "the restless 'have nots' will be converted into the peaceable 'haves'" (Fuller & Marks, 1973, p. 155). The caption continues: "Until [the] critical point is reached [the] majority of world men are 'have nots' and are incitable to socialism by revolution against the seemingly ever more unduly privileged minority. [A]fter 1972 [the] majority are haves" (Fuller & Marks, 1973, p. 155).

Fuller's aspirational modeling is infused with a post-war capitalist anxiety that the promise of automated democratic and social equity is threatened by communist and socialist ideological interference. An ideological anxiety about the 'other' pollutes the neutrality of scientific prediction with the threat of insecurity and disruption. In addition, although produced in 1952, Fuller's 1973 reproduction of the graph in his monograph, The Dymaxion World of Buckminster Fuller, *takes place a year after* Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind *(Meadows et al., 1972) is published, which represented an influential economic warning to western governments that their post-war reliance on the fossil fuel industry could not secure global neoliberal wealth and prosperity.*

Stepping back from this specific historical image, I want to reflect on the nature of such predictive visualizations of time, *during our current period of critical social, political, and economic*

transformation. As I am sure many who are reading this article have experienced themselves, the social and political responses to the Coronavirus pandemic, especially the various lock-down strategies which governments have implemented, have contributed to a considerable transformation in the experience of time (daily, weekly, and now, monthly), for significant numbers of the population. For those of us who are required to 'stay at home,' possibly for an extended period of isolation, even until a vaccine is produced –and with the added responsibility of being, or caring for, vulnerable individuals– scientific visualizations of the shifts in duration, rate, quantity and quality of our economic, medical, and mental (in)security are even more strongly resonant.

Some public intellectuals are already *writing cogently about the technological and political responses to, and futures after, the pandemic. But reading their analyses and projections produces discomfort, I wonder at the speed, assurance, and perspicacity of their ideas, asking myself: "how have these writers been able to* give time *to* writing, *already, now, when the virus is causing significant psychic, physical, and planetary impact to individuals and societies (myself included)?" Of course, the job of the intellectual is to produce ways of understanding the world for others, for communities. But in my 'world,' and of the people I 'live with,' living currently consists of very practical modes of existing in the day-to-day: for example, in addition to my professional academic work, I am responsible for arranging the food, medicine, and care for two self-isolating households (the time organizing food deliveries in the first month of lock-down was considerable, including queuing in online supermarket waiting lists at midnight with the hope of getting a delivery slot).*

Necessarily –in fact, involuntarily– the process of writing this article has involved me in projecting back and forth *between contemporary works by individuals* living with uncertainty, *which present especially corporeal models of scientific data and visual information. Visualizations of lives who are vulnerable, whose health is at greater risk, and who may have tragically died, are perhaps even more biologically and bodily explicit than Fuller's global visualizations of energy and labor: from the visualizations of a cancer patient's daily affective index of their* dis-ease *(disease) while undergoing treatment, to the current national and international epidemiological statistics of Covid-19's impact on the UK and other populations. By reflecting upon these more recent* bodies of work, *each of which is concerned with 'life-limiting illness,' scientific visualizations of life and death show poignant biological and political embodiments of vulnerability and uncertainty. In the final section of the article, I turn back to the philosophical work of Gillian Howie, whose ontology of 'living with dying' presents a powerful political imaginary of* living with vulnerability and uncertainty.

British artist Tom Corby examines the environmental and expressive intersections of bodies, environments, and their data. Visually charting the daily modulations of living for extended periods of self-isolation during oncology treatments, his Blood and Bones: Metastasising Culture *project (2013–) shows how his body produces affective psychological and physiological data and information (Corby, 2019). Figures 2, 3, and 4 present some of the 'data' recorded during a treatment known as PAD, a combination of three drugs, Bortezomib, Doxorubicin and Dexamethasone, which preceded a stem-cell transplant later in the same year. Figures 2 and 3 present*

the rise and fall in his immune system's response and blood platelet production during the treatment. Figure 4 shows his daily record of the psychological experience of treatment during this period.

Although not predictive, these images are nevertheless affective visualizations of the disease itself, of the pharmaceutical impact of the drugs on the body, and the dis-ease of living with a life-limiting illness. The artist's body is a producer of data or information. First, it is a project which is a deeply personal record of the experience, and an example of the biopolitical nature of 'life,' especially given the current and predicted financial and political investment by global healthcare and pharmaceutical industries in accessing patient data to increase their market profitability. Second, Corby's work previews the experience of self-isolation by those who are classed as 'vulnerable' during the Covid-19 lock-down. Many individuals with life-limiting illnesses will have self-isolated previously. In addition, many of us who are not normally classed as 'vulnerable' are living with a heightened sense of psychological and physical uncertainty.

Data visualizations of life are now also part of the everyday visual imagery of national efforts to prevent the spread of the Covid-19 virus in global populations. Graphs, such as Figures 5 and 6 are presented in daily news reports and briefings which governments use to navigate their way through this major healthcare and economic crisis. The UK government has adopted an almost textbook form of biopolitical rhetoric in its mantra, 'following the science.' Politicians, medics, and scientists speak to graphs which show rates of infection and deaths in combination with explanatory statements that are intended to demonstrate the success of the

Government's strategy for tackling the virus, including aspirational claims about the successful and expected rates of change and distribution of infection in the population through models that, for example, predict 'flattening the curve' and 'herd immunity.' Increasingly, however, the ministerial and scientific briefings in which these data visualizations are presented also highlight the ideological concealment of uncertainty with 'figures of certainty' that range from the human expert scientific knowledge, to statistical information.

However, such visualizations of the UK government's scientific, medical, and political management of our economic, health, and social security are neither comprehensive nor stable. Exposed, for example, in the acknowledgment that the UK government's statistics did not include the elderly population in care homes, or cases where community death registers omitted Covid-19 as the cause. The number of deaths in the UK has therefore been predicted as double those reported by the government (Giles, 2020). In addition, since the Government's late decision in March to change its strategy from 'containment' to 'suppression,' the biopolitical nature of the Coronavirus 'body of knowledge' has revealed extensive disagreements about the expertise the UK government has considered relevant to its strategy, including an apparent restriction to public health and community-based guidance, together with a lack of transparency about the political management of the scientific advice (e.g. concerns about the membership and views of the Government's scientific advisory group, SAGE, have resulted in its membership list and guidance being redacted). Consequently, the purportedly neutral and objective graphs of epidemiological data are

constituted from highly unstable bodies of knowledge, and are instead saturated with biopolitical forms of social, technological, political, and economic value. Rather than presenting non-ideological factual evidence about the spread and rate of the Covid-19 virus in the population, the data is infused with political and scientific disagreement. Hence, at the time of writing this article, for many of us, life is an intensely biological and political experience in several ways: ranging from the terribly sad numbers of the population who are dying in the pandemic to the powerfully affective experience of the NHS and care professions who care for us, and the impact of the virus on members of communities who are most vulnerable.

Finally, this discussion has led me to return to British feminist philosopher Gillian Howie's philosophical concept of 'living-with-dying,' articulated in her writing and research into 'living with life-limiting illness' (Browne & Whistler, 2016). Although we may not all be living with Covid-19 quite so intensively as 'with dying,' there are many amongst us who are much closer to this heightened biopolitical condition than a few weeks ago. Together with the febrile mix of political and scientific prediction entering our homes in daily briefings in an attempt to create a climate of certainty, many are experiencing increased levels of anxiety about their financial, housing, and health futures, which differ dramatically depending upon their individual, economic, and familial wellbeing. Moreover, details about how the disease is affecting those who are economically and socially disadvantaged show that those who are already most vulnerable are at an even greater risk of serious illness. Rather than presenting evidence of secure societal experience or governmental management of the Covid-19 virus, we are therefore in

a period of increased mental, physical, and material dis-ease, which may be with us for another 18 months until a vaccine is successfully produced and available to immunize the population. Given these circumstances, Howie's work seems highly relevant once again:

> *Those who live with life-limiting illnesses, or alongside someone with such a diagnosis, will recognise how the person can be overwhelmed; mental and physical time and space shut down in distressing, fearful and isolating ways. However, if a person can live through (cope with) these intense states of alienation, there can also be times, when dis-ease can lead to a decisive agency for engaging in one's own, and others', worlds; of self, work, family, community, friendship, politics and poetics. Time is lived differently: not having time means that powers of self-determination, for and to oneself, are intensified. For some, the trauma of a diagnosis can be put to work, and make work, both affirmatively and negatively, at the same time. In such phases, the individual (and those around them, if the person is able to share their knowledge), may find that this creates a living-space for a special kind of reasoning, which is affirmative, critical, acutely incisive, and hopeful (Rawes, 2018a, p. 124).*

Howie's thinking resonates powerfully with us now because of her interest in situated forms of corporeal reasoning, and her analysis of the individual in relation to one's social and political experiences of power. Her potent political imaginary of 'living-with-dying' therefore also has a special timeliness for our experience of 'living with Coronavirus:' a way to think about life as ontology, which reflects how many of us are living with increased states of vulnerability and uncertainty.

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