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By the time of his death in 1998 at age 65, Julian Simon had already established for himself the reputation of “doomslayer,” “one of those people who took on the thankless task of talking sense on a subject where nonsense is all the rage,” and of a man “set out to explain what happened in the real world, not what happens in abstract models or popular hysteria” (Sowell, 1998). His crusade against the conventional wisdom was featured in the *New York Times*, the *Washington Post* and the *Boston Globe* and he was considered the man who “thoroughly and often single-handedly capsized the prevailing Malthusian orthodoxy” by routing “nearly every prominent environmental scaremonger of our time” and by reframing “the central debate of our time: whether people are good for our planet or not” (Moore, 1998). Whether one agrees with his views or not, an overview of his key arguments is an important step towards a clearer understanding of the intellectual history and significance of one of the most salient and sensitive themes emerging on the public agenda during the second half of the 20th century.

Julian Simon, who wrote on resources, environment, and population (*The Ultimate Resource*, *Population Matters*, *The Economics of Population Growth*, *Population and Development in Poor Countries*) but also on other subjects, including statistics, research methods, and managerial economics (*Basic Research Methods in Social Science*, *Issues in the Economics of Advertising*, *The Management of Advertising*, *Applied Managerial Economics*) often complained that his work never received the recognition it deserved. Yet, contrary to his own belief, his arguments seem to have an immense impact by any standard. In fact, he was considered “one of the smartest people in Washington” while *Fortune* magazine listed him among the “150 Great Minds of the 1990s.” His views on population—i.e. that

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people are resource creators, not resource destroyers—influenced world leaders such as Ronald Reagan and Pope John Paul II and profoundly shaped the public debate on the issue for years to come (Moore, 1998). Of the many virtues he possessed, it was his attitude toward truth and facts that impressed most of his contemporaries (Sowell, 1998; Moore, 1998). There was nothing more irritating to him than “people who know in advance what the truth is,” who “don’t need to avail themselves of any ‘facts.’” Telling in this respect is the story of the evolution of his position. He recalled again and again the fact that when he originally got interested in population issues he had “exactly the opposite belief,” a “card-carrying antigrowth, anti-population zealot.” But when he found that “the data did not support that original belief” his thoughts changed. And, he wrote, “I was not disposed to close my eyes to the evidence because it did not square with my original beliefs. Rather, it was my beliefs that had to change” (Simon, 1997, xxviii).

Indeed, the best way to approach Simon’s work on population, environment and technology is to see it against the background of his dialogue and debate with the ideas inspiring the rise of Neo-Malthusianism in the second half of the 20th century as part of the “limits to growth” movement. A movement whose start goes back to Paul Ehrlich’s *Population Bomb* and Rachel Carson’s *Silent Spring* and that, by all accounts, reached maturity with the publication of *The Limits to Growth* (1972) and its success and huge circulation. With it a new tradition was born. And in this respect it is no exaggeration to say that Simon was one of the key figures that, together with authors such as Herman Kahn, created a critical counter-tradition by reacting systematically to what they considered to be the errors and even fabrications of works like *The Limits to Growth* (1972), *Global 2000* (1980), and *Beyond the Limits* (1992)—works that were pivotal in defining the main tenets of the neo-Malthusian revival. *The Ultimate Resource* (Simon, 1981/1996), or *The Resourceful Earth* (Simon and Kahn, 1984) were thoroughly argued and documented reactions to the questions addressed by the “limits to growth” rhetoric advanced in those works. By mirroring that rhetoric and by responding to it, Simon offered not only a different interpretation to the facts but also he positioned himself as an architect of an alternative vision. This paper will outline the main directions of Simon’s criticism of the “limits to growth” school of thought as well as some of the key features of the alternative vision he advanced as an alternative to it.

The Resourceful Earth

The Resourceful Earth, a work jointly coordinated and designed by Herman Kahn and Julian Simon, is probably the best vehicle to introduce the alternative pro-growth paradigm, advanced as a counter-reaction to the doomsday neo-Malthusian “limits to growth” ideas. To understand its circumstances and significance one should keep in mind that *The Resourceful Earth* was a point-by-point response to *The Global 2000 Report to the President*. *Global 2000* was supposed to be more than a manifesto and alarm bell. Solution building was supposed to be its next stage and the president (Jimmy Carter) directed the agencies of the government to identify solutions to the problems identified by that report. Thus *Global 2000* enjoyed a wide circulation and significant policy influence, marking one of the highest tides of the “limits to growth” neo-Malthusian movement.

The difference between *The Resourceful Earth* and *Global 2000* is drastic, and the outline of these differences constitutes one of the best introductions to the two schools of thought. Quite unsurprisingly, the “Major Findings and Conclusions” of *Global 2000* restated the standard themes of the radical environmentalist movement:

If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to disruption than the world we live in now. Serious stresses involving population, resources, and environment are clearly visible ahead. Despite greater material output, the world’s people will be poorer in many ways than they are today. For hundreds of millions of the desperately poor, the outlook for food and other necessities of life will be no better. For many it will be worse. Barring revolutionary advances in technology, life for most people on earth will be more precarious in 2000 than it is now—unless the nations of the world act decisively to alter current trends. (1980, 1)

Taking as a reference point precisely these conclusions, Kahn and Simon rewrote this summary in their *Resourceful Earth* from the perspective of their own analysis and conclusions:

If present trends continue, the world in 2000 will be less crowded (though more populated), less polluted, more stable ecologically, and less vulnerable to resource-supply disruption than the world we live in now. Stresses involving population, resources, and environment will be less in the future than now. . . . The world’s people

will be richer in most ways than they are today. . . . The outlook for food and other necessities of life will be better . . . life for most people on earth will be less precarious economically than it is now. (Simon and Kahn, 1984, 2)

Overall, *The Resourceful Earth* was an exercise in point-by-point dismantling of the arguments put forth by *Global 2000*. The global famine was just a myth. In fact, the food supply measured by grain prices and production per consumer had constantly grown in the second half of the century. Land availability was not a problem for world agriculture. Water scarcity or disappearance was not an imminent global danger “although the world and U.S. situations do call for better institutional management through more rational systems of property rights.” Mineral resources scarcity was a pseudo-problem as their availability increased rather than decreased. Threats of air and water pollution and climate change proved to be exaggerated. Life expectancy did in fact rise throughout the world, and that was a symptom of technological and economic progress. Finally, the birth rate in less-developed countries did not explode but fall—a symptom of modernization and of decreasing child mortality. *The Resourceful Earth* concluded that a lack of empirical data, misinterpretations, faulty trend analysis, and sloppy analytics and generalizations abounded in *Global 2000*. Moreover, from the conceptual standpoint, its authors “relied upon the same old discredited Malthusian theorizing that has led one after another of these studies to make forecasts that were soon falsified by events” (Simon and Kahn, 1984, 2–3).

In brief, *The Resourceful Earth* challenged in the most forceful and profound way the validity of *Global 2000*. The strategy was to follow closely—step by step—the claims made by that report and to rebut them:

Our conclusions are reassuring, though not grounds for complacency. Global problems due to physical conditions (as distinguished from those caused by institutional and political conditions) are always possible, but are likely to be less pressing in the future than in the past. Environmental, resource, and population stresses are diminishing, and with the passage of time will have less influence than now upon the quality of human life on our planet. . . . Because of increases in knowledge, the earth’s “carrying capacity” has been increasing throughout the decades and centuries and millennia to such an extent that the term “carrying capacity” has by now no useful meaning. These trends strongly suggest a progressive improvement and enrichment of the earth’s natural resource base, and of mankind’s lot on earth. (Simon and Kahn, 1984, 45)

To sum up, *The Resourceful Earth* challenges the basic assumptions and conclusions of the Presidential Report. But the most important thing to note is that Simon and his associates did more than elaborate a point-by-point rejection of the main factual claims and projections made by neo-Malthusian doomsayers. In fact, they synthesised in this work the basic elements for an entire theoretical and normative alternative to that offered by “the limits to growth” movement. The foundations of approach were firmly in place by then in Simon’s 1974 book on the economics of fertility, his 1977 book on the economics of population growth, and, most especially, in his 1981 book, *The Ultimate Resource*. Did Simon’s analysis proceed from his strongly held moral convictions, or did his convictions arise from his analysis? Most probably a parallel process took place in which analysis reinforced moral convictions and moral convictions fueled analysis. He started by developing a line of criticism that focused on the facts and their interpretation but he went beyond that, to the very foundations of the neo-Malthusian paradigm. In doing that, he articulated the core assumptions and concepts of an alternative paradigm—a social philosophy based on evolution, exchange, knowledge production, and creativity. A corollary of this effort was Simon’s constant concern with the place of values and principles in arguments about population and economic growth. The rest of the paper will briefly outline these dimensions of his work seen as building blocks of an alternative to the “limits to growths” perspective.

The Critique of Neo-Malthusianism and of the “Limits to Growth” Logic

One of the main problems with the “limits to growth” movement was in Simon’s view what he called “the lack of historical perspective.” The neo-Malthusian doomsayers, he explained, usually avoid confronting historical experience by saying that their interest is the future rather than the past. But neglect of the past is utterly unscientific. To be valid, science must be based on experience; all sound theories ultimately derive from experience and must be tested against it. Simon was keen to note that most people do not know the relevant facts about the trends they are talking about. Yet, the state of the present-day situation cannot be comprehended if one has no idea of what the terms of comparison with the past are.

A good example is the problem of the real price of resources, a problem implicit in many neo-Malthusian arguments. The historical reality is that these prices were higher in the past than now. Or to be more precise—and in the spirit of Simon’s approach—the reality is that, more often than not, the assumption that the prices will be lower over time, and that the longer the time period examined, the

more likely that will be the case, has been correct. But to construct and validate that piece of knowledge requires not only data but also complicated operations like adjusting for inflation. That makes the opinions about resource scarcity susceptible to misinformation because of the difficulty of checking the ongoing rhetoric against the real trends. The lack of historical perspective is revealed also by the practice of extrapolating from conjunctural trends. This is the practice of looking only at a limited time horizon and then extrapolating from a conjunctural or accidental downturn a bleak future. However, if one looks at the long-run historical trends used typically for that purpose, the downturn is “only a blip on the line.” Thus, the lack of historical perspective is amplified by the inability to make the distinction between the long run and the short run. Yet, that distinction is crucial for the understanding of trends and global phenomena. For instance, a negative on the short run may be a positive in the long run. What on the short run may look like overpopulation, in the long run may be a condition for a deeper division of labor and consequently for a higher standard of living. The lack of historical perspective leads to the misunderstanding of both the present and the future (Simon, 1999, 34).

Another conceptual error identified by Simon at the core of the Limits to Growth ideology was the result of a deeply engrained but highly defective way of thinking about resources. More precisely, the tendency to think of resources as given, autonomous of human productive and creative forces, as if they are independent of human action, and impervious to transformation through technology, choice, and inventiveness (Simon, 1999). This “closed system” perspective prepares the way to seduction by neo-Malthusian logic. The “limits to growth” discourse about resources and population has been dominated by the concept of fixity or finiteness of resources. In intellectual history terms, one may say that that is a Malthusian notion. But whether these are ideas that defined Malthus’s own thought is up for dispute. Most Malthus scholars would probably argue that neo-Malthusianism evolved from some core ideas developed by Malthus but pushed those ideas beyond thresholds that would have been crossed by Malthus himself. Moreover, wrote Simon, the concept of fixity or finiteness of resources is probably an anthropological constant—a way of thinking that comes naturally to humans. Because most of the things humans like, desire, or need are fixed in the short run, this logic becomes a “natural” way of thinking. One additional reason for the bias toward the closeness assumption might be a combination of epistemic and psychological factors. Many people may find it preferable to adopt a closed-system vision because of “a natural abhorrence of the loose-endedness of an open system.”

Irrespective of origins, there is a temptation to consider resources in terms of closed systems. From there, a sense of doom and gloom is inevitable. Simon notes, however, that once resources are seen not in isolation but in relationship with humans and as part of an open and dynamic system, the apparent

problem dissolves (Simon, 1996, 71–83). A sound approach to the problem of resources should be framed in terms of open—not closed—systems. The open-system approach implies optimism. Yet the closed-system vision is tempting because it gives the illusion of easy, calculable, and uncontroversial scientific results. As a parenthesis one should note that an excellent example in this respect is the “ $I = P \times A \times T$ equation,” i.e. the formalization of the notion that the Human Impact (I) on the environment equals the product of population (P), affluence (A=consumption per capita) and technology (T=environmental impact per unit of consumption). But assessing such “closed-system” models, Simon asked, “Where is the relevant boundary for our material world?” The ontology implied in creation and discovery in a universe populated not only by matter but also by ideas is different from the ontology assumed by the standard neo-Malthusian logic.

Usually the misunderstanding of the nature of resources, wrote Simon, goes hand-in-hand with a misunderstanding of the demographic basis of economic development. More people create more technical knowledge and, implicitly, more efficient ways of producing, exchanging, and consuming goods and services, such as economic growth. Indeed one may say that Simon took upon himself a crusade to defeat the neo-Malthusian view of the relation between demography, technology, and economic growth. One of his main targets was the widely believed idea that new technical knowledge occurs spontaneously. His point was that the link between needs, social conditions, and growth of knowledge is misunderstood or totally neglected. “A larger population is associated with more knowledge and productivity, because there are more potential inventors and adopters of new technology” (Simon, 1990, 200–201). But making this argument is not easy because short-run costs seem so obvious, while benefits are long term and look rather uncertain. A special problem arises from the fact that the increase in knowledge created by more people is nonmaterial and easy to overlook. “Writers about population growth usually mention a greater number of mouths coming into the world, and sometimes note more pairs of hands, but never mention more brains arriving” (Simon, 1999, 35–36). His central theme was that people are the ultimate resource. “Human beings,” he wrote, “are not just more mouths to feed, but are productive and inventive minds that help find creative solutions to man’s problems, thus leaving us better off over the long run.” He challenged the governmental economic and social statistics tendency to treat people as if they are liabilities and not assets: Every time a calf is born,” he observed, “the per capita GDP of a nation rises. Every time a human baby is born, the per capita GDP falls. (Moore, 1998).

Another impediment to clear thinking identified and criticized by Simon was a naïve and utopian vision of human nature. More precisely, it was a belief that love and altruism should be the main motivational

source of human action, and that family should be considered the ultimate models for all forms of social arrangements. But this mode of social organization cannot work nearly as effectively outside the kinship bonds, when the parent-offspring type of hierarchical relationship does not exist and when the complexity of choices and the uncertainty related to them go beyond a certain threshold. In these circumstances impersonal mechanisms like markets are the best means of social coordination. Nonetheless, many people resist the idea that markets are the best mode of coordination and social distribution. Impersonal markets lack love and caring. For people that stick to the “love and family” view of social order, the idea that impersonal institutional and market forces solve global problems in the long run and do not increase them becomes difficult to accept (Simon, 1999, 37–39).

That ties in well with a misplaced faith in planning and control. That faith, wrote Simon, usually comes from fear of anarchy in the absence of a strong central authority. The temptation to dismiss these fears as mere atavistic needs for control should be resisted. Fear of anarchy is a very powerful force in social life. Most of the time it is embodied in the dream of organizing an economy through a simple hierarchical system of central planning, in which all the problems are miraculously solved. That is why, argues Simon, the fight against the mirage of central planning starts with understanding the complexity of patterns of social coordination, cooperation, and collective action. Following Hayek (1952) one could better understand how centralized control in society affects social order. Both Hayek’s logic and the historical evidence of socialist experiments demonstrated the limits of the central planning and monocentric social systems. Market arrangements, imperfect as they may be, are more functional and better problem solvers. But the arguments that lead to this conclusion are subtle, and being able to defend them is not easy, so “it is not surprising that even well-educated laypersons often have not thought them through and do not understand them” (Simon, 1999, 39–40).

The notion of a centrally directed social order brings with it an implicit elitism. Simon rejected the notion that social elites should act as central planners for the less-educated masses who need guidance in their daily lives because they are unable to make sense of the great picture by themselves. He suspected that this implicit assumption fueled the attitude of many intellectuals and educated people. Yet, these people are rarely open enough to admit their belief that “trained intellects” should have an assured position of control in society. Their lack of confidence in the abilities of the poor to run their own lives is a function of their own ignorance of daily life resourcefulness, creativity, and ingenuity of people in day-to-day business. The uneducated and poor “can really create resources by way of creating new ideas.” Failing to understand this simple fact betrays a flawed understanding of society and

becomes yet another powerful impediment to clear thinking about population and resources issues (Simon, 1999, 41).

Among the catalog of errors that facilitate the spread of gloom and doom ideas, Simon identified a set of common fallacies in policy thinking and institutional impact assessment thinking. For instance, although externalities are widely mentioned as a reason of worries and governmental intervention, people have a very limited understanding of the multiple facets of externalities. The unintended by-products of economic activities could be malignant or benign. The unintended consequences principle works both ways. Seen from a different perspective and using alternative standards, a negative externality may appear as a positive one: “humans’ activities tend to increase the order and decrease the randomness of nature. . . . Humans perceive order, and create it.” While on the short run an externality may look all bad, on the long run things may look differently. That means that impact assessment is more complicated and not as straightforward as the common “externality equals bad thing” equation implies (Simon, 1999, 41).

Simon was among the first to criticize radical environmentalism for basing its conclusions only on arguments that neglected the logic of opportunity costs, trade-offs, and feasibility. In doing that, he inaugurated a tradition of responding to its proponents and their radical solutions with arguments regarding the costs and feasibility of those solutions and by pointing to the possible trade-offs. Cost-benefit, efficacy, efficiency, and effects-assessment become a part of the debate. In addition, a sound analysis takes into account “not just . . . the obvious and immediate effects of an economic event, but also the indirect and long-run effects as well” (Simon, 1998, 681-83). In their view, this is the master element in policy analysis. Simon was in agreement with the economist Henry Hazlitt, who considered that the mark of good applied work was to “look not merely at the immediate but at the longer effects of any act or policy” and to “trace the consequences of that policy not merely for one group but for all groups” (Simon, 1998, 681). Simon used the case of population economics to illustrate this principle. To understand the real dimensions of the phenomenon one needs to “enlarge the time span” not only by “pushing the historical record back to earlier times than are usually adduced in the discussion” but also by lengthening the horizon within which analyses of the future are made. This “enlargement” is an example of the logic at work. The ultimate goal is to understand not only the immediate action factors and their cost-benefit ratio, but also to take into account the “slower-moving yet fundamental forces” that generate them (Simon, 1998, 681–82).

A final example of what Simon considered to be major errors at the core of the neo-Malthusians' paradigm was the lack of understanding of the importance of the distinction between local and general, between the dynamics of specific areas and general trends, between global configurations and the accidental. Acknowledging the inevitability of local problems, he emphasized the huge difference between the global situation and local, specific areas and issues. One needs to keep things in perspective and not exaggerate the nature and significance of local mismanagement situations. They are a misleading base for generalizations in any global assessment:

Sometimes temporary large-scale problems arise. But the nature of the world's physical conditions and the resilience in a well-functioning economic and social system enable us to overcome such problems, and the solutions usually leave us better off than if the problem had never arisen; that is the great lesson to be learned from human history. (Simon and Kahn, 1984, 4)

Science, Values, Environmentalism and Humanism

Simon was very unhappy with the way the authority of science was used by many environmentalists. In this respect he identified as one of the most common confusions the belief that some value judgments could be "scientific" (Simon, 1996, 556). In other words, that science validates normatively specific ideas or propositions. A typical example was the belief that a recommendation such as that some countries have to reduce their population growth could be based purely on rigorous scientific assessment. And indeed, the claim that such judgments-recommendations are fully "scientific" was an important part of the doomsayers' portfolio (Simon, 1996, 548). Simon observed, however, that the notion of over-population (or under-population) is hardly a scientific concept.

Science, in the measure it deals with facts and not with values, can hardly decide where there is a case of overpopulation or one of under-population. Science alone does not, and cannot, tell us whether any population size is too large or too small, or whether the growth rate is too fast or too slow. . . . Social and personal decisions about childbearing, immigration, and death inevitably hinge upon values as well as probable economic consequences. And there is necessarily a moral dimension to these decisions over and beyond whatever insights science may yield. (Simon, 1981, 344)

By implication, population policies and policies in general cannot be based on scientific studies alone. Values play an important part in this type of decision as in all other cases. This raises the question of how those values are incorporated in policy decisions. Are they smuggled in deliberately, do they insert themselves surreptitiously, or are they decided based on an open discussion and a clearly structured decision process? But a more fundamental question is which specific values are relevant for specific situations.

In his ongoing debate with the “limits to growth” rhetoric, Simon drew attention to two values that, while they often pass unnoticed, create in fact the most basic framework of the debate: the value of progress and the value of human life. Both are as important as they are taken for granted. The idea that progress is desirable is based on the belief that people should have greater access to economic opportunity, better health, and material goods and in general to a better standard of living (Simon, 1996, 50, 54). But the value of progress is obviously derived from the value of man. If human beings have no inherently greater value than any other species and thus in the end are axiologically worthless, then their well-being—which is implied in the notion of progress—is a non-issue.

Therefore, even a cursory examination reveals not only the deepest normative parameters of the debate but also a hierarchy of values. And in this respect the value of humankind plays a top position. Simon identified the normative positioning on the issue of the value of man as one of the most fundamental issues separating his perspective from the “limits to growth” worldview. From his perspective, the environmentalist movement represented a radical turning point in the history of the way the value of humans and human life was seen.

The radicalism of the environmentalist approach could be fully perceived, he explained, only when put in historical perspective. Traditionally the problem of the numbers of the human population and its normative implications was neither a major philosophical or theological issue nor a matter of general concern. The value of humans was defined on parameters other than the quantitative and the demographic ones. Before 20th century, the biblical percept that people should be “fruitful and multiply” and “have dominion” over nature was the default belief. Neo-Malthusianism changed that. After it, even the utilitarian philosophy of “the greatest good for the greatest number” wasn’t able to stop a new tradition that questioned the value of more people and openly raised the problem in quantitative terms. A radical departure from the tradition that placed man at the center of the universe and the value of human life at the top took place. The neo-Malthusianism of the environmentalist movement reflected in doctrines such as the “Greenpeace Philosophy” radically altered the value and

place accorded to humanity: “Ecology teaches us that humankind is not the center of life on the planet. Ecology has taught us that the whole earth is part of our ‘body’ and that we must learn to respect it as we respect life—the whales, the seals, the forests, the seas” (Simon, 1996, 551–52).

One thus could see a sharp shift in values from one attitude—human centered—to another—nature-centered. That transformation took place in less than one century—actually in only a couple of decades. Conventionally, in the Western tradition, nature was seen as something created by God for man, that is, nature was instrumental. It was meant to serve people’s needs and to be an arena or context in which people were supposed to exercise the virtues they were endowed with. Understanding nature was a way to understand the glory of God. As a result of the shift, today the perspective has been transformed radically: nature is supreme. People have been relegated to a secondary role when not considered a downright danger or “cancer for nature.” Simon found vivid illustrations of this transformation by going back to old textbooks and comparing them to new ones. In doing that Simon makes, indeed, a key value judgment: humans have special value. In the past, he stated, “the descriptions of many birds included evaluations of their effects on humanity in general and on farmers in particular; a bird that helped agriculture was more highly valued than a bird which harmed it.” By contrast, the current textbooks “often evaluate humankind for its effect upon the birds rather than vice versa” (Simon, 1996, 551–52).

But while that example may be amusing, the transformation was also marked by more troubling changes of perception. A glance at the more fundamentalist environmentalist rhetoric could easily detect not just a change in the hierarchy of values but also a downright attack on humankind. The likening of the human species to cancer and other “virulent diseases” has been legitimized as a common piece of rhetoric: “the human species, have become a viral epidemic to the earth . . . the AIDS of the earth” and thus its extinction “may not only be inevitable, but a good thing.” Simon, quoting Robert Nelson (1991), pointed out an interesting contradiction. “On the one hand, *Homo sapiens* is said to be no different than other species; on the other hand, it is the only species whom the environmentalists ask to protect other species.” That is to say, they attribute to humans a special duty, but no special privilege (Simon, 1996, 555).

But, in the end, the problem is not that a transformation has taken place and a rearrangement of the value system has been instituted. The real problem is that the new system is incoherent and that in the absence of a minimal consistency, it becomes a mere arbitrary anti-humanism. The anti-humanist streak

could be illustrated by a resurgence of the doctrine of “lives that are not worth living.” That is, a return to a tenet of the old eugenics and population control tradition (Simon, 1996, 553). Eugenics encompasses not only the beliefs that the human race can, and should, be improved by selective breeding but also an implicit concept of lives that are “not worth living.” To be sure, eugenics comes in many guises and varieties: as population control in the poor countries and among poor persons, as a tenet of the Nazi ideology, in policies encouraging reproduction among high-income, high-education groups and discouraging it among others, in Malthusian and neo-Malthusian programs, and in various forms of preemptive eugenics (Simon, 1996, 554). This identification of a hard-core eugenics element touched on one of the deepest and most sensitive points in the debate about the “limits to growth,” population control authors: What is the value of a person’s life? If preemptive eugenics is practiced, what is to be lost? (Simon, 1996, 558–62). The problem was reformulated by Paul Ehrlich as a version of Pascal’s Wager: “If population control is undertaken and is successful in preventing births, but it turns out to be unnecessary, then what is lost?” (Ehrlich, 1968, 197–98). Once the issue is framed this way, values get a renewed salience because one’s answer to Ehrlich’s question obviously depends upon one’s values. “If you value additional human lives, and some lives are unnecessarily prevented from being lived, that is an obvious loss” (Simon, 1996, 561–62).

Simon went further. For him, the Ehrlich argument “boils down to an inverted (or perverted) Golden Rule: Do unto others—prevent their existence—what you are glad no one did to you” (Simon, 1996, 562). Simon’s analysis also reveals a structural identity between the eugenics position and the “compassion” shown by special interest groups and legislators when they use the government “to take taxpayers money in order to give it to some other persons or activities whom they think deserving.” This is “charity on the cheap”—“doing good without having to sacrifice from your own pocket to pay for it.” The “saving the environment,” population-control approach seems to be based on the same logic. That is to say that developed to its final conclusion, the argument also reveals something that looks like a deep hypocrisy on behalf of the promoters of preemptive eugenics (irrespective of the way the concept is operationalized in practice: marriage restriction, compulsory sterilization etc.). Sacrificing lives that might be lived and enjoyed “without first showing the way by sacrificing their own lives,” which most probably “they would claim are too valuable to be sacrificed,” sounds like a hypocritical and immoral position (Simon, 1976, 562).

It seems that a troublesome egocentrism infuses the attitude and reasons of precisely those who claim to be animated by the most selfless and generous sentiments. Yet, in most cases there is a method in madness. To get its clue it is necessary to look at how the risk factors are perceived and defined by the

“limits to growth” authors. It is clear that they see dangers from the unique perspective of their own persons and interests. In the end, the epistemics of risk assessment becomes secondary. Everything is a story about self-preservation and well-being of their own persons (Simon, 1996, 565). People with that attitude are prepared to sacrifice massive benefits to others in order to reduce low-probability risks to themselves. The fact that doomsayers are prone to make out of proportion risk evaluations, in which the dangers tend to be exaggerated, might not be a problem as long as those exaggerations affect only them. However, the exaggerations affect other groups in ways the doomsayers do not seem to care. One thing leads to another and an exaggerated gloomy forecast of natural resources availability may lead to eugenics implications for groups that have nothing to do either with the resources or the evaluation. This lack of proportion in thought, resulting from egocentrism doubled by an incorrect assessment of the trends and the resulting hysteria, were always just steps away from advocating eugenics. The justification that it is good for the unborn not to live, especially if at birth the child will become part of a poor society or underprivileged group, is a very troubling argument because it leads to slippery slopes with all sorts of implications for humanity and life on Earth.

An Alternative Vision: Evolution, Social Exchange, and Creativity

Julian Simon’s argument went beyond criticizing various components of the neo-Malthusian paradigm inspiring the “limits to growth” movement. His work articulated the elements of a complex social philosophy in which evolution, social exchange, and creativity play pivotal roles. His starting point was the standard economic history observation that “in two centuries, daily life changed more than in the seven thousand years before” (Mokyr, 1990, in Simon, 2000). Simon’s analysis concentrated on this break with the past starting about 1750 or 1800. For him, the study of the leap above the previous centuries and millennia in mortality rate, household consumption level, literacy rate, speeds of travel and communication was the key in understanding not only past social change but also the current predicament of the world. The answer to the question what force(s) caused this “sudden breakthrough” to occur precisely when it did—and not earlier or later in history—is essential.

Elaborating the argument, Simon agreed that the technology level resulting from the accumulation of knowledge played an important part. But what produced the accumulated knowledge? In his view the necessary conditions of change was the total quantity of humanity. Utilization of technology “had to wait on the accumulation of the nexus of human numbers and knowledge.” New knowledge doesn’t mean automatic progress. New and innovative knowledge “can remain dormant for a long time” if “demographic conditions are not appropriate for its adoption,” hence “the gain in knowledge would not

necessarily be converted into an increase in progress.” “Sudden Modern Progress” depended on “the number of people endowed with intellect and training who lived thereafter, together with the amount of technology in existence at the particular moment” (Simon, 2000, 13–14). The technology level and the standard of living would have stayed low if the total population “had remained at the few hundreds of millions that existed at that time” (Simon, 2000, 21).

Simon takes as an axiom the fact that the historical evidence is unambiguous in showing how in the past, new knowledge, new inventions, and human ingenuity have increased the access to resources, the safety, and the comfort of humans. That bolsters the legitimacy of the argument that sees humankind and social order “as part of the long evolutionary chain dating from the simplest plants and animals”—a history of “increasing complexity of construction and greater capacity to deal actively with the environment” (Simon, 1996, 74–83). But what if the convergence of various areas of improvement (security, comfort, life expectation, knowledge) is just an accident? Is the improvement trend in social evolution a mere coincidence? Simon realized that a general theory explaining these correlated phenomena would be a decisive argument against an “accidental” explanation. He was confident he had such a theory: The uniting thread was the dynamic relationship between an evolving and adapting social order and the environment. The general theory could be found in applications of evolutionary social theory. Humankind has evolved “sets of rules and patterns of living which are consistent with survival and growth rather than with decline and extinction.” As such, they are “an aspect of the evolutionary selection for survival among past societies.” Specific rules, institutions, and living patterns that increase chances for survival get selected and therefore “the patterns we have inherited constitute a machinery for continued survival and growth” (Simon, 1996, 73–75). Among them are uncertainty coping institutions, institutions of coordination and cooperation, institutions that create and manage knowledge, and the institutions of voluntary exchange. “The market system is part of that evolution, of course. But it is not the whole of it” (Simon, 1996, 74–75).

In other words, humanity has developed institutions, rules, and patterns of behavior that lead to an increase of available resources. The extension of the resource base and the improvements resulting from that were not the result of accidents but a response to a survival challenge. If that challenge had not been met, either humankind would have stalled in a stationary state or the increase in human population would have led to a crisis and perhaps its extinction. Instead, population growth was accompanied by a growing mastery of nature and its resources. The two reinforced each other and thus, humans managed both to increase both their population and their quality of life. In this process, human numbers and institutions are key in making knowledge and technology work to create wealth and prosperity.

One cannot disentangle from human numbers the effects of the human brain and its contents—call it human capital—any more than one can disentangle the effects of the human digestive or procreative anatomy from human numbers. It is a crucial element of the model . . . that population growth and density affect the structures of markets, law, tradition, and political institutions. If this had not been so, structures incompatible with an improvement in technology and the long-run standard of living could have remained in place indefinitely, thereby preventing further progress. (Simon, 2000, 17–18)

While knowledge is the driver, the role of institutions and demographics is critical. Institutions create incentives: They may encourage the production of new knowledge or they may hamper it. But the gains of knowledge are not necessarily converted to economic growth. New knowledge “can remain dormant for a long time” if “demographic conditions are not appropriate for its adoption at the time” and if institutions hamper the initiative that would put that knowledge to work for the benefit of the population. “It is not only the human mind and the human spirit that are crucial, but also the framework of society.” In fact, “the political-economic organization of a country has the most influence upon its economic progress” (Simon, 1996, 588).

Therefore, a double creativity is at work in human history: the creativity of technical inventions and the creativity leading to institutional inventions that shape society in ways that encourage the production and successful application of knowledge. If that perspective is correct, then two main conclusions come forward. The first is that humans should be seen as fundamentally creators rather than destroyers. This propensity toward creative adaptation is spontaneous and intrinsic to humans as social beings. Humans continuously alter the fabric of the universe and of nature, bringing to life new combinations of elements and new things. Our whole evolution up to this point shows that human groups spontaneously evolve patterns of behavior, as well as patterns of training people for that behavior, which tend on balance to lead people to create rather than destroy. Humans are, on balance, builders rather than destroyers. The evidence is clear: The civilization which our ancestors have bequeathed to us contains more created works than the civilization they were bequeathed. In short, humankind has evolved into creators and problem solvers. (Simon, 1996, 75)

The second conclusion is a corollary of the thesis emphasizing what a distinct and special ontological realm human society is. The complex social order involving language and institutions is the background condition of human creativity and growth of knowledge is the ultimate new thing created by

humankind. Social exchange creates, maintains and extends this order. Identifying social exchange as a central principle was a relatively easy task, since that conceptual territory had already been charted by F. A. Hayek and Simon fully acknowledged his debt and incorporated Hayek's language. Division of labor, comparative advantage, and other similar phenomena are all captured by an analytical focus on social exchange: "exchange mechanism evolves everywhere as a way of handling differences in abilities among persons, in order to improve our capacities to construct and create new goods as well as to distribute existing goods" (Simon, 1996, 73–83). In a word, social exchange is the fuel and facilitator of human creativity. And thus creativity and social exchange are two elements brought into existence by humankind that if properly taken into account, change the way we understand the universe and our relationship with it. This perspective contains simultaneously a social theory, an anthropology, and a philosophy—all of them in direct contradiction with the social theory, anthropology, and philosophy implied in the views of the "limits to growth" doomsayers. As a social philosophy, Simon's perspective emphasises the dynamic and creative nature of social order seen as a complex set of problem-solving institutional and social devices growing on an intricate system of social exchange relationships. As an anthropology, it rebuts the view of the average human as destroyer and emphasizes the intrinsic creativity of the human species. Finally, as a social theory it explains why the "constructive patterns of behavior must have been the dominant part of our individual-cum-social nature in order for us to have survived to this point" (Simon, 1996, 73–77).

And thus, we have reached the point that allows us to identify one of the major ironies of Simons' views: the human capacity to be creative and to create a distinct ontological realm somehow escapes the evolutionary account of institutional development. Everything is evolution: except human creativity, which enables human beings to be different than the rest of the animal world and to create complex orders based on ideas and exchange. One could easily agree that humans are different, and that their specific difference enables them to set up institutions that allow them to avoid nature's (Malthusian or neo-Malthusian) trap. However it is difficult not to notice the tension between the argument that the development of the institutions was the product of evolution (not of human planning and control) and the argument that human creativity in technology is the pivotal factor that allows human to escape those traps.

Conclusions

Julian Simon's criticism of neo-Malthusianism targeted the conceptual, empirical and philosophical flaws of the "limits to growth" paradigm. His critique led him to develop the elements of an alternative paradigm incorporating a radically different vision. And thus, we end up by being confronted with two competing perspectives. On the one hand is the pessimism of neo-Malthusianism. On the other is the confidence that "the nature of the physical world permits continued improvement in humankind's economic lot in the long run, indefinitely." Simon wanted the public to adjudicate between the two based not on emotions and mass media campaigns but on facts and analysis. Whether his view was the correct one was, is, and most probably will continue to be a matter of debate. Yet he was convinced that his was a more realistic perspective and that sooner or latter people would embrace it. Its appeal was not, however, to utopian optimism. In fact, Simon distanced himself from the charge of "utopian thinking":

To describe those who believe that the natural resources are available in practically limitless abundance, someone has coined the phrase "cornucopians," to contrast with "doomsdayers." But please notice: The school of thought that I represent here is not cornucopian. I do not believe that nature is limitlessly bountiful. I believe instead that the possibilities in the world are sufficiently great so that with . . . human imagination and human enterprise . . . we and our descendants can manipulate the elements in such fashion that we can have all . . . we need and desire. (Simon, 1981, 41)

To sum up, Julian Simon strongly believed that the notion that nature puts a clear-cut, limiting condition on growth is a simplistic and misleading premise for public debates and governmental decisions. He was convinced that both facts and theory were on his side. But ultimately his views were rooted in deep moral convictions. Simon was always eager to denounce the anti-humanism of those who think "that additional poor persons in this generation do make others poorer in this and future generations," that human lives matter less than lives of animals or that humans are the cancer of the Earth. But more than anything, he wanted to demonstrate that altruism is not the monopoly of any particular political economic philosophy and that staunch supporters of free markets, like himself, are true altruists. Simon took pride in his own altruism, a "cosmopolitan view of human beings": "The lives of people of other countries, ethnicities, and religions matter to me," he wrote, "irrespective of the fates of the groups to which they belong. I take pride and pleasure in the human race" (Simon, 1996, 558).

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