

## The Sustainable Society

“[T]he doing of science is a much, much more personal, social, and subjective process than we have even dared to imagine in our wildest dreams.”<sup>1</sup> This is a daring comment, especially on the front-page of a MIT thesis by an author famous for his use of objectifying computers.<sup>2</sup> Yet it was the quote that Jørgen Randers (b. 1945), one of the co-authors of the 1972 *The Limits to Growth* report, chose as his motto. This chapter will untangle some of the subjective processes Randers used throughout his research and uncover his do-gooding gaze or how he came “to realize the wonders of religious belief” through this process.<sup>3</sup>

It is worth reviewing his work in some detail as it is important to understand key concepts and terms leading up to the 1987 *Our Common Future* report from the World Commission on Environment and Development, which was chaired by the Norwegian politician Gro Harlem Brundtland. Central to this history is the phrase the “sustainable society,” which Randers coined in 1974. I will argue that in creating his vision for a viable environmental future, he sought to open a new, endless frontier for science with the larger goal of mobilizing a defence of nature. His chief patrons came from within Lutheran communities, and it is their

<sup>1</sup> Ian I. Mitroff, “The myth of objectivity or why science needs a new psychology of science,” *Management Science*, 18, no. 10 (June 1972), 613–18, quote p. 615. Quoted in Jørgen Randers, *Conceptualizing Dynamic Models of Social Systems: Lessons from a Study of Social Change*, PhD thesis (Cambridge, MA: A. P. Sloan School of Management, MIT, 1973), p. 5.

<sup>2</sup> Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007), pp. 309–61.

<sup>3</sup> Randers, *Conceptualizing*, p. 4.

shared ecumenical hope that came to frame the early understandings of sustainability. The word “sustainable,” it is worth mentioning, has been in use among economists for at least the last 250 years, specifically as a way to describe economic policies that can be sustained over a long period. Historians of ideas have made considerable efforts to trace the concept back to Enlightenment scholars and beyond.<sup>4</sup> These efforts have been helpful in tracing the idea of sustainability up to recent affairs, but have been unsuccessful in describing how sustainability relates to events in Norway and Lutheran theology.

The proximity of science to religion is a contested terrain, especially among biologists worried about creationism as an alternative explanation for evolution.<sup>5</sup> It is therefore worth noting that neither Randers nor the Church leaders discussed in this chapter thought that religion should intervene in scientific affairs. Instead, they believed Christian faith could offer hope and motivation for taking action on behalf of the environment, the poor, and future generations of people. Religion could thus offer a set of “valence values,” to borrow Matthew Stanley’s term, which would guide scientific research in the direction of a sustainable society on Earth.<sup>6</sup>

#### THE LIMITS TO GROWTH REPORT

To understand Randers’ participation in Church debates about sustainability, it is necessary to conduct a short review of his background leading up to *The Limits to Growth* report of 1972. He was the son of Gunnar Randers (1914–92), the Director of the Institute of Energy Technology at Kjeller, near Oslo. Gunnar was a student of, and later assistant to, the astrophysicist Svein Rosseland (1894–1995). Rosseland, among other things, was in charge of the “Oslo Analyzer.”<sup>7</sup> This computer, which operated between 1938 and 1954, was at its time one of the

<sup>4</sup> Lukas Vischer, “Climate change, sustainability and Christian witness,” *Ecumenical Review*, 49 (1997), 142–61. Simon Dresner, *The Principles of Sustainability* (London: Earthscan, 2002), pp. 9–59. Ulrich Grober, *Sustainability: A Cultural History* (Cambridge: UIT Cambridge, 2012), pp. 155–86. Jeremy L. Caradonna, *Sustainability: A History* (Oxford: Oxford University Press, 2014). Paul Warde, *The Invention of Sustainability: Nature and Destiny, c. 1500–1870* (Cambridge: Cambridge University Press, 2018).

<sup>5</sup> See, for example, Richard Dawkins, *The God Delusion* (London: Black Swan, 2006).

<sup>6</sup> Matthew Stanley, *Practical Mystic: Religion, Science, and A. S. Eddington* (Chicago: Chicago University Press, 2007), pp. 239–45.

<sup>7</sup> Per A. Holst, “Svein Rosseland and the Oslo Analyzer,” *IEEE Annals of the History of Computing*, 18, no. 4 (1996), 16–26. Thue and Helsvik, 1946–1975 *Den store transformasjonen*, pp. 77–113.

world's largest differential analyzers, originally developed by Vannevar Bush at the Massachusetts Institute of Technology (MIT). Rosseland visited MIT and corresponded with Bush about its importance, and it came to invigorate the work of astrophysicists at the University of Oslo which, thanks to the Oslo Analyzer, was at the forefront of the field. Thus, early on, the values that computer engineering had for scientific research were impressed on the young Jørgen.

His father was also very much a proponent of Bush's famous *Science: The Endless Frontier* report to President Franklin D. Roosevelt of 1945. Here Bush famously stated that "Scientific progress is one essential key to our security as a nation, to our better health, to more jobs, to a higher standard of living, and to our cultural progress" – an idea about the role of science and the "pioneer spirit" of scientists that came to dominate such thinking in the United States for decades.<sup>8</sup> Randers, the elder, followed this example in Norway with high profile promotion and advocacy of technological and scientific research as a key to Norwegian prosperity. It was the nuclear sciences and power that were to propel the country, he stated, in a series of popular books on the topic.<sup>9</sup> As Director at Kjeller from 1948 to 1968 he was known not only for his progressive view on nuclear science, but also as a member of the Labor Party who staunchly defended Norwegian membership of NATO and the European Community (EC), including Euratom.<sup>10</sup> All this gave him an important public persona and made him vulnerable for attack, especially from people on the left side of the Cold War divide, who were skeptical of NATO and the nuclear industry's entanglements with weaponry.

The young Jørgen Randers would follow in his father's footsteps in believing in the importance of science and computers. He also began his academic life by studying physics and received a master's thesis at Kjeller in 1969 on the topic of solid-state physics on the scattering of inelastic neutrons.<sup>11</sup> Yet there were also important differences between them.

<sup>8</sup> Vannevar Bush, *Science the Endless Frontier: A Report to the President*, July 1945 (Washington: National Science Foundation, reprint 1960), p. 2.

<sup>9</sup> Gunnar Randers, *Atomkraften: verdens håp eller undergang* (Oslo: Cappelen, 1946); *Atomer og sunn fornuft* (Oslo: Aschehoug, 1950); *Atomenergi som industriell kraftkilde* (Kjeller: Institutt for Atomenergi, 1953).

<sup>10</sup> Gunnar Randers, "Norges stilling til Euratom," *Teknisk ukeblad*, 109 (1962), 773. Olav Njølstad, *Strålende forskning: Institutt for Energiteknikk 1948–1998* (Oslo: Tano Aschehoug, 1999), p. 155.

<sup>11</sup> Jørgen Randers, *En undersøkelse av spinnsystemet i  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> ved uelastisk neutronspredning*, MA thesis (Kjeller: Institutt for Atomenergi, 1969).

He would, for example, distance himself from his father's vocal support of nuclear power, and would not engage in raging debates on Norwegian membership in the EC, which culminated in a national referendum in September 1972. He was listed in 1967 as a member of the Conservative Student Union and he did his mandatory military service. Yet there is no evidence of him being passionate about these conservative commitments. With respect to his father's linear view of ongoing scientific progress inspired by Bush's *Endless Frontier*, the young Randers would agree on the importance of science for society but would, as will be apparent, differ with Bush on the "pioneer spirit" of natural scientists.

Debates about scientific and social progress in Norway were shaped and molded by the nation's natural resource policies. To some, such as Professor of Geology Ivan Rosenqvist, there were more than plenty. The mountainous country had high waterfalls that should be turned into hydropower, he argued, and newly discovered oil and gas fields in the North Sea indicated a plentitude of new riches to be tapped into. Others, like Gunnar Randers, thought nuclear energy was necessary to secure further economic growth and the prosperity of the welfare state. Yet another group, represented by the increasingly vocal Deep Ecologists, argued that the exploitation of natural resources made possible by scientists did not lead to social progress at all, but instead to an ecological disaster. These debates were quite intense. Indeed, forty years later, Randers still has vivid memories of family dinners in which his father would voice his frustrations about Rosenqvist or some other antagonist. Thus, questions related to scientific progress and natural resources were the chief academic themes he knew (besides computers and counting neutrons) before he entered MIT as a PhD student in 1970 with a grant from The Norway-America Association.

At MIT he was supposed to continue with his physics studies, though he had "serious agony" about it as he would rather "pursue a topic that engaged more directly with society and its problems."<sup>12</sup> He first began to study macromolecules, but abandoned it after hearing Jay W. Forrester presenting on the concept of urban dynamics modeling at an open seminar.<sup>13</sup> He consequently enrolled at MIT's Sloan School of Management

<sup>12</sup> Haakon Olsen, "Fysikermøtet i Bergen 16–18 juni 1971: System dynamics" (review of a lecture by Randers), *Fra fysikkens verden*, 33, no. 4 (1971), 69–72, quote p. 69.

<sup>13</sup> Jørgen Randers, "From limits to growth to sustainable development or SD (sustainable development) in a SD (system dynamics) perspective," *Systems Dynamics Review*, 16, no. 3 (2000), 213–24, p. 213.

to work with a team of researchers and students under the guidance of Forrester. This was a radical shift of field, as the School was a hot-bed for business leaders by virtue of its focus on managerial sciences and entrepreneurship.

Forrester believed his students should stake out alternative paths for a world that was not progressing at all. The physical “[s]cience is no longer a frontier,” he would tell his students at MIT as, to him, the processes of discovery in natural sciences were an organized normality. Instead he argued that “the next frontier for human endeavor will be to pioneer a better understanding of the nature of our social systems.”<sup>14</sup> This attempt to shift Bush’s focus on natural sciences toward a new frontier for managerial sciences became important to Randers, who from now on came to place system dynamics at the very edge of human exploration. What looked like an end to technocratic optimism to his father was to Randers a new beginning for the managerial sciences.<sup>15</sup> This sense of pushing forward the frontier of research would later become evident in Randers’ thinking about the importance of managerial leadership in the development of a sustainable society. Indeed, as will be argued (in Chapter 9), Norway as a country was to be the pioneer, showcasing environmental leadership to the world.

At the Sloan School, Forrester placed Randers in the project team developing his *World Dynamics* (1971) study into a formed report for the Club of Rome. It was a medium-sized research project with a total budget of 200,000 dollars. The Director of this team of seventeen researchers and graduate students was Dennis L. Meadows, who made Donella H. Meadows responsible for a subgroup looking into population dynamics. William W. Behrens was in charge of another subgroup researching resource questions, while Randers was leading a subgroup working on the role of pollution. They began investigating the dynamics of solid waste within nature and society, a topic that was inspired by Rachel Carson’s *Silent Spring* (1962) argument about the circulation of DDT within a closed ecosystem.<sup>16</sup> Randers was not in charge of

<sup>14</sup> Jay W. Forrester, *World Dynamics* (Cambridge: Wright-Allen Press, 1971), p. 127.

<sup>15</sup> Gunnar Randers, *Lysår* (Oslo: Gyldendal, 1975), pp. 295–301.

<sup>16</sup> Jørgen Randers, “System simulation to test environmental policy: DDT,” *International Journal of Environmental Studies*, 4, no. 1 (1972), 51–61; “DDT movement in the global environment,” in Dennis L. Meadows and Donella H. Meadows (eds.), *Toward Global Equilibrium* (Cambridge, MA: Wright-Allen Press, 1973), pp. 49–83. Jørgen Randers and Dennis L. Meadows, “The dynamics of solid waste,” *Technology Review*, 75 (Mar./Apr. 1972), 20–32; “The dynamics of solid waste,” in Dennis L. Meadows and Donella

formulating the methodology and overall approach of the MIT project, though it is safe to say that he had a significant impact on the content, especially in creating the “World 3” computer model. Indeed, he was listed as third author (among the four group leaders) when *The Limits to Growth: A Report for the Club of Rome’s Project on the Predicament of Mankind* was released in 1972.<sup>17</sup>

This report and its aftermath has been the topic of several historical studies, and thus there is no need to go into depth about it here.<sup>18</sup> Briefly, *The Limits to Growth* sought to understand the world as a global system, specifically focusing on the way in which population, industrial output, food production, non-renewable resource availability, and the level of pollution interact. They reached the dramatic conclusion that growth in human population and material production could not continue indefinitely due to the finite nature of the world’s resources. It became perhaps one of the most debated environmental reports of modern times, thanks in part to the public relations firm that handled the book, Calvin Kyle Associates, which used clever marketing to push sales. To make sure it got attention, it was published simultaneously in half a dozen languages and sent for free to 1,200 selected world leaders.<sup>19</sup> As a result, over the years the report sold a total of nine million copies. The report and the PR stunt were financed by the industrialist Aurelio Peccei and the Volkswagen Foundation, funds which made sure the report dominated environmental debate after its release in March. The reverberations of the report continued through the United Nations Conference on the Human Environment in Stockholm in June 1972, and beyond.<sup>20</sup>

H. Meadows (eds.), *Toward Global Equilibrium* (Cambridge, MA: Wright-Allen Press, 1973), pp. 165–211.

<sup>17</sup> Meadows (et al.), *The Limits to Growth*.

<sup>18</sup> Paul Sabin, *The Bet: Paul Ehrlich, Julian Simon, and Our Gamble over Earth’s Future* (New Haven: Yale University Press, 2013), pp. 80–93. Matthew Connelly, *Fatal Misconception: The Struggle to Control World Population* (Cambridge, MA: Harvard University Press, 2008), pp. 340–1. Paul N. Edwards, “The world in a machine: Origins and impacts of early computerized global systems,” in Agatha C. Hughes and Thomas P. Hughes (eds.), *Systems, Experts, and Computers* (Cambridge, MA: The MIT Press, 2000), pp. 221–54. Charles T. Rubin, *The Green Crusade: Rethinking the Roots of Environmentalism* (New York: The Free Press, 1994), pp. 130–73. Paul Neurath, *From Malthus to the Club of Rome and Back: Problems of Limits to Growth, Population Control, and Migrations* (London: Sharpe, 1994).

<sup>19</sup> Robert Gillette, “The limits to growth: Hard sell for a computer view of doomsday,” *Science*, 175, no. 4026 (Mar. 10, 1972), 1088–1092.

<sup>20</sup> Wade Rowland, *The Plot to Save the World: The Life and Times of the Stockholm Conference on the Human Environment* (Toronto: Clarke, Irwin, 1973), pp. 9–25.

Though *Limits to Growth* predicted limits to natural resources, it did not predict limits to existing political systems. The MIT group was, in this respect, part of a larger trend of environmentalists looking for solutions to ecological problems within established social structures. Most prominent among them was the designer Richard Buckminster Fuller, whose widely read *Operating Manual for Spaceship Earth* (1969) did more than merely hint at an engineering and managerial answer to the ecological crisis.<sup>21</sup>

It is hard to find the word “sustainable” in systems dynamics literature from this period. When in use, the MIT group used it descriptively as a synonym for equilibrium. Forrester, for example, used the word “sustainable” at least once in his *World Dynamics* (1971) to describe an economic system in equilibrium.<sup>22</sup> To him it was a technical expression. The word seems to have appeared only once in *Limits to Growth* when they stated that: “We are searching for a model output that represents a world system that is: 1. *sustainable* without sudden and uncontrolled collapse; and 2. capable of satisfying the basic material requirements of all of its people.”<sup>23</sup> Randers himself used the word similarly once in his thesis proposal from 1972 in describing the need to move the world “in a new and sustainable direction,” which meant in the direction of equilibrium (as opposed to the direction of inevitable collapse).<sup>24</sup> This would change between 1972 and 1974, as sustainability gradually evolved from a rarely used descriptive word into a larger normative vision for a viable environmental future. As will be apparent, Randers played a central role in this process.

#### THE CALL FOR A GOLDEN AGE IN EQUILIBRIUM

In June 1971, well before the publication of *Limits to Growth*, Randers gave a lecture on “The Carrying Capacity of our Global Environment – A Look at the Ethical Alternatives” for a Working Committee on Church

United Nations, *Report of the United Nations Conference on the Human Environment* (New York: United Nations, 1973). Arne Semb-Johansson, “Stockholm-konferansen kan få stor betydning,” *Forskningsnytt*, 17 (1972), 7–10, Meadows (et al.), *The Limits to Growth*, p. 11. Ugo Bardi, *The Limits to Growth Revisited* (New York: Springer, 2011), pp. 5–13.

<sup>21</sup> Richard Buckminster Fuller, *Operating Manual for Spaceship Earth* (Edwardsville: Southern Illinois University Press, 1969). Peder Anker, “Buckminster Fuller as Captain of Spaceship Earth,” *Minerva*, 45 (2007), 417–34.

<sup>22</sup> Forrester, *World Dynamics*, 1971, 12.

<sup>23</sup> Meadows (et al.), *Limits to Growth*, 1972, 158.

<sup>24</sup> Jørgen Randers, “The Diffusion of New Ideas and Values – A Dynamic Model of the General Process: A Proposal to the National Council of Churches,” June 30, 1972, 10 pages, D-1889, p. 1, SD.

and Society within the ecumenical World Council of Churches (WCC). The event took place in Nemi, a suburb of Rome, Italy, and was designed to address the role of science in the search for “Quality of Life.” It was a high-power meeting with notable intellectuals, such as Margaret Mead and Theodore Roszak, in which the Church sought to find its voice in the growing countercultural and environmental debate. Randers was invited through the Club of Rome to present the ongoing research at MIT. In the words of one participant, he was “a talented youthful MIT student,” who suggested “that we all mark time” in a common effort to reach ecological equilibrium.<sup>25</sup>

In the early 1970s human ecologists and sociologists explored social and natural conditions for raising “the quality of life” of people. The main finding of this research was that merely economic and material parameters did not measure social improvements, and that one also had to take into account social interactions and environmental conditions in order to determine the “quality” of social life.<sup>26</sup> The main target of this research was the assumption often held by social economists and politicians alike that economic activity (as expressed, say, in GDP per person) was an adequate standard on which to measure the wellbeing of a nation. Others were perhaps equally important, such as spiritual, social, cultural, and ecological parameters. This quality-of-life research found its chief audience within the World Future Society, which was an organization that sought to open up a multitude of alternative visions for the world’s future aside from the dominating capitalist and socialist dogmas of the Cold War.

The Nemi meeting was part of a five-year ecumenical inquiry sponsored by WCC that began in 1969 called “The Future of Man and Society.” The meeting was called as a response to the founding of the World Futures Studies Federation, which was initiated by Johan Galtung and his Peace Research Institute in Oslo with a conference in 1967. Yet scholars active in the Church inquiry hardly became active in Future Studies circles, as their research paths took a life of their own with publications in their new journal *Anticipation: Christian Thought in Future Perspective* (1970–83). They met for the first time in Geneva in

<sup>25</sup> Benjamin C. W. Nwosu, “Quality of life on the technological options: The African perspective,” *Anticipation*, 17 (May 1974), 31–5, quote p. 33.

<sup>26</sup> Sylvian J. Kaplan and Evelyn Kivy-Rosenberg (eds.), *Ecology and the Quality of Life* (Springfield, IL: Charles C. Thomas, 1973). Norman C. Dalkey with Daniel L. Rourke, Ralph Lewis and David Snyder, *Studies in the Quality of Life* (Lexington, MA: Lexington Books, 1972).

1970 under the banner “Technology, Faith and the Future of Man.” The published papers from the conference would “catalogue the negative effects of modern technology,” question the almighty power of technology, call for a renewed dialogue between scientists and theologians, and stress the importance of maintaining faith in God in times of crisis.<sup>27</sup> Worries about the ecological state of the world factored most heavily in their work, though they also addressed human population growth, the possibility of manipulating biological genes, the industrialization and urbanization of societies, and the importance of keeping computers at arm’s length. At the core was the importance of upholding the future role of Christianity in a changing world.

It was this group of about thirty scientists and theologians that Randers met in Nemi when he presented his “Carrying Capacity” paper. It was an important lecture for him. It was one of his first public appearances, and when it appeared in print, in the theological journal *Anticipation*, it became his first publication. However, he did not bring good news for the Christian thinkers. He began by reminding them of the famous line from the Bible: “For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it?”<sup>28</sup> It was meant as an allegory for the importance of using long-term cost analysis to find solutions for an Earth in deep trouble. In summarizing the major findings of the forthcoming report to the Club of Rome, Randers told the Church leaders that “our globe is finite” and that it is suffering from “desperate land shortage,” “heat increase,” and the inability to absorb pollution.<sup>29</sup> The exponential growth in use of finite natural resources, he argued, would “inevitably lead us to some sort of collapse” unless people began taking into account long-term needs including the needs “of those who will live on the planet 100 years from now.”<sup>30</sup> It was the concern for the next generations that moved Randers to engage Christians, as he thought people of faith could move politics in a more responsible direction. “Probably only religion has the moral force to bring such a change” in long-term objectives by bringing to an end the politics of growth, he argued.<sup>31</sup> It was with the help of religion that one could

<sup>27</sup> Samuel L. Parmar, “Forward,” in David M. Gill (ed.), *From Here to Where? Technology, Faith and the Future of Man* (Geneva: World Council of Churches, 1970), pp. 5–8, quote p. 5.

<sup>28</sup> The Bible, Luke 14, 28. Jørgen Randers, “The carrying capacity of our global environment – A look at the ethical alternatives,” *Anticipation*, 8 (1971), 2–11, quote p. 2.

<sup>29</sup> Randers, “Carrying capacity,” 1971, 2, 3, 4.

<sup>30</sup> Randers, “Carrying capacity,” 1971, 7, 9. <sup>31</sup> Randers, “Carrying capacity,” 1971, 9.

hope to “transfer into an equilibrium state” or “*The Golden Age*,” which will “put the human race into harmony with the world’s ecosystem,” increase “the quality of life for the individual,” and lead to “profound flowering of the arts.”<sup>32</sup> “[T]he churches have always been a leader,” Randers concluded in his plea to the World Council, and therefore they should lead the way in the necessary transition “from growth to equilibrium.”<sup>33</sup>

Randers appealed to deep-seated Christian beliefs and traditions. In the wake of Lynn White’s article “The Historical Roots of Our Ecologic Crisis” (1967), in which the medieval historian accused Judeo-Christian theology of nurturing an exploitative ethic toward the natural world, there was a longing for medieval times among Christian environmentalists. Randers appealed to this wish to again see the Church as the leading moral and political force in society. More importantly, the “Golden Age” in Christian thinking is synonymous with the lost Eden that one day will reemerge as the Kingdom of God with the reign of Christ. In this future Golden Age humans will live in harmony with the earth and each other, there will be peace between animals (“the lion will eat straw like the ox”), and there will be no need for agricultural exploitation of nature.<sup>34</sup>

The paper generated debate among the Nemi participants around the idea of moral conflict between present and future generations of human beings. The gist of Randers’ lecture, one participant later recalled, was that “only religion appears to afford the necessary moral strength to effect any change on behalf of those yet unborn.”<sup>35</sup> The Christian Gospel of hope for a “Golden Age” could thus infuse the environmental debate with the power of faith in the future. Randers’ paper was republished in several versions and became, in the subsequent years, a standard reference in steady-state economics and environmental studies.<sup>36</sup>

<sup>32</sup> Randers, “Carrying capacity,” 1971, 10, 11. Randers’ emphasis (subtitle).

<sup>33</sup> Randers, “Carrying capacity,” 1971, 11.

<sup>34</sup> The Bible, Isaiah 65, 25. White, “The historical roots of our ecologic crisis.”

<sup>35</sup> Martti Lindqvist, *Economic Growth and the Quality of Life: An Analysis of the Debate within the World Council of Churches 1966–1974* (Helsinki: The Finnish Society for Missiology and Ecumenics, 1975), 95.

<sup>36</sup> Randers, “Carrying capacity,” 1971, reappeared in many different versions, such as Jørgen Randers with Donella Meadows, “The carrying capacity of the globe,” *Sloan Management Review*, 13, no. 2 (1972), 11–27; “The carrying capacity of our global environment: A look at the ethical alternatives,” in Herman E. Daly (ed.), *Toward a Steady State Economy* (San Francisco: Freeman, 1973), pp. 283–306.

## LEADING THE SUSTAINABLE EFFORT

The spring semester of 1972 was hectic and exciting for Randers, with the publication of *Limits to Growth* in March and the subsequent debate around it. As a co-author of the book, he emerged in the public realm as an important figure in the international environmental debate. Yet he was still a graduate student, and it was time for him to settle on a thesis topic. He chose to address one key criticism of the report: that humankind did not face a predicament, as the problems described in *Limits to Growth* would catalyze radical changes in human behavior that would solve the problems laid out and thus prove the predictions in the report wrong. In other words, he wanted to investigate how the power of new ideas could generate social change.

His plan reflected a widespread belief, both in the popular and academic culture of the early 1970s, that society lay on the cusp of revolutionary changes. A typical example may be Alvin Toffler's widely read *Future Shock* (1970), which held that the world was about to change radically due to a series of new technologies and social practices.<sup>37</sup> This sense of radical transformation was particularly intense among religious leaders, who with admiration or dismay saw numerous new congregations arise. The phenomenon was scrutinized in church circles, as in the project "Insearch: The Future of Religion in America" led by John E. Biersdorf, a clergyman who headed the National Council of Churches of Christ's Department of the Ministry in the USA.<sup>38</sup>

In the spring of 1972 Randers explored the feasibility of studying such radical value changes by using system dynamics methodology, and he contacted the Planning and Research Department of the National Council in New York to find financial and intellectual patronage. The Council, it is worth noting, was the leading non-orthodox ecumenical association. It acted as an umbrella organization for churches with a liberal theological outlook, and it was a stern supporter of civil rights activism and a host of social welfare programs.<sup>39</sup> Thus, its leaders not only observed but also actively promoted the need to radically redefine Christian values and

<sup>37</sup> Alvin Toffler, *Future Shock* (New York: Random House, 1970). Tord Høivik (eds.), *År 2000* (Oslo: Pax, 1969).

<sup>38</sup> John E. Biersdorf, *Elements of Research Design for a Study of Value Change in Religion in American Society* (New York: Working Paper from the National Council of Churches, 1972).

<sup>39</sup> Henry J. Pratt, *The Liberalization of American Protestantism* (Detroit: Wayne State University Press, 1972). James F. Findlay, *Church People in the Struggle: The National*

teachings. The same was true for their work on environmental issues. As Randers put it in his PhD thesis, they held that “large scale change in social attitudes and values [...] is desirable to insure a sustainable global society in earth’s finite environment.”<sup>40</sup>

In June 1972 Randers submitted a research proposal to these “moral leaders,” as he called them. He wrote that he could offer them “a dynamic model” of “the diffusion of new ideas and values” in human populations of relevance to their church planning.<sup>41</sup> His study could also offer a manual on “how to succeed in quickly diffusing the new values and gaining their acceptance by many people in a relatively short time” so that human activity would move with speed “in a new and sustainable direction.”<sup>42</sup> By using the modeling programs of the System Dynamics Group, Randers suggested developing “a simulation game to be played” by the Church leaders so that they could predict value changes in society and thus in their congregations.<sup>43</sup>

The Council was excited about Randers’ ideas. As he presented his proposal to them during the time when the *Limits to Growth* report still dominated most environmental debates, it was fairly easy to explain his needs to grant committees. The Council provided him with enough funding for a salary, secretarial and editorial support, social benefits, computer and material expenses, as well as a generous travel budget. Additional grants from the Minna-James-Heineman Foundation and the Zaffaroni Foundation gave him even better financial flexibility. Perhaps equally important was the intellectual support from Biersdorf and Neil Douglas from the Council, both of whom Randers would later thank in his thesis acknowledgments for opening him up to the wonders of religious beliefs.<sup>44</sup> Whenever issues went beyond his advisor Jay W. Forrester’s domain, Randers would call upon Biersdorf or Douglas. He was also close to Poikail George and Frank White, both of whom also worked for the Council. In addition Everett Perry, who was on the Board

*Council of Churches and the Black Freedom Movement, 1950–1970* (New York: Oxford University Press, 1993).

<sup>40</sup> Randers, *Conceptualizing*, 1973, p. 65.

<sup>41</sup> Randers, “The Diffusion of New Ideas and Values,” ms. 1972, 1, SD.

<sup>42</sup> Randers, “The Diffusion of New Ideas and Values,” ms. 1972, 3, 1, SD.

<sup>43</sup> Randers, “The Diffusion of New Ideas and Values,” ms. 1972, 8, SD.

<sup>44</sup> Randers, *Conceptualizing*, 1973, p. 4, 69 (note 1). Jørgen Randers, “Behavior Change Induced by Diffusion of New Ideas – A Dynamic Model of the General Process: A Proposal to the National Council of Churches,” Sept. 25, 1972, 5 pages, D-1890, budget on p. 5, SD.

of the National Mission for the United Presbyterian Church, and Herbert Dordick, the Director of Telecommunications at New York City Government, provided external expertise. Dordick, the only exception to this high-power theological support group, was at the time exploring how ideas spread in urban environments though new telecommunications devices, ideas which he much later summarized in his widely read *The Information Society* (1993).<sup>45</sup>

As “leaders of movements,” the advisory group at the National Council in New York became Randers’ intended audience (as he describes in his final thesis proposal from November 1972).<sup>46</sup> Social movements were to him “myth-making groups trying to impart a sense of increased power and meaning to their members.”<sup>47</sup> What the leaders were to get from Randers’ work was a model capable of predicting the lifecycle of their respective movements by punching data into a model and running it on a computer.<sup>48</sup> Biersdorf had the relevant data through his “Insearch” project, and the only thing missing was a model capable of making predictions about how these movements would develop on a timeline. In effect, Randers sought to understand the trends of human belief systems as an extension of human use or abuse of natural resources.

The underlying issue was the problem of solving the environmental problems in time, or before the collapse predicted in *Limits to Growth*. There was a “mismatch,” Meadows and Randers argued in an article from the period, “between the time-span of environmental problems and the time-horizons of institutions designed to deal with those problems.”<sup>49</sup> They were pessimistic about the capability to solve the problems in time unless “a specific commitment is made to the future” with a planning horizon of fifty years or so.<sup>50</sup> They argued that if the environmental movement organizes itself so that they have the time-horizon of other political institutions, they “cannot be expected to succeed in stopping

<sup>45</sup> Herbert S. Dordick and Jack Lyle, *Access by Local Political Candidates to Cable Television: A Report of an Experiment* (Santa Monica, CA: Rand, 1971). Herbert S. Dordick and Georgette Wang, *The Information Society: A Retrospective View* (Newberry Park: Sage Publications, 1993).

<sup>46</sup> Jørgen Randers, “The Lifecycle of a Movement: Outline of a Research Project,” Nov. 1972, 35 pages, D-1891, frontpage, SD.

<sup>47</sup> Randers, “The Lifecycle of a Movement,” ms. 1972, 1, SD.

<sup>48</sup> Randers, “The Lifecycle of a Movement,” ms. 1972, 1, 6, SD.

<sup>49</sup> Dennis L. Meadows and Jørgen Randers, “Adding the time dimension to environmental policy.” *International Organization*, 26, no. 2 (1972), 213–33, quote p. 214.

<sup>50</sup> Meadows and Randers, “Adding the time dimension,” p. 232.

environmental deterioration.”<sup>51</sup> What worried Randers was “the slowness in large social systems” as it takes a long time to get environmentally positive results due to social changes.<sup>52</sup> The churches, on the other hand, worked with a more viable timeline.

The thesis topic also reflected a sense of being at the center of a growing environmental movement, as, from March 1972 until he settled in Oslo in 1974, Randers constantly traveled and debated *Limits to Growth*. In his diary from January 1973, for example, he notes that he “lectured all over the US[A]” about the report, and voices frustration over not finding time to work on his new project.<sup>53</sup> His top-down managerial approach to movements and social change was definitely not done from an ivory tower, but instead reflected a sense of being right in the midst of a social upheaval. Indeed, the authors of *Limits of Growth* were themselves prime movers of the environmental debate. It is thus tempting to read Randers’ thesis as a personal attempt to come to terms with his sudden status as a leader of a movement. His success raised the question of what it would take to sustain the debate.

A key term that became important in the initial model building was “the sustainable effort,” which was defined as the “total amount of resources” a movement could expend in trying to achieve its goal.<sup>54</sup> This term differs from the descriptive way the word “sustainable” was used by other scholars working with Forrester. As Randers indicated (in Figure 6.), the “sustainable effort” of a social movement included allocation of efforts to increase its relevance, visibility, income, services, etc. in order to gain momentum for the cause. Sustainability thus understood was a way of describing the survival capacity of a movement based on measuring its “efforts.”

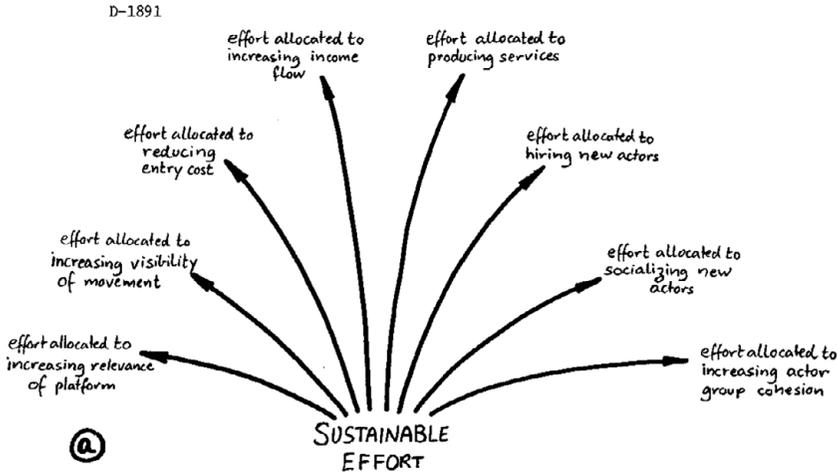
The sustainable efforts made by an organization or social movement would enhance the quality of its member experience and thus produce more members, some of whom would become active participants in providing more sustainable efforts which would lead to more members, etc. This feedback loop served as the basis for what became Randers’ model of the lifecycle of movements. The dynamic of a lifecycle could be positive by generating new members or negative, depending on the capability of maintaining the “sustainable effort.” What determined the

<sup>51</sup> Meadows and Randers, “Adding the time dimension,” p. 232.

<sup>52</sup> Jørgen Randers (interview), *Aftenposten*, 11. Nov. 1972, PA.

<sup>53</sup> Randers, *Conceptualizing*, p. 112.

<sup>54</sup> Randers, “The Lifecycle of a Movement,” ms. 1972, 17, SD.



The allocation of sustainable effort to the possible movement activities

FIGURE 6 Sustainable effort as Jørgen Randers saw it in the manuscript “The Lifecycle of a Movement” from November 1972.

Courtesy of Jørgen Randers

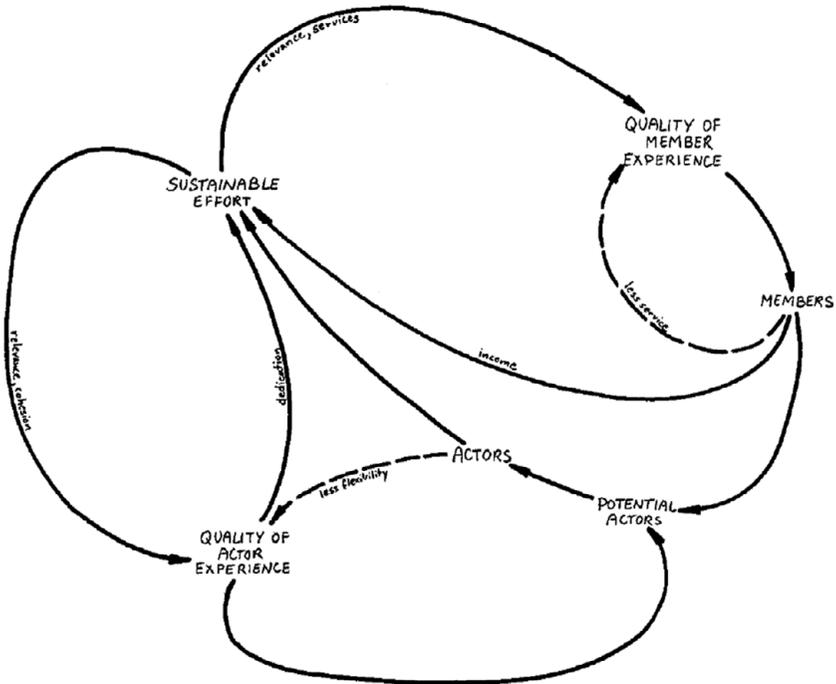
process was both the quality of member experience and actor experience, as shown in the loops of Figure 7.

These somewhat simplistic models would grow in complexity the following year as Randers’ work matured into his dissertation entitled *Conceptualizing Dynamic Models of Social Systems: Lessons from a Study of Social Change*.<sup>55</sup> There is not much on religion in these pages. Rather, Randers focused on the general dynamics of social movements as a consequence of introducing an idea into society. The overall perspective of the thesis was very much a top-down approach that provided tools for leaders of movements – a type of reasoning that was typical within the Sloan School of Management.

What is notable about this is that progressive Church leaders at a time of religious upheaval would look to Randers and his ideas about social movements in order to make sense of the dynamics of their organizations. He provided them with managerial tools inspired by natural resource management to understand and deal with their respective congregations

<sup>55</sup> Randers, *Conceptualizing*; “The Dynamic Interaction Between an Action Group and Society: A PhD Dissertation Proposal,” Apr. 1, 1973, 48 pages, D-1892, SD.

FIGURE 4



Second description (aggregate) of the model structure

FIGURE 7 The lifecycle of a social movement as Jørgen Randers saw it in November 1972.

Courtesy of Jørgen Randers

at times when the member base was fluctuating greatly. For example, Randers' work was "received with great interest" by representatives of the Jesus Movement and Pentecostals, among others, at the second conference on the Relevance of Organized Religion in January 1973.<sup>56</sup> In the process, Church leaders learned about the importance of leading a "sustainable effort" in order to reach the Golden Age of sustainable equilibrium. As will be argued (in Chapter 9), this corresponded with "sustainable development" toward "sustainability" as defined by the World Commission for Development and Environment in 1987. Meanwhile, Randers finished his thesis in September 1973, and was subsequently promoted to Assistant Professor in management at MIT.

<sup>56</sup> Randers, *Conceptualizing*, p. 112.

## THE SUSTAINABLE SOCIETY IN BUCHAREST

In the meantime the World Council of Churches continued with their “Science and Technology for Human Development” inquiries, with new meetings and a string of publications. The highlight was, perhaps, the participation of Church leaders in the 1972 United Nations Conference on the Human Environment in Stockholm, Sweden. The implications of the *Limits to Growth* report continued to dominate these debates, which focused on the need to develop relevant technologies for a more modest society respecting God’s Creation. Key publications in 1973 included Thomas S. Derr’s *Ecology and Human Liberation* and the Council’s *Genetics and the Quality of Life* report, which addressed the possibility of manipulating the human biological makeup to improve the quality of life.<sup>57</sup> These books and articles came in response to the Nemi meeting back in 1971, and tried to find a new relationship between humans and nature, population policy, and better quality of life for people of faith. Interestingly, one of the debaters was Ernst F. Schumacher, who launched his “Small is Beautiful” argument in this religious context.<sup>58</sup>

These debates came to a climax with the World Council of Churches’ conference “Science and Technology for Human Development: The Ambiguous Future and the Christian Hope,” which took place in Bucharest at the end of June 1974. The United Nations had designated 1974 as the World Population Year and a major conference about it was set to take place, also in Bucharest, a month later. A chief purpose of the Church leaders was to prepare well for this meeting. Because the human world population was expected to raise from about four billion in 1973 to well over six billion by the end of the millennium, this raised key theological questions with respect to family planning, social justice, and human values. *Limits to Growth* would frame much of the debates, according to the editor of WCC’s intramural journal *Study Encounter*, who in 1973 noted that the Council “found itself having to sort out the crucial issues in the public debate raging around the Club of Rome’s report.”<sup>59</sup>

<sup>57</sup> Martti Lindqvist, *The Biological Manipulation of Man and the Quality of Life* (Helsinki: Research Institute of Lutheran Church, 1972). Anonymous, *Genetics and the Quality of Life: Report of a Consultation Church and Society, June 1973* (Geneva: Christian Medical Commission, 1974).

<sup>58</sup> Ernst F. Schumacher, “Small is beautiful,” *Study Encounter* 9, no. 4 (1973), 13–16. Special issues of *The Ecumenical Review* 26, no. 1 (1974); *Study Encounter* 10, no. 1–4 (1974); *Anticipation* 17–19 (1974).

<sup>59</sup> Editorial comment, *Study Encounter* 9, no. 4 (1973), p. 13.

At the conference a gathering of about 120 “Christian laymen from many branches of science and technology and public life” addressed the ways in which people of faith should respond to the consequences of economic growth, technological developments, and population growth.<sup>60</sup> Environmental degradation and human poverty were the two main problems, the invitation to the conference stated, and the participants were asked to discuss if “the instrumentalities of scientific rationality . . . threaten the right relation between man and nature,” and where to draw the “distinction between what is needed and what is superfluous.”<sup>61</sup> Though the conference was to address more-mainstream theological questions, such as the unity of the gospel and the meaning of confession, environmental and developmental issues took center stage. The “Selected Preparatory Papers” published in *Anticipation* a month before the event focused on the pitfalls of economic growth, the ethics of natural resource use, the lack of quality of life in both rich and poor nations, and the role of religion in society.<sup>62</sup>

In the early 1970s, Bucharest was a contested territory in a world dominated by the Cold War divide. Nicolae Ceaușescu had been the Secretary General of the Communist Party since 1965 and Romania’s President since 1968. Though he shared communist interests with his Soviet neighbor and other East Bloc countries, he condemned the Soviet invasion of Czechoslovakia in 1968 and refused to send military troops. This made him into a darling of the West, despite his reputation as a brutal dictator who used the secret police to establish a system of fear by rounding up and imprisoning dissidents.<sup>63</sup> Foreigners traveling to Romania, however, hardly noticed this fear, as the government carefully orchestrated their visit so that they would leave with the best possible impression of the country. Norwegians were not immune to all the friendliness if one is to judge from Randers’ lack of criticism of Ceaușescu’s government. The same goes for the Christian professor of

<sup>60</sup> Paul Abrecht, “Science and technology for human development – The ambiguous future and the Christian hope,” *Study Encounter*, 10 (1974), 1–2.

<sup>61</sup> Anonymous, “Fifth Assembly: Notes for sections,” *Study Encounter*, 10, no. 1 (1974), 1–16, quote p. 16.

<sup>62</sup> World Council of Churches, “Selected preparatory papers,” *Anticipation* 17 (May 1974), 1–61.

<sup>63</sup> Julian Hale, *Ceaușescu’s Romania: A Political Documentary* (London: George G. Harrap, 1971). Amnesty International, *Annual Report 1972–1973* (London: Amnesty International, 1973), p. 67; *Annual Report 1973–1974* (London: Amnesty International, 1974), p. 64.

biochemistry at the University of Oslo, Jens Gabriel Hauge, who also attended the conference.<sup>64</sup>

The local protégé who defended Ceaușescu was Mircea Malitza. He was a professor of mathematics at the University of Bucharest who served as Deputy Minister of Foreign Affairs (1962–70), Minister of Education (1970–72), and Minister and Counselor of the President (from 1972). Thus he was in the inner circle of Ceaușescu's dictatorship. Besides mathematical work, he published on the history of diplomacy and the politics of negotiations, and as an affiliate and later honorary member of the Club of Rome he would co-author its report *No Limits to Learning* (1979).<sup>65</sup> To the WCC delegates he would rage about the pitfalls of “consumer society” where “individual consumers” were merely following “logic of profit” and were unable to care for the poor.<sup>66</sup> As an alternative he quoted Ceaușescu's speech on “sustained industrialization” aiming at “raising . . . the living standards” of Romanian people and the workers of the world without lapsing into materialistic consumerism.<sup>67</sup> Though Malitza was a keynote speaker on the first day of the conference, he did not dominate it. Indeed, the participants were concerned about the social situation of Christians in a communist country, as the services and biblical meditations organized in collaboration with the Romanian Orthodox Patriarchate were overly well attended.

The conference began with a paper by Lynn White, in which he repeated his accusation that Christian human-centered theology was the underlying cause for the ecological crisis, and that one should embrace Franciscan perspectives as a remedy.<sup>68</sup> Another key plenary presentation was given by Kenneth Boulding, Samuel L. Parmar, and George Borgström on shared moral and social challenges in view of the *Limits to Growth* report.<sup>69</sup> These presentations situated the debate between the

<sup>64</sup> Jens Gabriel Hauge, *Gud og naturen: Om vitenskap og kristen tro* (Oslo: Genesis forlag, 1999).

<sup>65</sup> James W. Botkin, Mahdi Elmandjra, and Mircea Malitza, *No Limits to Learning: Bridging the Human Gap: A Report to the Club of Rome* (Oxford: Pergamon Press, 1979).

<sup>66</sup> Mircea Malitza, “Technological development and the future of Man in a socialist society,” *Anticipation*, 18 (1974), 23–5, quote p. 25.

<sup>67</sup> Nicolae Ceaușescu quoted in Malitza, “Technological development,” p. 24.

<sup>68</sup> White, “The historical roots,” 1967; “Theology and the future of compassion” (unpublished) short résumé in Paul Abrecht, “An ecumenical vision of the future,” *Anticipation*, 18 (1974), 3–6.

<sup>69</sup> Samuel L. Parmar, “Ethical Guidelines and Social Options after the Limits to Growth Debate,” *Anticipation*, 18 (1974), 20–2. George Borgström, “World food scarcity and

call from White and an emerging group of eco-theologians to show more respect and care for the Creation, and on the opposite side, the focus from the admirers of the Club of Rome report on the gloomy end of natural resources and economic growth.

After these keynote lectures, a set of working groups were organized to generate a report in the form of “A New Ecumenical Vision of the Future” that could provide religious communities with a framework for approaching developmental and environmental problems with Christian hope.<sup>70</sup> Charles Birch, a professor of biology at the University of Sydney, chaired the working group which Randers attended. Originally trained at Oxford University, Birch was a widely respected geneticist and population ecologist who also believed in God’s existence. He believed that constructive dialogue between science and religion was possible if scientists provided facts that religious leaders could use to stake out a vision for the future. In his memoirs Birch recalls how, in the workshop, he pushed for a discussion of the future based on the warnings in *Limits to Growth* with respect to the world’s finite resources, pollution from industries, damaging effects of economic growth, and the importance of living within the Earth’s limits. Yet he got nowhere as the delegates from the Global South world were hostile: “Don’t talk to us about limits to growth, they said, when what we need is to grow as the rich countries have grown.”<sup>71</sup> The phrase “ecologically sustainable society” entered the discussion at this point:

At a coffee break Jorgen Randers said to me: “We have to find some phrase other than limits to growth that is positive in its impact. Limits has a negative connotation. Other suggestions such as a stationary state, an equilibrium society and a steady state society are too static.” Then he suggested: “What about the ecologically sustainable society?” meaning the society that could persist indefinitely into the future because it sustained the ecological base on which society is utterly dependent.<sup>72</sup>

Randers had been backpacking for the previous three months, and he also had an annoying itch on his arm. It was a personal relief for him that the phrase was immediately adopted by the working group so that the discussion could move on and focus on its requirements.

the struggle for human survival,” *Anticipation*, 18 (1974), 17–19. I have been unable to locate Kenneth Boulding’s paper.

<sup>70</sup> World Council of Churches, “Science and technology for human development: The ambiguous future and the Christian hope: Report,” *Anticipation*, 19 (1974), 1–43.

<sup>71</sup> Charles Birch, *Regaining Compassion for Humanity and Nature* (Kensington: New South Wales University Press, 1993), p. 114.

<sup>72</sup> Birch, *Regaining Compassion*, p. 114.

At the plenary meeting of the Conference “*Sustainable Society*” was accepted as the key concept necessary for envisioning an ecumenical vision of the future, despite criticisms of it being “a too static and mechanistic approach” from African, Asian, and Latin American delegates.<sup>73</sup> The “sense of an ending” to a materialistic lifestyle on Earth signaled to the majority of the Conference participants the beginning of a “new historical situation,” with a promise of a return to the Christian “tradition of asceticism” and a renewed faith in the Gospel’s promise of “the new creation of Christ.”<sup>74</sup> The resurrection of Christ entailed a sustainable and just society for all, and thus an ecumenical vision for the future all Christians should strive for. At the core of the conference report was a guide to how the Christian community should address secular questions about the role of science and technology for human development. Aiming at “a robust sustainable society” was the answer, as it was a state in which (1) there was “social stability” and equitable distribution of opportunities, (2) production of food within the “capacity of the ecosystem,” (3) use of non-renewable resources which did not exceed “the increase in resources made available through technological innovation,” and (4) a level of human activity which did not suffer from “natural variation in global climate.”<sup>75</sup> “In essence, the sustainable society will be one with a stable population and with a fixed material wealth per person, a society actively pursuing quality of life in basically non-material dimensions such as leisure, service, arts, education, and sport.”<sup>76</sup> The secular language of this description is misleading, as there is ample evidence elsewhere in the report that their hope for a sustainable society had a Christian bearing. “Hope for the future is a gift of grace,” the Conference typically stated, “and the struggles for the new future a result of a faith that transcends all historical prospects.”<sup>77</sup> The sustainable society should thus be understood within the context of the Gospel of hope: “We [Christians] look . . . for a new life and new age in the future, in ourselves as new creatures, in society as the New Jerusalem, and in history as the promised Kingdom . . . The future is a realm of hope and not of despair for those who know God. It is toward this eschatological goal that the creative and ‘luring’ work of God is directed.”<sup>78</sup> The hope for a

<sup>73</sup> Abrecht, “An ecumenical vision,” p. 4. Abrecht’s emphasis.

<sup>74</sup> World Council Report, “Science and technology,” p. 5.

<sup>75</sup> World Council Report, “Science and technology,” p. 12.

<sup>76</sup> World Council Report, “Science and technology,” p. 12.

<sup>77</sup> World Council Report, “Science and technology,” p. 33.

<sup>78</sup> World Council Report, “Science and technology,” p. 34.

sustainable society expressed by Conference participants was thus a secular articulation of the Christian longing for the Promised Land, the New Jerusalem.

The Council was unsuccessful in bringing this message to the United Nations World Population Conference the next month, as there are no references to sustainability or theological issues in their reports.<sup>79</sup> The initial reactions from some Christian participants reflecting back on these events were also skeptical. A French delegate noted, for example, that environmental issues would help to recruit the young for the Churches: “Ecology is a fashion. Thanks to ecology, a youthful vigor and freshness has been restored to ethical reflection” he stated in a paper marked by a cynical sarcastic subtext.<sup>80</sup> Another participant thought that the “ecological approach” of the sustainable society was “markedly futuristic” in not addressing the Cold War divide and that it thus failed in providing a strategy for “political action” for the Christian community.<sup>81</sup> Despite such reactions, most Conference participants thought “sustainability” was a productive concept around which the Christians could engage the secular society with a renewed hope for the Creation.<sup>82</sup> Kenneth Boulding, for example, was an active Quaker and returned to the USA arguing that the “sustainable society” expression he had picked up at the Conference signaled hope for the future.<sup>83</sup> Soon theologians were busy probing the meaning of sustainability from a Christian perspective, as in Robert Stivers’ *The Sustainable Society* (1976).<sup>84</sup> With the help of Randers as a consultant, the concept was eventually incorporated in

<sup>79</sup> World Population Conference, *The Population Debate: Dimensions and Perspectives: Papers of the World Population Conference, Bucharest, 1974*, 2 vol. (New York: United Nations, 1975). Lars Levi and Lars Andersson, *Population, Environment and Quality of Life: A Contribution to the United Nations World Population Conference* (Stockholm: Allmänna Förlaget, 1974).

<sup>80</sup> André Dumas, “The ecological crisis and the doctrine of creation,” *The Ecumenical Review*, 27 (1975), 24–35, quotes pp. 24, 34.

<sup>81</sup> Lindqvist, *Economic Growth*, 1975, 98.

<sup>82</sup> World Council of Churches Central Committee and David E. Johnson (eds.), *Uppsala to Nairobi, 1968–1975: Report of the Central Committee to the Fifth Assembly of the World Council of Churches* (New York: Friendship Press, 1975), pp. 109–16. Paul Bock, *In Search of a Responsible World Society: The Social Teachings of the World Council of Churches* (Philadelphia: Westminster Press, 1974).

<sup>83</sup> Kenneth Boulding quoted in Cliff Smith, “Economist urges tax boost,” *Medina County Gazette*, Aug. 28, 1974, 18.

<sup>84</sup> Robert Stivers, *The Sustainable Society: Ethics and Economic Growth* (Philadelphia: Westminster Press, 1976). John B. Cobb, *Sustainability: Economics, Ecology, and Justice* (New York: Orbis Books, 1992), pp. 45–8.

1979 into the World Council of Churches' seven year program: "The Search for a Just, Participatory and Sustainable Society."<sup>85</sup>

#### THE LIMITS TO GROWTH IN NORWAY

When Jørgen Randers left for MIT in 1970 he was entirely unknown to Norwegians, besides a handful of people who might have heard of his MA thesis from 1969 about the scattering of neutrons.<sup>86</sup> It was therefore a shock to the Norwegian environmentalists to see this twenty-seven-year-old nobody rise to world fame as a co-author of *Limits to Growth*. The sudden distinction of a graduate student was looked upon with suspicion. Yet the Norwegian tall poppy syndrome (Law of Jante) was not the chief reason environmental scholars were skeptical. It was the managerial reform program of the report that upset those who sought radical environmental answers to the question of what to do with Norway's natural resources.

*Limits to Growth* was immediately translated into Norwegian with the new subtitle "MIT's research report on the world's continuing growth." On the back cover was a quote from the world's first Minister of the Environment, Olav Gjærevoll, who proclaimed that "this book will have a vehement significance for our way of thinking and our course of action."<sup>87</sup> He served as Minister between May and September 1972, after which he, along with the entire cabinet, resigned. They had suffered a humiliating defeat in the national referendum on Norwegian membership of the European Community (EC). Most environmentalists looked with suspicion at Gjærevoll's support of the EC, as generally they were vividly against Norwegian membership. As discussed in previous chapters, both ecologists and ecophilosophers were on a national campaign against what they regarded as a capitalist international organization at the root cause of environmental degradation. It is thus unlikely that potential readers glancing at the Norwegian edition of *Limits to Growth* in bookstores

<sup>85</sup> World Council of Churches Central Committee, "Report of the Advisory Committee on 'The search for a just, participatory and sustainable society'," in Koson Srisang (ed.), *Perspectives on Political Ethics: An Ecumenical Enquiry* (Geneva: WCC, 1979), pp. 174–93, Randers is listed as consultant on p. 175.

<sup>86</sup> Randers, *En undersøkelse av spinnsystemet*, 1969; *Conceptualizing Dynamic Models*, pp. 107–20.

<sup>87</sup> Olav Gjærevoll quoted on the back cover of Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, *Hvor går grensen? MITs forskningsrapport om verdens fortsatte vekst*, Leif Bakke (trs.) (Oslo: Cappelen, 1972).

found Gjærevoll's favorable blurb encouraging. Instead, his statement placed the book firmly within a set of literature addressing the need to reform the Labor Party, debates most radical environmentalists refused to engage in. To make matters worse, the name Randers in Norway was associated with the nuclear advocate and chief NATO bureaucrat Gunnar Randers. Being his son was certainly not an asset for Jørgen in the environmental debate, as they could be confused. An eco-Marxist reaction to *Limits to Growth* from a philosophy student, for example, approached writings from the younger Randers with much suspicion as he assumed that the connection meant NATO was behind it.<sup>88</sup>

Yet it was the managerial ethos and lack of social-class analysis in *Limits to Growth* that Norwegian environmentalists would find most troublesome. Most prominent among them was the futurist and sociologist Johan Galtung, who (as discussed in Chapter 4) launched a most sour critique at the World Future Research Conference in Bucharest in early September 1972, labeling the report as a product of an "ideology of the middle class." The philosopher Arne Næss was there as well with his onslaught on the "shallow" technocratic perspective of *Limits to Growth* and the environmental approach of the Club of Rome. It was the lack of philosophical analysis of and commitment to broader social and environmental issues that upset Næss: "The shallow ecology movement has just two objectives: Combating pollution and combating the depletion of natural resources. The objectives are isolated from the broader problems concerning ways of life, economic systems, power structures, and the differences between and inside nations."<sup>89</sup> As Næss saw it, Randers and the system dynamics method he represented were unable to address the underlying "deep" issues that caused the environmental crisis at home.

Both Galtung and Næss elevated their own thinking by drawing up a distinction between their own respectively "radical" and "deep" points of view versus Randers' "middle class" and "shallow" ecology. Their arguments had a lasting effect on the reception of *Limits to Growth* in Norway, and on Randers' ability to find an immediate audience at home among environmental scholar-activists. He was living in Boston between 1970 and 1974 and, as he only visited Norway for short periods, he could not follow up the local reception of the report. As major movers of academic debate in Norway, Galtung and Næss thus managed to marginalize Randers by bumping up their own thinking at his expense. They

<sup>88</sup> Gunnar Skirbekk, *Økologi og politikk* (Bergen: Universitetet i Bergen, 1972), 44, note 3.

<sup>89</sup> Næss, "The shallow and the deep," 1972, 59–60.

were effective, as there are hardly any debates or comments in Norwegian peace research and ecophilosophical literature regarding *Limits to Growth* in the years following its release. This is quite remarkable, given the intense international debate of a book with a Norwegian co-author. It was not until the fifth edition of his deep ecology book from 1976 that Næss would offer a somewhat balanced evaluation of *Limits to Growth*, still quoting at length from Galtung's onslaught from 1972.<sup>90</sup> At that time Randers was, as will be apparent, a local force to be reckoned with as Director of the Resource Policy Group in Oslo. Indeed, throughout his life he was invited only two or three times to give a lecture at the University of Oslo, which would inevitably turn into verbal assaults thanks to Galtung, Næss, and their supporters.

One of the few documented public exchanges in which Randers engaged the Deep Ecologists was arranged by the *Forbrukerrådet* (Consumer's Council), a public institution devoted to consumer interests in Oslo. It was the Council's attempt to address environmental issues on their terms. Judging from the published version of the debate, it seems clear that Randers and the Deep Ecologists imagined different societies altogether. The ecologist Eilif Dahl was his chief opponent, arguing that a program of consumer indoctrination in the spirit of Mao was necessary to halt population growth and turn society toward ecological equilibrium.<sup>91</sup> Randers was, in comparison, more optimistic on behalf of the consumers' ability to foster change: "Many have labeled us doomsday prophets. But . . . we see a new order of society that will improve the quality of life for many people over a long period . . . [As] super technocrats we have arrived at the same conclusion as the hippies and others who believe that the most important thing in life is to have contact with people, experience things, not produce or work your head off, but have a rich life."<sup>92</sup> To Dahl this line of argument was surely evidence of "shallow" thinking. Relaxation was not the answer to the problem of economic growth and it was not what the environmental movement needed most, he argued. Most worrying, though, was Randers' lack of political commitment to an altogether different way of organizing the world.

That Randers thought halting economic growth was a lifestyle and not a political issue is evident in another public appearance of this

<sup>90</sup> Næss, *Økologi, samfunn og livsstil*, 5th ed., pp. 216–23.

<sup>91</sup> Tryggen Larsen, "En samtale om verden: Vi står overfor bestemte begrensninger med store konsekvenser," *Forbrukerrapporten*, 10 (1972), 4–10.

<sup>92</sup> Randers quoted in Larsen, "En samtale om verden," p. 10.

period. It was in front of a friendly audience at the Norwegian Physics Society. Here he told them that addressing limits to growth in practical terms meant using “time on music, painting art, writing books, or – theoretical physics!”<sup>93</sup>

While being criticized by Deep Ecologists for his alleged “middle class” perspective and “shallow” technocratic approach to environmental issues, Randers was also confronted by scholars who dismissed future studies altogether. One critique stated, for example, that future studies had an “imperialistic tendency” in trying to make the common future the object of a narrow managerial discipline.<sup>94</sup> Others did not believe in any limits to growth. A book reviewer in one of Norway’s largest newspapers thought Randers was simply irrational.<sup>95</sup> One of the most articulated versions of this criticism came from a group of researchers at the University of Sussex who published a lengthy critique in 1973. In it the authors argued, among other things, that if one ran the mathematical model used in *Limits to Growth* in reverse on known historical data, the model would not match the actual historical development. Thus, one should be highly skeptical of the model’s ability to predict the future.

In Oslo, the professor of geology Ivan Rosenqvist received the Sussex report with open arms, and used it to attack Randers as a “doomster” whose success relied on “a psychological factor” in people’s curiosity in bad news.<sup>96</sup> Arguments that Rosenqvist had previously used against the energy pessimism of the elder Randers in the 1950s would now reemerge in sweeping attacks on his son. Rosenqvist was not impressed by his use of “modern computers and intense propaganda” in the *Limits to Growth* report and stated, “a political view will not be more objective by running it through a computer.”<sup>97</sup> The “ongoing ecological debate” about “renewable and non-renewable resources” was problematic to him since the nature of resources was poorly understood by ecologists

<sup>93</sup> Randers quoted in Olsen, “Fysikermøtet i Bergen,” p. 71.

<sup>94</sup> Tord Høivik, “Framtidsforskning – et urovekkende fenomen?” *Forskningssnytt*, 18, no. 6 (1973), 21–4, quote p. 21.

<sup>95</sup> Per Andersen, “Gjetning og virkelighet” (review), *VG* Dec. 12, 1972, 3, PA.

<sup>96</sup> Ivan Th. Rosenqvist, “Verdifullt korrketiv til dommedagsprofetiene” (review), *Forskningssnytt*, 19 (1974), 35. H. S. D. Cole, Christopher Freeman, Marie Jahoda and K. L. R. Pavitt, *Thinking about the Future: A Critique of The Limits to Growth* (London: Sussex University Press, 1973). Robert McCutcheon, *Limits of a Modern World: A Study of the “Limits to Growth” Debate* (London: Butterworths, 1979).

<sup>97</sup> Ivan Th. Rosenqvist, “Har vi nok ressurser?” in Mauritz Sundt Mortensen (ed.), *I forskningens lys* (Oslo: NAVF, 1974), pp. 343–58, quotes pp. 345, 346.

and system dynamics theoreticians alike.<sup>98</sup> There were plenty of natural resources and no limits to growth, Rosenqvist argued, even with radical population growth.

A letter to the editor in support of Randers from the physiologist Anton Hauge was a rare exception to all the criticisms he received in Oslo.<sup>99</sup> Indeed, forty years later Randers would still shiver from the attacks he experienced from established professors such as Rosenqvist, Galtung, and Næss when he presented *Limits to Growth* at the University of Oslo. They took the moral high ground against the young scholar and deemed him unworthy of any significant attention.

#### THE RESOURCE POLICY GROUP

In 1974 Randers returned to Oslo after what must have been four remarkable years as a graduate student and subsequently a professor at MIT. Intellectually, it had been a productive period where he had produced an impressive list of publications, while socially the Sloan School of Management had propelled him into the very core of international environmental debate. Yet despite all his intellectual and social credit abroad, Oslo scholars and environmentalists did not welcome him with open arms and he was quickly marginalized as a thinker not worth listening to. Nor did he receive attention from the theologians. As shown in Chapter 6, only a few of them took an interest in environmental issues and, when doing so, they would focus narrowly on Norwegian debates and the circle of ecophilosophers surrounding Næss.

As a result Randers would turn to the only group who had shown genuine interest in his work, namely Labor Party intellectuals. He consequently became a member of the Party. Chief among them was Labor Party Minister of Industry Finn Lied. Lied was a personal friend of Randers' father, Gunnar Randers, and a fellow member of the Party, as well as the Chair of the Board of the state's chief oil company, Statoil ("state oil"), the Research Director of the Norwegian Defense Research Establishment, and Chair of the Board of the Norwegian Technical Research Council (NTNF), to mention just a few of his numerous public responsibilities. In the wake of the oil crisis in 1973, during which Norwegians were not allowed to drive their cars on the weekend or fill up their cars with gas after 7 p.m., the Parliament asked Lied to write a

<sup>98</sup> Rosenqvist, "Har vi nok ressurser?" p. 344.

<sup>99</sup> Anton Hauge, "Dommedagsprofetiene," *Forskningssnytt*, 19, no. 5 (1974), 31.

white paper on the apparent limits of natural resources. The result was a report stressing the need to explore more natural resources while also investigating the nation's resource economy. *Limits to Growth* as well as the competing Sussex report, would frame much of this discussion, giving both environmentalists and resource optimists something to bite on.<sup>100</sup> Among the debaters was the newly appointed Minister of the Environment Gro Harlem Brundtland (1939), who, from the rostrum of the Parliament, talked about the "finite limits to growth in the use of energy in the world" and the need to determine the nation's natural resource policy on solid research.<sup>101</sup>

Randers arrived in Oslo in the midst of these debates with barely enough financial backing to start his own Resource Policy Group through the Norwegian, Swedish, and Danish technical research councils. Randers' dream was to create "an institute for policy analysis that could provide relative neutral descriptions of what the effects of different policies would be."<sup>102</sup> But the research councils did not allow for much free contemplation about global resource issues. Instead the Group was asked to do industrial branch analysis, for example, for the Scandinavian pulp and paper industry, which resulted in a string of dry reports. Apparently, the foresters were down-to-earth clients with limited interest in highbrow visions for the future. Then again, the concluding report was not very encouraging, declaring "the Scandinavian forest industry viewed as a whole will not be able to increase its wood consumption significantly during the next thirty years."<sup>103</sup>

These forestry reports did not hinder Randers from addressing more principal issues, as he did in *The Quest for a Sustainable Society* (1975). This is most likely the first time the word "sustainable" appeared in the title of a publication dealing with environmental issues. Here Randers would reiterate and elaborate on the World Council of Churches' principles for sustainability, saying that "one of the major goals of the

<sup>100</sup> Finn Lied (et al.), *Norges ressursituasjon i global sammenheng*, NOU 1974: 55 (Oslo: Universitetsforlaget, 1974).

<sup>101</sup> Gro Harlem Brundtland "Energiforsyning i Norge i framtida," in *Stortingsforhandlinger 1974/1975*, May 13, 1975, p. 4163. Yngve Nilsen, *En felles plattform? Norsk oljeindustri og klimadebatten i Norge fram til 1998* (Oslo: TIK Senter, 2001), pp. 37–65.

<sup>102</sup> Randers quoted in Mariken Vaa, "Samtaler i samtiden: Mellom olje og sol" (interview), *Samtiden*, 89 (1980), 9–13, quote p. 9. Besides Lie, key supporters of Randers were Rolf Marstrander and Bertil Agdur.

<sup>103</sup> Lennart Stenberg, *Longterm Development in the Scandinavian Forest Sector: A Study of Transition Problems using the System Dynamics Approach*, GRS-88 (Oslo: Gruppen for Ressursstudier, 1977), p. 5.

sustainable society is to deliver to the next generation a carrying capacity better than the one inherited from the past.”<sup>104</sup> The report was supposed to appear in the Council’s anthology *Life within Limits*, which never materialized. Instead it came to serve as the programmatic statement for the Resource Policy Group. What was needed, Randers argued, was a “Movement towards the Sustainable Society . . . while maintaining an acceptable level of welfare in the process.” As will be shown (in Chapter 9), this gradualist approach to environmental change would be important for the way in which sustainable development eventually became defined by the World Commission on Environment and Development in 1987.

By 1975, the sustainable society was not only a synonym for a state in equilibrium (as expressed in *The Limits to Growth* and Forrester’s *World Model*). The phrase also entailed making a “sustainable effort” and showing leadership in maintaining the environmental movement (as outlined in Randers’ PhD thesis of 1973). Moreover, it meant focusing on quality of life and taking a stand against the materialism of consumer society. Also, the sustainable society was at the time discussed almost exclusively in intellectual circles connected to the World Council of Churches. In these groups it represented an ecumenical faith in the coming of the environmental harmony of the Golden Age.

Randers would soon translate this broad thinking about sustainability into a program for Norwegian foreign policy which, he argued, should focus on improving quality of life, rather than on material welfare for people around the world. In practical terms, that meant “a less open economy” in the world, self-sufficient nations, and keeping Norway outside the European Community.<sup>105</sup> In terms of national policy, Randers argued that Norwegian politicians should try to halt economic growth and prepare for a sustainable society that could inspire and be a model for the rest of the world. The question was “How to Stop Industrial Growth with Minimal Pain?”<sup>106</sup> He argued that, in order to do that, one should undermine the chief motivating force behind economic growth, namely incentive-based salaries, and instead give everyone an equal and unchangeable “citizen salary” paid for by the state. A “reduction in the

<sup>104</sup> Jørgen Randers, *The Quest for a Sustainable Society*, GRS-9 (Oslo: Gruppen for Ressursstudier, 1975), p. 7.

<sup>105</sup> Jørgen Randers, *En ramme for norsk utenrikspolitikk*, GRS-56 (Oslo: Gruppen for Ressursstudier, 1975), p. 7.

<sup>106</sup> Jørgen Randers, “How to stop industrial growth with minimal pain?” *Technological Forecasting and Social Change*, 11, no. 4 (1978), 371–82.

working hours and longer vacations” would also be helpful in generating more jobs while at the same time damping economic growth.<sup>107</sup> This attempt to “revolt from the middle ground” was met with a lukewarm response from all parties involved in the Cold War deadlock.<sup>108</sup>

At the same time Brundtland became Minister of the Environment. She was mildly suspicious about such proposals, but would not keep them at arm’s length. As a politician, she recognized the need for renewal within the Labor Party in order to make it relevant to younger demographics, and she was genuinely interested in new ideas and perspectives. The same was true for Lied who wrote a report for the Resource Policy Group emphasizing the value of systems dynamics to the “*broad policy analysis and long term planning*” for the Party he represented.<sup>109</sup> This was his opening address to The Fifth International System Dynamics Conference, which Randers arranged in August 1976 at the Geilo ski-resort. Here the growing community of system dynamics scholars from all over the world met to discuss methodological issues and examine questions such as how to choose a problem, what to include in a model, the amount of details, and how to make it relevant to the right audience.

The Conference has in retrospect been celebrated as a turning point in system dynamics methodology and was of key importance for the formation of the System Dynamics Society. *Elements of the System Dynamics Method* (1980), the conference anthology Randers edited, was the chief methodological reference tool among members of this Society for at least a decade.<sup>110</sup> Yet the Conference and the anthology were hardly noticed among Norwegian scholars. It is equally telling that Randers became a formal member of the Club of Rome in 1977, but was never acknowledged with a membership in the Norwegian Academy of Science and

<sup>107</sup> Jan-Evert Nilsson and Jørgen Randers, *Den unødvendige arbeidsløsheten*, GRS-217 (Oslo: Gruppen for Ressursstudier, 1979), p. 16.

<sup>108</sup> Jørgen Randers, “Utopier og lønssystem,” *Samtiden*, 87 (1978), 349–51. Inspired by Niels Meyer, Helveg Petersen, and Villy Sørensen, *Oprør fra midten* (Copenhagen: Gyldendal, 1978).

<sup>109</sup> Finn Lied, *Social Difficulties versus Social Problems*, GRS-76 (Oslo: Gruppen for Ressursstudier, 1976), p. 6. Lied’s emphasis.

<sup>110</sup> Jørgen Randers and Leif K. Ervik (eds.), *The System Dynamics Method: Proceedings of the 5. International Systems Dynamics Conference* (Oslo: Gruppen for Ressursstudier, 1976). David Andersen (et al.), “How the System Dynamics Society came to be: A collective memoir,” *System Dynamics Review*, 23, no. 2/3 (2007), 219–27. Jørgen Randers (ed.), *Elements of the System Dynamics Method* (Cambridge, MA: MIT Press, 1980); “The 1976 International Conference on System Dynamics,” unpublished, Jan., 2007, 2 pages, SD.

Letters. Somehow, he was never able to shake off Galtung, Næss, and Rosenqvist's portrait of him as a "shallow" intellectual.

In 1981 Randers threw in the towel. The late 1970s was a period of economic depression in Norway, in which environmental activists became increasingly radical. When he was asked by the students of the Norwegian School of Management to become a candidate for the School's President, he accepted and won the election. "The world is moving towards a resource crisis," he told a student newspaper, "yet I have resigned in the fight for limiting economic growth, as I realize that 99 percent of Norwegians still wants growth in material consumption."<sup>111</sup> Following the liberalist economic thinking of his new patron, he began endorsing political efforts that would spur economic growth and renewal.<sup>112</sup> In his new role as President he tried to spur green business initiatives that aimed to make money using environmentally friendly production methods. More recently he emerged as a key authority in the nation's climate debate, favoring economic incentives to reduce greenhouse gas emissions, and as the Deputy Director General of WWF International in Geneva.

<sup>111</sup> Anonymous, "Ressursprofeten som ble rektor: Randers den resignerte," *Universitas* no. 5, Mar. 22, 1983, PA.

<sup>112</sup> Jørgen Randers, "Industripolitikk i Norge," *Kontrast*, 18 (1982), 44–9.