AN IMAGINED DIALOGUE: RICHARD BUCKMINSTER FULLER & MARK WIGLEY

Evaluating   Screams   towards   Sustainability: Similarities   and   Differences
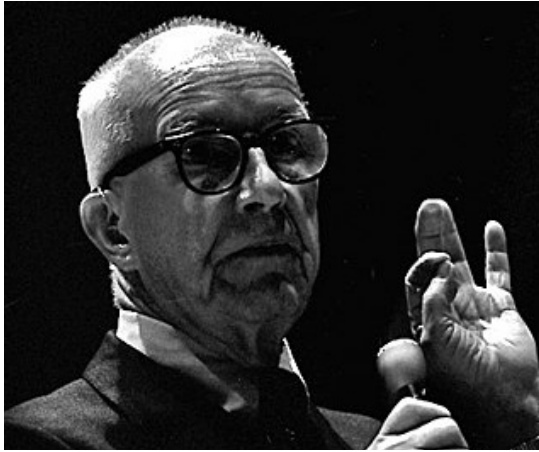

fig 1: Richard Buckminster Fuller
United States, 1895 - 1983
1966 Kassler Lectures: *'World Man'*
Princeton University School of Architecture

fig 2: Mark Wigley
Australia, 1956 - current
2021: Book Chapter from Non-Extractive Architecture
'Returning the Gift – Running Architecture in Reverse'

A   B   S   T   R   A   C   T

This thesis will explore two different perspectives on the urgency of sustainable design in the built environment. The first perspective is Mark Wigley's call for the imagination of '*non-extractive architecture*' as outlined in his essay '*Returning The Gift: Running Architecture in Reverse*'. The second perspective is Richard Buckminster Fuller's lecture titled '*World Man*', delivered in 1966 at Princeton University School of Architecture.

According to Wigley, ecological responsibility and energy efficiency are not equivalent, which contradicts Fuller's philosophy of '*doing more-and-more with less-and-less*' to ensure human survival and evolution. This thesis aims to explore this contradiction by comparing these two perspectives from the past and present and answer the research question: *What are the key differences & similarities in conveying the urge for sustainable design in the past & present, studied by the use of two outstanding voices?*

The thesis will examine how the different social and political contexts of both figures, as well as their use of language and rhetoric, influenced their messages and empowered their audience. Through discussing the lessons that can be learned from both perspectives, a deeper understanding of the evolution of sustainable design will be gained, and the insights can be useful for developing a sustainable design process for the future.

Although both Fuller and Wigley use language as a tool to communicate their ideas, their rhetorical strategies differ significantly. Fuller's lecture has a spontaneous and seemingly unorganized style, while Wigley's essay employs rhetorical questions and vivid adjectives to captivate his audience.
Wigley's essay '*Returning the Gift*' appears to learn from Buckminster Fuller's sustainability approach in architecture. While Wigley agrees with Fuller's objective of achieving more with less until everything can be done with nothing, he suggests that we should expand beyond Fuller's technological fix to address sustainability challenges and interact with wider social and economic systems that generate ecological issues. Wigley also illustrates Fuller's concept of how local activities have global effects. Lastly, Wigley suggests running architecture in reverse to consider what might come after architecture, since architecture is deeply involved in extractive economies.
In order to promote a more sustainable design process, it is crucial to raise awareness about the various perspectives on energy use, sustainable design approaches, and the definition of sustainability itself. By doing so, we can acknowledge and learn from the mistakes we have made in the past. If we trust in Fuller's philosophy, this increased awareness may lead to a positive shift in our behavior, resulting in more conscious actions and a more sustainable design process in the future.

C O N T E N T S

This thesis will explore two different perspectives on the urgency of sustainable design in the built environment. The first perspective is Mark Wigley's call for the imagination of *'non-extractive architecture, that moves beyond the unsustainable, exploitative, and destructive practices of the present'*, as outlined in his essay *'Returning The Gift: Running Architecture in Reverse'*. The second perspective is Richard Buckminster Fuller's Kassler Lecture titled *'World Man'*, delivered in 1966 at Princeton University School of Architecture. By comparing these two voices, one from the past and one from the present, this thesis aims to answer the following research question: *What are the key differences & similarities in conveying the urge for sustainable design in the past & present, studied by the use of two outstanding voices?*

Mark Wigley & *'Returning the Gift: Running Architecture in Reverse'*
Mark Wigley, born in 1956, is a Professor and Dean Emeritus at the Columbia Graduate School of Architecture, Planning and Preservation. As an architectural theorist and historian, Wigley explores the intersection of architecture, art, philosophy, culture, and technology. Wigley was born in New Zealand, where he was trained as an architect, and currently lives in New York.
        Mark Wigley's (2021) essay *'Returning the Gift: Running Architecture in Reverse'* argues that it is urgent to imagine a non-extractive architecture that goes beyond the unsustainable, exploitative, and deadly economies of the present. However, Wigley questions whether non-extractive architecture is possible, considering that architecture is inherently extractive. The piece reflects on the history of architecture and the role of the architect in the creation of buildings. Wigley emphasizes that buildings are not simply added to a site and that there is no construction without deconstruction. Furthermore, he describes buildings as hungry organisms that depend on a complex global system of extraction of materials and labor. Wigley discusses the concept of doing more with less in architecture, which has been a longstanding tradition in the field. The idea is that architects have the ability to make material do more, and to produce maximum effect with whatever resources are used. This has become a central mantra in recent calls for energy responsibility in architecture. Wigley appoints following Buckminster Fuller's pioneering ecological call *'to do more-and-more with less-and-less, as the ultimate goal, until everything can be done with nothing, leading to a better world in which resources are shared'*. However, he notes that this optimistic scenario is not often embraced by architects, who are addicted to the tension between the idea of architecture as an excess beyond building and the idea of architecture as an alchemical release of new efficiencies and potentialities. The essay suggests that the figure of the architect should be reconsidered, and a sustained pessimism about architecture might be a much more valuable guide to design than the usual optimism.
        'Returning the Gift' is a chapter from the book *'Non-Extractive Architecture: On Designing without Depletion'* by Space Caviar (2021). Space Caviar is an architecture and research studio operating at the intersection of design, technology, politics and the public realm and was founded in 2013 by architects Joseph Grima en Tamar Shafrir. Joseph Grima (2021) has reflected on this new paradigm of *'Non-Extractive Architecture'*. He names how throughout the history of our existence as a species we have become better and better: First, tools gave us the means to survive on this planet. Later, they gave us the means to thrive and eventually fundamentally change our environment. According to Grima (2021), we now face an evolutionary crisis: we can no longer afford to simply ask ourselves how much we can take from our habitat, we are now forced to ask ourselves how much it is *reasonable* to take from our habitat. It is necessary to reconsider the principles towards which modern industrial economies have been optimized. Grima (2021) sees *'Non-Extractive Architecture'* as an attempt to make this shift from the *possible* to the *reasonable* within the confines of the built environment. In recent decades, environmental discourse has created a broad equivalence among the public between ecological responsibility and energy efficiency. Grima (2021) argues that this equation is false: efficiency, while necessary, is not sufficient, and *'efficient'* building often only adds to the extractive burden rather than reducing it. The reality is that a much broader and more ambitious reappraisal of human activities is urgently needed. Instead of energy efficiency, externalities should therefore be considered as a measure of sustainability: *'Non-Extractive Architecture'* is a form of architecture that considers the full chain of consequences of building, taking into account all possible externalities.

In a time of increasing awareness around both the scarcity of materials and other resources, as well as the damages caused by their extraction and transportation, it is clear that we need to both think and do differently. To achieve this, reconsideration of the design process is needed. According to Space Caviar (2021), this takes form in way of *'Non-Extractive Architecture'*. However, there are of course other visions on how sustainable design can express itself: within contemporary contexts, but also in the past, many have had visions on what a sustainable design process could look like. One of them was Richard Buckminster Fuller. He was one of the first modern Western thinkers to connect architecture to ecology and the environment. (The Outpost, 2014)

Richard Buckminster Fuller & 'World Man'

Richard Buckminster Fuller was born in 1895 in Massachusetts and died in 1983 in Los Angeles. He studied at Harvard and married Anne Hewlett in 1917, the daughter of a prominent New York architect, and spent around five years working with his father-in-law on new techniques of housing construction. From 1927 on he started working independently and committed himself to rethink the question of shelter— challenging every assumption about structure, function, materials, technology, aesthetics, services, distribution, mobility, communication, collaboration, information, recycling, politics, property, and social norms. He started to formulate a radical philosophy of doing *'vastly more with vastly and invisibly less'*. The constant goal was a much more efficient and equitable distribution of planetary resources to enable the survival and ongoing evolution of the human species. His work paralleled, radicalized, and critiqued the mainstreams of modern architecture. He was a nonstop teacher and communicator around the globe in every possible medium—becoming probably the single most exposed designer and design theorist of the twentieth century.

Fuller's lecture *'World Man'* was part of the Kassler Lectures held at the Princeton University School of Architecture. The lecture series was founded in memory of Kenneth Stone Kassler (1905-1964). He attended the school and served as a design critic and instructor for more than three decades. Kassler was an admirer of Fuller and brought him to Princeton for a series of visits throughout the 1950s and 1960s. (Zaera-Polo, 2013)

To open the lecture, Richard Buckminster Fuller is introduced as a multidisciplinary inventor, discoverer, and architect interested in sustainable design. His focus was on developing designs and processes that decrease restraints on humanity, increase their fundamental capacity, and give them more of their own time to invest freely. Fuller talked about how he believed in employing principles operative in the universe to bring about devices that solve known problems, such as population explosion and urbanism, in a sustainable manner.

In his lecture, Fuller discussed the function of human beings in the universe and their impact on sustainability. He believed that humans have not acted wisely in terms of the conservation of energy, but saw hope in the fact that humans are born helpless and can discover their errors and behave in a logical way with respect to their function in the universe. He suggested that human customs may not be conducive to the success of human beings and that they must participate in the regeneration of moral life to ensure sustainability. Fuller also touched upon the concept of automation and how it is not a new idea, but rather a description of a process that has been occurring for a long time. He reflected on his own self-awareness and how he, and humans in general, are mostly subconsciously operative, with only a small percentage of conscious participation. He, therefore, excused human errors due to this small amount of conscious participation and emphasized the importance of making mistakes in order to gain knowledge and understanding. Additionally, Fuller discussed the challenge of using our human abilities and technology in a responsible way, and how humanity is on the brink of a new relationship with the universe. He suggested that the mistakes we have made in the past, such as burning fossil fuels, can be converted as we begin to understand them. Fuller also talked about the importance of energy and its role in human life. Overall, Fuller seems to be advocating for a more conscious and effective use of energy resources in order to address the challenges facing humanity. He rejects the idea that wealth is constantly depleting and instead sees it as an organized capability that can be improved and increased through the use of energy flows. Fuller believes that the technology developed, has allowed us to do more with less and that we have the potential to redesign the use of our resources to take care of 100% of humanity. Fuller concludes by expressing that he sees the young generation as being world thinkers and believes that they will take the initiative as inventor-scientists to employ principles available to them and concert resources to achieve this goal.

Comparison

In their recent work, both Grima (2021) and Wigley (2021) argue that the equivalence of ecological responsibility and energy efficiency is a false assumption. However, this seems to be at odds with Fuller's philosophy of achieving more with less and his constant pursuit of a more efficient distribution of planetary resources to ensure the survival and evolution of the human species. This contradiction prompted me to explore how the vision of a sustainable design process can evolve over time, and what factors may influence such changes. Fuller, who was seen as a pioneer in the field of sustainable and efficient design, can be compared to Wigley's vision, in order to offer insights into how the vision of sustainable design has changed or remained similar over time. Similar themes are addressed by both, which makes a comparison possible.

How they both come from different contexts, focusing on the social and political conditions of their own place and time - the 1960s and the present - will be examined and related to their visions of sustainable design.

Furthermore, how they convey their message - Fuller through an unprepared lecture and Wigley through a well-thought-out essay - will also be assessed. The comparison of the messages will focus on the use of language, tone, and rhetorical devices, with the aim of understanding how they convey their message and empower their audience.

By comparing the context in which Fuller and Wigley conveyed their messages and by the use of which rhetorical devices they did, several conclusions regarding these aspects will be drawn and discussed.

Lessons

In the final section of the thesis, the lessons that can be learned and the conclusions that can be drawn from both messages will be discussed. The relevance of Fuller's message in contemporary times and what new or different insights Wigley offers will be considered. This will result in a comprehensive assessment of their respective contributions to the vision of sustainable design.

Insight into approaches to sustainable design can be gained by comparing Wigley and Fuller's messages and visions. As two influential figures in the field, their voices offer valuable perspectives. Both voices will be listened to and delved into, allowing us to understand how they were shaped and how they reached their respective audiences. By comparing the lessons and conclusions drawn from both messages, a better understanding of the evolution of sustainable design will be gained. This comparison of two outstanding voices will reveal how the vision of sustainable design can change, or remain the same over time. The insights gained from this thesis will be useful in developing the sustainable design process of the future.

Examining Wigley's and Fuller's visions of sustainable design within their respective contexts can provide valuable insights into how external factors, such as the social and geopolitical conditions of their time, may have shaped and influenced the development of their visions.

Fuller's 'World Man'
In 1966, Richard Buckminster Fuller accepted an invitation from the newly appointed dean of Princeton University's School of Architecture and Urban Planning, Robert Geddes, to deliver the inaugural Kenneth Stone Kassler Memorial Lecture.
      According to Zaera-Polo (2013) Fuller's lecture '*World Man*' today is timely. The lecture was given during a period when the Princeton School of Architecture was exploring new technologies and the cross-over between architecture and science. The meeting of Fuller with other design scientists in the mid-twentieth century at Princeton University initiated a culture of technology. This culture has since then, nearly disappeared. During this brief period of time, Princeton University functioned as a laboratory and voice for major technological and structural developments in architecture.

Richard Buckminster Fuller has become a reference point for a range of contemporary approaches to sustainable development and design. In combination with the sociological theory of reflexive modernization, Massey (2012) reconstructs the reflexive modernism through which Fuller aspired to chart a more sustainable course for humanity.
      Reflexive modernity is a concept in sociology and philosophy that refers to the current condition of modern societies, which are characterized by their self-awareness, self-examination, and constant questioning of established norms and institutions. It is a term that describes the way modern societies have become aware of their own internal workings and how they are constantly reflecting on and critiquing themselves. Reflexive modernity is characterized by a heightened sense of individualism, skepticism towards authority, and a preference for flexibility and adaptability in all aspects of life. Overall, reflexive modernity is a concept that describes the way modern societies have become increasingly self-aware and reflective, and the impact this has had on our understanding of the world and our place in it. (Beck et al., 1994)
      Massey (2012) describes how Buckminster Fuller was a thinker who was deeply concerned with the geopolitical conflicts of his time, including the battles between capitalism and communism, liberal democracy and authoritarianism, and markets and planned economies. His solution to these problems was to promote change through the introduction of better products within a liberal capitalist system, with the aim of reducing the potential for revolution, communism, and fascism.

Fuller's vision of industry was influenced by the Technocracy movement, which advocated putting engineers and technical experts in charge of production and consumption decisions. Technocracy is a form of governance in which experts in various fields are given authority to make decisions on behalf of society. It is based on the belief that the most qualified individuals should have the power to shape policy and lead society. The idea of technocracy emerged in the early 20th century as a response to the perceived failures of democracy and capitalism during the Great Depression. They argued that power should be transferred to a group of scientific experts who could use rational analysis and empirical evidence to guide policy. (Technocracy Inc, 1940)
      Like the technocrats, Fuller believed in the idea of '*one best way*' for economic and social organization, which could be achieved through centralized decision-making and managerial practices. (Massey, 2012)

However, Fuller was also committed to preserving individual autonomy within the framework of a market economy, and he rejected the autocratic solutions proposed by the technocrats. He pursued a market-based social reform strategy by designing standardized solutions to problems of housing, transportation, and resource use. (Massey, 2012)

Fuller believed that modifying the environment, rather than trying to reform people, was the best way to get individuals moving in preferred directions. He sought to rebalance production and consumption in sustainable terms within the framework of liberal capitalism by leveraging resources more efficiently and reshaping human resource use patterns through non-coercive means.

Fuller's work and ideas were also influenced by his experiences as a child, growing up in a family that struggled financially. He developed a deep sense of empathy for the poor and saw technology as a means of solving social and economic problems. This led him to focus on designing low-cost, mass-produced housing that could be easily assembled and adapted to local needs. (Massey, 2012)

Massey (2012) describes how Fuller's reflexive modernism reflects a broader tension between modernization and sustainability, which remains unresolved. On the one hand, modernization promises technological and economic progress, and Fuller's work exemplifies this. On the other hand, sustainability advocates emphasize the need for fundamental revisions to existing social and economic structures to address ecological limits and social inequalities.

Wigley's 'Returning the Gift'
Wigleys '*Returning the Gift*' is a chapter from the book '*Non-Extractive Architecture: On Designing without Depletion*' by Space Caviar (2021).

Climate change and sustainable development have become dominant themes in contemporary architecture and design. Various design paradigms and environmental assessment methods have emerged in the past few decades. The ultimate goal is to achieve an ecological balance between resource consumption and regeneration. The concern for environmental building dates back to the 1960s and 1970s. The growth of the sustainability movement and the realization of the impact of fossil fuels on the climate have further pushed the architectural world towards sustainable design since the late 1980s and early 1990s. Architects identified architecture's reliance on fossil-fuel-dependent energy grids as a key problem and proposed solutions that focused on material and energy efficiencies and distributive justice. Climate change and resource concerns forced architects to rethink the ways in which structures could reduce environmental impacts and use resources and technologies in new ways. (Caradonna, 2018)

'*Non-Extractive Architecture*' is a manifesto that tries to rethink some of these ways and proposes a new type of architecture that does not deplete the earth's resources. It calls on architects to design buildings that avoid exploiting the planet or people. Grima (2021), one of Space Caviar's founders, says '*Our goal as architects is not to limit carbon emissions. It is to come up with an idea of architecture that is not intrinsically dependent on some form of exploitation.*' '*At the most basic level, non-extractive architecture is an architecture that does not produce externalities.*'

Joseph Grima (2021) explains that while there are many other efforts to make architecture more sustainable by reducing carbon emissions and improving energy efficiency, '*Non-Extractive Architecture*' takes a more holistic approach. Non-extractive architecture questions the assumption that building must inevitably cause some kind of irreversible damage or depletion somewhere and aims to create an idea of architecture that is not intrinsically dependent on some form of exploitation. This approach considers not just material extraction, but also sociological, economic, and geopolitical factors.

The idea of non-extractive architecture is not new, and there are many studies into the ways in which vernacular traditions around the world have evolved to establish a balance between the needs of a community and the equilibrium of the environment it is situated in. However, the authors of '*Non-Extractive Architecture*' are not advocating a return to past practices or the dimension of the vernacular.

On a more theoretical level, Grima (2021) explains that the manifesto was at least in part inspired by the writing of Ivan Illich, who was a fierce advocate of the need to question modernity's pathological dependency on technology, and often argued that a more socially and environmentally equitable society could only be built if one is willing to start from first principles and embrace long-term thinking, rather than getting caught in the negative feedback loop of solving the problems caused by the thoughtless use of technology with more technology. Space Caviar (2021) tries to intersect his ideas with one of the most technologically-driven thinkers of the 20th century, Buckminster Fuller, who was equally preoccupied with environmental issues but approached the problem from a diametrically opposite angle.

Conclusion
Both Mark Wigley's 'Returning the Gift' and Richard Buckminster Fuller's 'World Man' are related to sustainable development and design, although in different contexts.

'World Man' was a lecture given by Richard Buckminster Fuller in 1966 during a period when the Princeton School of Architecture was exploring new technologies and the cross-over between architecture and science, while 'Returning the Gift' is a chapter from the in 2021 published book 'Non-Extractive Architecture: On Designing without Depletion' by Space Caviar, which calls on architects to design buildings that avoid exploiting the planet or people.

Massey (2012) employs the sociological theory of reflexive modernization to analyze Fuller's approach to sustainability, which aimed to chart a sustainable path for humanity influenced by the Technocracy movement, trying to find '*one best way*' for economic and social organization, highlighting the tension between modernization's promises of progress and sustainability's call for fundamental revisions to social and economic structures to address ecological limits and social inequalities; Joseph Grima (2021) extends the notion of sustainable architecture beyond just improving energy efficiency to encompass a more comprehensive and holistic approach, coined as 'Non-Extractive Architecture,' which considers the full chain of consequences of building, taking into account all possible externalities.

This chapter will focus on how Richard Buckminster Fuller and Mark Wigley convey their messages. The comparison of the messages will focus on the use of language, tone, and for example rhetorical devices, with the aim of understanding how they convey their ideas and empower their audience.

Fuller's 'World Man'

When Richard Buckminster Fuller accepted the invitation to give the Kenneth Stone Kassler Memorial Lecture, he announced that he would *'speak entirely extemporaneously, without notes.'* A few weeks later, on October 5th, he addressed a group of architecture students, faculty members, and professionals, in a process of *'thinking out loud cumulatively, as had become 'the pattern for [his] life.'* Fuller explained that he followed a strict life discipline that prevented him from preparing lectures or even thinking about them ahead of time, other than agreeing to give a title. Drawing upon themes that he had been contemplating for decades - *'I am going to think out loud with you in a way that I have thought of myself a great deal.'*- Fuller delivered a powerful assessment of the challenges facing humanity in the mid-twentieth century.

      The documentary *'The World of Buckminster Fuller'*, directed by Snyder and Glascock (1974), offers an immersive experience of Fuller's perspective, thoughts, and emotions. Using solely Fuller's own words, the film delivers a moving, private, and motivational message from Fuller to our vulnerable planet. The documentary clearly illustrates Fuller's seemingly unstructured and *'thinking out loud'* way of discussing different topics.

According to Zaera-Polo (2013), Fuller has had a great capacity to trigger public interest in his projects and their causes. To achieve this, Fuller attempted to gain a clearer understanding of his audience by documenting his ideas, sharing them with readers for feedback, and then selectively integrating the feedback into subsequent versions of his writing. This documentation comprises various materials, including handwritten notes, typescripts, charts, graphs, memos, newspaper and magazine clippings, letters, photographs, and other fragments. These materials reflect the continuous process of reading, writing, and corresponding through which Fuller formulated his ideas and undertook initiatives.

      Fuller relied on collective experimentation in his education and in this way focused on capturing the innovations of the moment rather than reinforcing long-standing academic traditions, styles or pedagogy. In his 1953 and 1960 visits to Princeton, he created physical models to explore cartographic and structural concepts. In his 1966 Kassler lecture, however, he used words to build conceptual models and engaged his audience in open dialogue. López-Pérez (2013) explains how Fuller used language to represent relationships between the conceptual and the physical, the cognitive and the experiential. An example of Fuller using language as a demonstrational tool to explain the difference between the brain and the mind would be: *'I am now going to have to make some sort of a demonstration to give you the difference. First I take a piece of rope...'* And later on in his lecture does the following statement, clarifying the term *'generalization'*: *'What is interesting about what I have just recited to you is the fact that I started off by saying I take a piece of rope, and I didn't have a piece of rope at all, and nobody in the audience said to me, 'You don't have a piece of rope.' You have all had so many experiences with so many ropes that when I did it, it seemed so completely logical to you that I did not contradict any of your experiences, that you allowed me to assume I had a piece of rope. We call that generalization.'*

López-Pérez (2013) notes that Fuller's lecture was structured using clear, deductive logic. He began with a number of concepts, many of which he presented as dualities, such as '*brain*' and '*mind*,' '*physical*' and '*metaphysical*', and '*entropic*' and '*antientropic*.' He then posited a '*theory of functions*', which held that functions are relational and exist '*only by virtue of the always and only coexistence of other functions*.' From there, he offered generalizations of increasing complexity regarding these opposing functions. These generalizations gave rise to new words, many of which were neologisms coined by Fuller himself, and whose meanings were clear only within the context of his developing narrative. López-Pérez (2013a) describes how Fuller believed that words and concepts were closely intertwined, as the growth of the dictionary reflected the increasing complexity of the subjects we consider. Language was a valuable tool for sharing and developing ideas, with Fuller seeing it as a discursive process for exploring new concepts. He created new words by recombining elements of existing ones, examples of such terms include '*dymaxion*', a synthesis of '*dynamic*' and '*maximum*' that referred to Fuller's concept of employing technology and resources to maximum advantage with minimal expenditure of energy and material. Fuller's terminology was iterative and evolving, never becoming fixed or static. His definitions moved and extended from one area of relevance to another, providing an abstract but suggestive outline of Fuller's '*geometry of thinking*'. (Fuller et al., 1982)

Wigley's 'Returning the Gift'

Wigley starts off his essay by introducing us to the topic of '*Non-Extractive Architecture*' through the use of a few big rhetorical questions. Starting the text with these key questions he immediately grabs the audience's attention and encourages an active, interactive reading attitude. By using multiple expressive adjectives, as seen in the first sentence '... - *an architecture beyond the unsustainable, exploitative, and murderous economies of the present.*', emphasis is added and Wigley starts to tap into the audience's emotions. Wigley closes his introductory paragraph with a concluding sentence that conveys the essence of the essay's message: '*Non-extractive activism might begin by dramatically reconfiguring or dismissing the architect - or at least the architect should be the first technology to reconsider.*' Assuming that the main audience of this essay consists of architects and designers, he seems to address his audience directly and urges them to turn to themselves and reconsider their own role (as architects) in a critical way. He also plays with the use of words in this last sentence, by transforming the now multiple times repeated term '*Non-Extractive Architecture*' into '*Non-Extractive Activism*'. This attracts attention to the word Activism and implies the activist nature of the essay and the book/manifesto '*Non-Extractive Architecture*' of which the essay is a part.

Next, Wigley describes how architecture portrays itself as a '*Gift*,' as something extra. There is much repetition as he uses multiple synonyms or similar expressions to reinforce his point: '*a gift*' & '*an act of giving rather than taking*'; '*something extra*', '*some kind of bonus beyond the physical need*', '*not needed*' & '*a going beyond our needs*'. Wigley begins to argue the notion that architecture is supposed to be a Gift by reflecting on the history of architecture and the role of the architect in the creation of buildings. After that, he again emphasizes his point using repetition '*not essential*' & '*something that exceeds the essential*'.

In the succeeding section of the text, he again seems to directly urge his audience to look at themselves with a critical eye and almost inculcates a sense of guilt by calling out an '*addiction*': '*But few architects embrace their own erasure. If anything, architects are addicted to the ongoing tension between the idea of architecture as an excess beyond building and the idea of architecture as an alchemical release of new efficiencies and potentialities.*' He identifies this '*addiction*' as something that would prevent architects from actually doing '*more-and-more with less-and-less*' and reaching towards an optimistic ecological scenario.

Wigley goes on to describe how a building is a '*simplifying device*', '*hiding so much more than it reveals*'. Architects are said to be '*experts in veiling. veiling the fact that each building is but the tip of a massive extraction system*'. Again, in doing so, he addresses his audience in a pedantic and critical manner.

Next, Wigley elaborates on the *'extractive nature'* of architecture and the text takes on a somewhat darker and negative tone. *'Seemingly static buildings are actually pieces of mining equipment, actively devouring the planet.'*, *'Buildings give shape to death.' 'A sustained pessimism about architecture might be a much more valuable guide to design than the usual optimism.' 'As buildings rise in one place, a deadly net of holes, gaps, cracks, collapses, deficiencies, floods, and famines appear elsewhere.'*

After this, Wigley repeats and emphasizes his earlier statement: *'The materials that are mixed to produce architecture are extracted, transported, processed, stored, assembled, and installed. The building veils this fact, and it is the auction that gives form. Architects are experts in veiling all the acts of extraction that make a building possible.'* He continues by calling building sites *'crime scenes'* and describes the role of the architect on these *'crime scenes'*: *'The building, in its seeming simplicity, sits on, depends on, and conceals all these deadly systems of extraction. In a sense, the role of the architect is to make the culture of extraction comfortable - removing the sense that every building site is a crime scene.'* He sticks to the darker tone of writing, relating architecture to death.

Overall, in his essay, Wigley bases his arguments primarily on facts and examples. Facts are not presented as hard facts but brought in a narrative manner which helps in getting his points across to the audience. Wigley strengthens his story by using a lot of repetition and several times - directly - encourages his audience to look critically at themselves. He does this at times by capitalizing on emotions and almost stirs up a sense of guilt.

Wigley concludes his text with two paragraphs. In the first of the two, he asks numerous *'What if...'* questions. By asking these questions, he again encourages his audience to actively think and look at themselves. The last paragraph functions as a conclusion and tries one last time to urge the audience to take action and do it now! *'It is time to take account of the real costs of the words, models, drawings, renderings and buildings offered by the architect as a gift.'*

Conclusion

Both Fuller and Mark Wigley use rhetorical strategies to convey their messages.

In summary, Buckminster Fuller was a visionary thinker who spoke extemporaneously without notes and focused on thinking out loud cumulatively. He followed a strict life discipline that prevented him from preparing lectures or even thinking about them ahead of time. Fuller's lecture is structured using clear, deductive logic, and he introduces new words and concepts that are closely intertwined with his ideas. He used language as a tool to represent relationships between the conceptual and the physical, the cognitive and the experiential, and created new words by recombining elements of existing ones.

Wigley's use of repetition, rhetorical questions, and emotional language is effective in grabbing the audience's attention and encouraging them to actively engage with his arguments. The essay takes on a negative tone as Wigley exposes the dark side of architecture's impact on the planet. He concludes by urging architects to take immediate action and consider the real costs of their work. Overall, Wigley's essay serves as a call to action for architects to reconsider their role and embrace a non-extractive approach to architecture.

While both Fuller and Wigley use language to convey their messages, their rhetorical strategies are quite different. Fuller's lecture is characterized by its extemporaneous and seemingly unstructured style, while Wigley's essay uses rhetorical questions and expressive adjectives to engage his audience. Despite these differences, both authors are able to effectively communicate complex ideas and challenge their audiences to think critically about architecture and its relationship to the wider world.

The most important lessons that can be drawn from Wigley's Essay '*Returning the Gift*' and Fuller's Lecture '*World Man*' are the following:

Fuller mainly conveys a lot of beliefs he has and talks about how he believed in employing principles operative in the universe to bring about devices that solve known problems, such as population explosion and urbanism, in a sustainable manner. He pointed out that humans have not acted wisely in terms of the conservation of energy, but saw hope in the fact that we can discover our errors and behave in a logical way with respect to our function in the universe. Overall, Fuller seems to be advocating for a more conscious and effective use of energy resources in order to address the challenges facing humanity and ensures us that we have the potential to redesign the use of our resources to take care of 100% of humanity. Wigley also touched upon the subject of energy and describes how buildings are responsible for around half of the energy use and he points out that '*if energy itself is considered as material, the real building material, then the days of conventional architecture might be numbered*'. Adding to that he also points out that '*the energy that goes into the design itself*' should even be added to this. '*All the seemingly nonphysical labor to think the possible future has its own substantial physical footprint.*'

Wigley describes that the ultimate goal would be to follow Buckminster Fuller's pioneering ecological call '*to do more-and-more with less-and-less until everything can be done with nothing, leading to a better world in which resources are shared*'. However, he points out that this optimistic scenario is not often embraced by architects, who are addicted to the tension between the idea of architecture as an excess beyond building and the idea of architecture as an alchemical release of new efficiencies and potentialities. This way he puts Fuller's optimistic and futuristic vision of sustainable design in a more realistic and contemporary point of view. Theoretically '*doing more-and-more with less-and-less*' might be a good goal, but to achieve it, we have to act upon it. He critiques the term sustainability and states that extractive economies remain fully operational and are in no way challenged by the current version of the architect's commitment to maximum effect from the minimum of resources under the buzzword of sustainability. Just like Grima (2021) pointed out, that the equivalence of ecological responsibility and energy efficiency is a false assumption, Wigley argues that '*Calls for sustainability do not threaten the uneven distribution of resources. On the contrary. The architect's more-from-less is complicit with the economic reality of most-for-the-least.*'

Massey (2012) describes Fuller's approach to sustainability as a form of ecological modernization that seeks to reconcile economic growth with environmental protection through technological innovation. This approach has been criticized for failing to address the underlying social and economic structures that produce ecological problems in the first place. Massey joins Wigley in this opinion and states that sustainability movements today should prioritize reflexive solutions that engage with the complexity of social and environmental issues and promote democratic participation and deliberation. To fully address the challenges of sustainability, one should move beyond Fuller's technological fix and engage with the broader social and economic structures that produce ecological problems.

Fuller's lecture at that time, anticipated what is now considered to be common knowledge: local actions have universal consequences. According to Fuller, architecture required a global scope of vision. Wigley illustrates this principle in his essay as follows: '*As buildings rise in one place, a deadly net of holes, gaps, cracks, collapses, deficiencies, floods, and famines appear elsewhere. Each building is not only supported on holes, but supports those holes.*' Wigley presses that it is time to take account of the real, globally spread costs of the words, models, drawings, renderings and buildings offered by the architect as a gift. He also proposes a new way of drawing architecture: where the distant effects of constructing it are highlighted more than the local effect and internal life. Wigley suggests that we could move the design expertise from veiling the extractive basis of architecture to foregrounding it, to see if the figure of the architect would survive or mutate.

Fuller encourages the young generation to be world thinkers and believes that they will take the initiative as inventor-scientists to employ principles available to them and concert resources to achieve this goal. He suggested that the mistakes we have made in the past, such as burning fossil fuels, can be converted as we begin to understand them. You could say that Wigley 'reacts' to this hope and potential for conversion as expressed by Fuller in a more tangible manner. He puts thoughts into action and suggests that it might be useful to run architecture in reverse, since architecture is so complicit with extractive economies. Non-extractive thinking in architecture must at least return the gift of architecture and take the risk of seeing what might come after architecture.

Considering the content of both messages, one could say that Wigley's essay '*Returning the Gift*' draws important lessons from Buckminster Fuller's approach to sustainability in architecture. Wigley agrees with Fuller's goal of doing more with less until everything can be done with nothing, but he points out that this optimistic scenario is not often embraced by architects. He critiques the term sustainability and argues that it does not challenge the uneven distribution of resources and is complicit with the economic reality of *most-for-the-least*. Fuller's work remains influential in design, architecture, and sustainability movements today. His emphasis on systems thinking, holistic design, and technological innovation continues to inspire designers and architects to think creatively about sustainable solutions. However, to fully address the challenges of sustainability, contemporary practitioners must move beyond Fuller's technological fix and engage with the broader social and economic structures that produce ecological problems. (Massey, 2012)

Furthermore, Wigley illustrates Fuller's principle that local actions have universal consequences. He proposes a new way of drawing architecture, where the distant effects of constructing it are highlighted more than the local effect and internal life. Wigley suggests that architecture should move from veiling the extractive basis to foregrounding it, to see if the figure of the architect would survive or mutate. Finally, Wigley proposes running architecture in reverse to take the risk of seeing what might come after architecture, since architecture is so complicit with extractive economies.

The Future of Sustainable Design

Based on the lessons that can be drawn from Fuller's and Wigley's messages, a few conclusions can be taken into account that might be useful for the future development of a more sustainable design process.

The topic of energy has been and still is an important aspect of sustainable design, as both Wigley and Fuller addressed the topic. Whereas Fuller only talked about the efficient use of energy, over time awareness has increased and more attention is now being paid to the socially, economically, and environmentally responsible use of energy, as discussed by Wigley. Fuller did not yet seem to have these insights, or at least did not seem to consider them important enough to mention.

When thinking about the future development of a more sustainable design process, we could take Fuller's hope and optimism that when people discover their mistakes, they will consider them and then act accordingly. It is important to create more awareness regarding the different possible perspectives on energy use, how sustainable design can be approached, and how the concept of sustainability can be defined. This could be done by using the previously mentioned drawing methods described by Wigley, which emphasize our 'mistakes'. However, it might also be a good idea to look for more ways of verbally or visually communicating issues regarding sustainability. In this way, more awareness will be created around the 'mistakes' we still make and, if we can trust Fuller, this will lead to an appropriate change in our behavior, which will hopefully lead to more conscious actions and a more sustainable design process.

Perhaps in the future, we will discover new perspectives on sustainable energy use, in addition to its efficient, social, economic, and ecological use, of which we and Wigley might currently not even be aware yet.

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fig 1: *Richard Buckminster Fuller*. (n.d.). https://en.wikipedia.org/wiki/Buckminster_Fuller.

fig 2: *Mark Wigley*. (n.d.). https://forart.no/lectures/mark-wigley-architecture-age-radio/.

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