



Rethinking development at the twilight of Bacon's age

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ABSTRACT

Four centuries ago Sir Francis Bacon articulated a comprehensive view on how to use the power of modern science for the benefit of humanity. Over time the Baconian program led to conceptions of progress and development associated with unlimited growth, intensive resource use and unbridled consumption. The success of Bacon's program ended up undermining its own foundations and requires a revision of development thinking and practice. In particular, climate change and technological advances are creating a new context for development and demanding behavioral and value changes. Efforts to improve the human condition in the transition to the post-Baconian age should focus on reorienting value systems, and on articulating a new program for humanity.

Sitting on the ruins of failed paradigms, we are condemned to invent new ones for the twenty-first century

Ignacy Sachs (2009: 9)

1. Introduction

The first decades of the 21st century are a period of unusually high instability, uncertainty and anxiety, stemming from a host of accelerated transformations in all aspects of human activity. Interpretations of the magnitude and direction of these change processes suggest that two key drivers will determine the range of future options: the increasingly troublesome interactions between human activities and the ecosystems that support life, and the massive and pervasive impact of scientific and technological advances. As we enter a new epoch, the vastly different global context that is emerging in full view requires reassessing the Enlightenment idea of progress and updating the post-World War II concept of development. The Baconian Program, a set of propositions put forward by Sir Francis Bacon four centuries ago on how to improve the human condition, provides an initial framework to examine changes in the conception of progress and development.

2. The Baconian program

During the late sixteenth-early seventeenth centuries Bacon articulated a comprehensive view on how to use the power of modern science for the benefit of humanity (Jardine & Stewart, 1999). Four centuries later our lives and thoughts are deeply influenced by the visions of this unusual man. German philosopher Hans Jonas defined the Baconian program as: “to aim knowledge at power over nature, and to utilize power over nature for the improvement of the human lot” (Jonas, 1984: 140).

Elaborating on this definition and based upon an examination of his prolific writings, with hindsight it is possible to propose several features that distinguished his program from other views on the production and use of knowledge current in Bacon's time

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(Sagasti, 2000). First, an awareness of the importance of appropriate procedures (scientific method); second, a clear vision of the purpose of knowledge generation (improving the human condition); third, the idea of indefinite and cumulative human progress (driving force of the Baconian program); fourth, a firm conviction that human beings occupy an uniquely privileged place in the universe (centrality of humanity); and fifth, a practical understanding of the arrangements necessary to put the program in practice (scientific institutions, public support, patronage).

The combination of these five features gave the Baconian program its powerful and unique character, which gave rise to the four centuries-long Baconian age. Bacon's ideas were greatly enhanced by Enlightenment thinkers, although they did not evolve unchallenged and continue to generate considerable controversy (Peltonen, 1996; Urbach, 1987; Pérez-Ramos, 1988; Gaukroger, 2004; Desroches, 2006; Merchant, 2007; Vickers, 2002, 2008). Yet, the basic framework of the Baconian program has withstood the test of time and endured until our days. Its application improved the human condition in ways that Bacon and his contemporaries could hardly imagine. Two of these five features are of particular interest for redefining development in our troubled times: Bacon's assumption of the centrality of humanity and his belief in indefinite and cumulative character of progress.

Bacon's interpretation of the myth of Prometheus provides a clear statement of his view that our species occupies a unique place in a God-created universe: "Prometheus clearly and expressly signifies Providence ... the special and peculiar work of Providence was the creation and constitution of Man ... The chief aim of the parable seems to be, that Man, if we look to final causes, may be regarded as the centre of the world; insomuch that if man were taken away from the world, the rest would seem to be all astray, without aim or purpose." (Bacon, 1985: 270). The Baconian conception that the world is there for Man to dominate through understanding has come under attack in recent decades (Merchant, 1983), and a growing awareness of the impact that human activity has on ecosystems that support life and civilization has compelled a repositioning of our species in relation to other living organisms, the diversity of ecosystems we inhabit, and the universe as a whole (Intergovernmental Science-Policy Platform on Biodiversity & Ecosystem Services, 2019).

Enlightenment philosophers enriched considerably the idea of progress, giving reason a central place, adapting it to changing circumstances, and also leavening it with doses of wit and awareness of its limitations (Bronner, 2006; Bury, 1932; Gay, 1995a, 1995b; Lasch, 1991; Nisbet, 1980). Yet, faith in the inevitability of human progress was eclipsed during the turbulent first half of the twentieth century. The "age of catastrophe" (Hobsbawm, 1994) forcefully challenged the idea of steady and unending human progress, suggesting that the extraordinary improvements in the human condition derived from the unfolding and deployment of Bacon's program (Pinker, 2018) had a darker side that demanded a reassessment of its achievements limitations.

3. From progress to development

A renewed faith in the possibility of progress emerged at the end of World War II. The Allied triumph, largely based on an unprecedented mobilization of scientific knowledge, operational competence and management skills (Baxter, 1968; Budiansky, 2013; Jones, 1978), brought back the idea that deliberate interventions could improve the human condition. In parallel with the successful post-war reconstruction efforts in war-ravaged countries, the concept of *development* emerged in the mid-1940s to revitalize the Enlightenment idea of inevitable human progress for the whole world.

Firmly rooted in Bacon's program, development became the latest incarnation of progress. The subsequent quarter century Golden Age of economic growth (Maddison, 1995; Sachs, 2009), appeared to prove conclusively that improvements in the human condition, understood primarily as increases in material wellbeing, were possible—but only if backward countries did the right things with assistance of advanced, mostly Western, nations. The notion of unlimited human progress, now relabeled development, was transformed into an unquestioned objective for all societies.

Two alternative systems for achieving development were postulated at the onset of the Cold War: one based on market economies and pluralistic democracies, and the other on centrally planned economies and single-party political systems. In both case the underlying assumptions were, not only that development was possible and imperative, but also that economic growth and modernization were the only paths towards it. This conception of development gave rise to a variety of policy prescriptions (Agarwala & Singh, 1969). Yet, notwithstanding a diversity of approaches, development thinking and practice were primarily concerned with economic efficiency, resource allocation, production and consumption, savings and investment, growth and other economic issues (Arndt, 1978).

With notable exceptions, culture, religion, ethics and ethnic loyalties did not figure prominently in development thinking and practice (Harrison & Huntington, 2000). Cultural factors were seen as prerequisites for, but not as an integral component, of successful development. Nonetheless, beyond basic requirements for survival and social interaction, men and women are guided by cultural, ethical and moral impulses. Non-material aspects of human activity, including sentiments, emotions and values, are fundamental for affirming the capacity for action, for creating and sustaining institutions, and for guiding efforts to improve the human condition.

The concept of development placed the evolution of all societies along the same continuum; in a well-known formulation, all countries were supposed to advance linearly from a "least developed" stage to become "advanced mass consumption societies" through economic growth (Rostow, 1971). Development was assumed to be a problem that could be solved by adopting the right strategies and policies, usually fashioned in the image of those prevailing in rich countries. This conception, associated with unlimited growth, intensive resource use and unbridled consumption, has run its course. Current challenges, opportunities and threats demand a shift in the direction of efforts to improve the human condition.

4. The twilight of Bacon's age

Revisiting the premises and consequences of the Baconian program helps to understand the combination of crises that characterizes these turbulent times. The first decades of the twenty-first century are witnessing the twilight of Bacon's age: *the enormous success of the Baconian program that guided human efforts during the last four centuries has ended up undermining its own foundations*. Each of the key features of the Baconian program is now being questioned. Our conceptions of where humanity stands at present and of its future prospects require a fundamental reassessment, which, in turn, forces a reconsideration of the ideas of progress and development.

Knowledge is advancing with such speed that it is nearly impossible to provide an accurate picture of the breadth and intensity of the changes under way (López Portillo, 2018). The emergence of artificial intelligence opens new possibilities for leveraging our knowledge generation capabilities, while at the same time showing that the capacity to reason is not an exclusive prerogative of human beings. Advances in genetic engineering and biotechnology have opened the possibility of deliberately guiding the biological evolution of our species, regardless of our readiness to accept such awesome responsibility. We have also been forced to cope with the swift emergence of cyberspace, a new level of reality, which has challenged the dualism that underpinned the modern scientific outlook. We have realized that technological advances are transforming human interactions, fragmenting our selves and profoundly altering our sense of personal identity.

The methods of modern science have evolved gradually but are poised to experience even more significant transformations in the coming decades. New modes of knowledge production, the reflective character of the modern scientific enterprise, the impact of information sciences and technology, and the increasingly complex relations between theory formulation and empirical verification, suggest that we may be entering an age in which, as Sir James Frazer pointed out, science may be complemented or even superseded by new ways of “registering the shadows on the screen” (Frazer, 1964).

Efforts to improve the human condition have had many unintended negative consequences, which have made it impossible to unambiguously abide by Bacon's injunction to employ knowledge for the benefit of humanity. The ambivalent character of scientific discoveries has been heightened through centuries by advances in military technologies, which reached a high point with the development of the atomic bomb and its deployment at the end of World War II; and that are now stretching to even higher levels with new forms of outer space- and cyber-warfare. This conundrum is becoming even more acute with advances that have expanded the possibility of democratizing biological weapons of mass destruction (Joy, 2000; Wiener, 2018).

The overwhelming evidence that the exponential growth of human activities is leading to irreversible changes in the ecosystems that support life and civilization as we know it, requires a displacement of the human species from the central place in the universe (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019). Bacon's account of the myth of Prometheus requires updating, reinterpreting it in much more uncertain and ambiguous terms without assuming that “Man is the center of the world.”

The institutional settings for the generation and utilization of knowledge are experiencing major transformations. Public support of science and technology is losing ground to private funding for scientific research and technology development, which now accounts for close to seventy percent of the world total (UNESCO, 2018). The profit motive and the ruthless logic of markets have displaced to a second plane public interests in the generation and utilization of knowledge.

We are witnessing the twilight of the Baconian age. Attempts to cope with the assaults on the Promethean centrality of humanity and to deal with the challenges to the Baconian program are creating confusion, anxiety and a widely shared feeling that humanity has lost its bearings. As we move deeper into the twenty-first century and the new millennium, humanity is embarking in a journey into uncharted territory; a journey whose destination cannot be visualized clearly, and which is forcing a reappraisal of the human condition.

5. Rethinking development at the twilight of Bacon's age

The post-World War II symbiosis of development and growth began to be questioned in the 1960s (Carson, 1962; Sachs, 1980b; World Commission on Environment & Development, 1987). Critics of development as growth argued that it was impossible for the whole world to achieve the levels of material prosperity and consumption of the rich countries, for this would violate the biophysical limits and threaten the viability of natural ecosystems that support human existence (Daly & Cobb, 1994).

The material wellbeing for all that has been the basic aspiration of the modern development idea since its inception, has been seen by those who oppose it more as a quest to tear apart the fabric of the planet than as a means of bringing material comfort to the poor (Herrera et al., 1977; Meadows, Meadows, Randers, & Behrens, 1972). The contrary argument is that scientific and technological advances would allow overcoming the limitations of nature and the negative environmental consequences of growth (Kahn, 1979; Simon, 1981). Looked in this way, most current approaches to development thinking and practice become a matter of faith—faith that human ingenuity will always be superior, or at least equal, to the consequences of human actions, that science and technology will save humanity from itself (Simms, Johnson, & Chowla, 2010). Moreover, it is seldom acknowledged that capacities to generate knowledge and technology are highly concentrated in rich countries with high levels of material consumption. The inherent biases in the orientation of scientific and technological efforts, now largely financed with private funds, have contributed to maintain faith in the fantasy of endless economic growth and to disregard, until recently the fundamental changes required in our conceptions of development and the value systems that underpin them.

Colby (1989) identified five paradigms to examine relations between environment and development—frontier economics, environmental protection, resources management, ecdevelopment and deep ecology—, examining their characteristics, the strategies

derived from each, and their main policy recommendations. Assessing their relative merits and flaws, he suggested it was possible to move in the direction of “ecodevelopment,” and that the rise of environmental concerns implied a change in value systems was taking place, as exemplified by the rise of green political movements. Yet, early ecodevelopment advocates were fully aware of the difficulties in making the transition towards paths that were at odds with decades of development thinking and practice (Sachs, 1980a),¹ a sentiment clearly expressed by Colby (1989, p. 31): “widespread political paralysis which will prevent effective cooperation and institutional innovations of the magnitude needed to meet the great challenges of the coming decades may be the result if some synthesis does not surface as a vision for the future development of both industrial and developing societies.”

Echoing earlier appeals to harmonize environment and development, recent attempts at broadening and rethinking the idea of development take biophysical constraints explicitly into account and arguing for an “ecomodernist” approach, which eschews both minor adjustments in environment-friendly policies and a celebration of unbridled capitalist creative destruction. This approach envisions an “ecologically vibrant planet” characterized by an intensive use of resources, space and technology, and made possible by “state investment in mission-oriented research to accelerate the development and deployment of an array of breakthrough low-emissions technologies that can transform industry, transport and agriculture as well as electricity generation.” (Symons, 2019, p. 7). Ecomodernism would require major shifts in development strategies and public policies, which in turn demands fundamental value changes that must seep through society and overflow to reach political and policy elites.

Other attempts to redefine development have focused on the non-material human aspirations, and still others privilege the creation of opportunities for personal enrichment. Using concepts such as “life opportunities,” “freedoms, functionings, and capabilities,” “emancipation” and “human empowerment,” development has been recast as the possibility of individuals and societies choosing life-styles and deciding on their own future, while respecting biophysical environment constraints (Dahrendorf, 1983; Deneulin & Shahani, 2009; Nussbaum & Sen, 1993; Sachs, 1980b; Sen, 1984; Welzel, 2013). Similar approaches were advanced early in the twentieth century by Indian philosophers and activists, most notably Rabindranath Tagore and Mahatma Gandhi, and later by Western thinkers like Eric Fromm, who distinguished between “having” and “being,” and Denis Goulet who proposed two strategic principles to guide development efforts: “to have enough to be more” and “universal solidarity” (Fromm, 1976; Goulet, 1999; Jahanbegloo, 2017). These concepts embody the aspiration to provide all individuals —both at present and in the future— with the same opportunities to freely develop their potential to the maximum in harmony with nature and with others.

Conceiving development as a relentless march towards increases in material wellbeing and prosperity, along a single path for all of humanity to follow, is clearly now untenable. *The prevalent late-twentieth century conception of development may be seen as the latest and last reinterpretation of the idea of progress within the framework of the Baconian age.* Yet, we are still at an early stage of rethinking the ideas of progress and development in the uncertain transition to the post-Baconian age. Taking a cue from changes in social attitudes that have taking place in recent decades, a potentially fruitful approach to this task involves focusing on the value systems that guide human actions.

6. Development as reframing, revitalizing and creating values

García Morente (1980) stated eight decades ago that “progress is the realization of the realm of values through human effort ... in essence progress signifies the realization of values.” Building on his ideas, progress and development in the transition to the post-Baconian age could be redefined as: *the open-ended process of reframing old, revitalizing existing, and creating new values, of seeking to evolve increasingly enlightened and more widely shared perceptions of what humanity is and should be, and of devising the means for advancing individually and collectively towards realizing these values.*

Human beings are capable of establishing conscious distinctions between preferred and not preferred events, emotions and ideas; to elaborate and process mental maps that take into account both external environmental and internal bodily states; and to anticipate the consequences of their actions and modify their behavior towards the pursuit of desired ends (Damasio, 2018). Affective bonds and mutual trust allow the transition from individual preferences to shared commitments, a process that takes place in ever expanding circles of human interactions. When preferences become culturally accepted, widely shared, and capable of eliciting obligation, they are transformed into values, into normative guides for the exercise of individual freedom. The transition from individual to collective preferences is riddled with conflicts and paradoxes, but communities that endure and prosper reach agreement on what is good or bad, better or worse. They accept and leverage diversity, while containing and redirecting conflict to fruitful ends (Appiah, 2006; Arrow, 1950; Bok, 1995; Edelman, 1995; Taylor, 1993; Vickers, 1980).

The articulation, unfolding and deployment of the Baconian program provided a framework for the evolution of the idea of progress during the last four centuries; its triumph after World War II did the same for development thinking and practice. Over time, shared notions of the preferred and the undesirable have been changed, and norms guiding individual and social conduct have been

¹ At a June 3–12, 1971 meeting of experts held in preparation for the 1972 first United Nations Conference on the Human Environment the Miguel Ozorio de Almeida, the Brazilian participant, argued that: “it is necessary to conclude that there is a fundamental contradiction between the process of economic development most specially in its initial and intermediate stages, and the ideal environmental conditions hoped for by the idealistic sociologist. ... in the heavy industrial stage of the process of development —shoes high productivity and technological impact are essential elements of the process of development and, as such an indispensable condition for human progress— the disruption and deterioration of environment conditions reach gargantuan proportions.” (United Nations Conference on the Human Environment, 1972). While he qualified his remarks indicating that “whenever possible, irreversible deprecations should be avoided” and that “efforts should be made to undertake those economic task that might have beneficial environmental consequences,” it is clear that the growing awareness of environmental disruptions and climate change have led to profound value and attitude changes all over the world during the last five decades.

modified. Valuation grounds all over the world shifted by fits and starts, largely under the influence of Western civilization but often preserving local attributes (Romero, 2009).

The first decades of the twenty-first century are witnessing another round of major changes in values (Welzel, 2013). Awareness of environmental damage, climate change, and threats to the regenerative capacity of ecosystems that support life, have led to the emergence of values linked to environmental sustainability. Advances in information technologies and robotics are changing the set of values associated with work, employment and livelihoods. Demographic shifts are modifying values related to intergenerational equity, altering the nature of duties to children and elders, and our responsibilities and obligations towards others. Inequalities of wealth and income are fraying the social fabric and bringing to the fore egalitarian values and impulses.

Twenty-first century scientific and technical advances in biology and genetics have made it possible to deliberately manipulate the human genetic makeup, ushering the need for shared values to guide decisions that could alter the path of human evolution.² New discoveries about the origin and end of the universe and of life, as well as about the nature of time, are challenging religious conceptions and opening up space for reinterpreting, renewing and creating values related to the meaning of existence and human transcendence.

As these transformations in value systems began to take hold in the late twentieth century, the Baconian belief in the possibility of human progress acquired a new expression in the ideal of advancing towards just, good, decent and emancipated societies. Advancing in this direction implies a willingness to engage in moral dialogues that combine reason with emotion, accept a diversity of viewpoints, preserve freedom of speech, and acknowledge the existence of conflicts to be resolved without violence (Etzioni, 2000; Margalit, 1997; Sen, 1999). This should allow identifying overlapping consensuses (Rawls, 1993) on what constitutes a worthwhile life, and eventually lead to evolving cores of shared values.

Bok (1995) identifies a “minimalist” set of values grounded in trust that could be recognized across societal and other boundaries: mutual support, loyalty, and reciprocity; refraining from violence and deceit; and fairness and procedural justice to process conflict. Dahlsgaard, Peterson, and Seligman (2005) point out that different philosophical systems in the West, South Asia and China share similar conceptions of valued human strengths, or virtues. These could inform the process of creating cores of widely shared values across cultures to re-define development in the transition to the post-Baconian age.³

7. Redefining development: from concept to practice

There are indications that the redefinition of development as the creation, reinterpretation and realization of values has begun. Sen’s notion of development as freedom, together with his related formulations of functionings and capabilities, provide useful guidance (Sen, 1984, 1999). Their imprint can be seen in the United Nations Millennium Declaration, which considered freedom, equality, solidarity, tolerance, respect for nature and shared responsibilities as “fundamental values to be essential to international relations in the twenty-first century,” and in the formulation of the eight Millennium Development Goals that were to be achieved by 2015, and the seventeen Sustainable Development Goals to aim for 2030 (Millennium development goals and beyond 2015, n.d.; Sustainable Development Knowledge Platform, n.d.; The United Nations Millennium Declaration, 2000: 6).

Sen’s notions have also influenced the construction of development indicators such as the Human Development Index (Ul Haq, 1990), and new measures of economic performance and social progress (Stiglitz, Sen, & Fitoussi, 2009). A shift towards emancipative values associated with human empowerment has been detected by the World Values Surveys program, which tracks changes in value systems in various parts of the world (Welzel, 2013). Concerns about disparities in the capacity to generate and utilize knowledge have focused on values related to creating science and technology capabilities in disadvantaged countries (Castells & Himanen, 2016; Sagasti, 1988), and about the negative impact of scientific and technological advances have instigated values aimed at preserving the integrity of the human species, and urged restraint to avoid the possible adverse consequences of genetic engineering experiments (Goldim, 2015). Values related to environmental protection have been enshrined in the formulation of the “precautionary principle” to prevent actions that could harm the ecosystems that support life (United Nations Conference on the Human Environment, 1972).

Despite advances at the international level, in the current and foreseeable geopolitical context initiatives centered on redefining development make sense primarily at the national level. Nations are “the largest unit we know until now that is decently accountable to people’s voices and capable of expressing their desire to give themselves laws of their own choosing” (Nussbaum, 2013: 17). National interpretations of concepts such as human freedoms, functionings and capabilities have led to the design of development policies (Deneulin & Shahani, 2009). As an example, the Agenda: PERÚ program defined the aim of development as to “expand as far as possible the options which all Peruvians have to imagine, design, choose and freely realize their own life projects,” which led to the definition of strategic directions for economic, social, environmental and infrastructure policies; of reforms to improve state, private, civil society and security institutions; of initiatives to strengthen democratic governance; and to the identification of value changes

² Jonas (1984: 21) anticipated that: “man will take his own evolution in hand, with the aim of not just preserving the integrity of the species but of modifying it by improvements of his own design. Whether we have the right to do it, whether we are qualified for that creative role, is the most serious question that can be posed to man finding himself suddenly in possession of such fateful powers.”

³ A recent report by a working group of the World Academy of Arts and Sciences clearly highlights the importance of widely shared human values: “The demands of rapid social evolution fuel global demand for universal access to more and better-quality education. ... [that focuses] on development of independent thinking, values, character, social skills and life-long learning. ... Self-mastery of creative powers is essential for promoting human welfare and future well-being. ... Underlying all these forces is the inexorable march toward universal human values. Values are not merely pious intentions, utopian ideals or political slogans. They represent the quintessence of the collective wisdom of humanity regarding the essential conditions for continuous and sustainable human accomplishment, welfare and well-being.” (Jacobs et al., 2018).

that support the strategic directions, institutional reforms and democratic governance initiatives. (Sagasti, 2001).

The gradual expansion of overlapping consensus and evolved sets of shared values requires agreement on the enabling conditions for moral dialogue. Responsibility, tolerance, knowledge and effectiveness provide a starting point for such exercises. *Responsibility*, in the sense of acknowledging and facing up the consequences of one's actions, and of taking care of whatever one freely accepts as an obligation (Jonas, 1984; Vickers, 1980); *tolerance*, understood as recognition, respect and celebration of diversity, rather than just grudging acceptance of differences (Embree, 2006; Gamio Gehri, 2006); *knowledge*, in the Baconian sense of a better understanding of natural and social phenomena to improve the human condition, of basing decisions on evidence, and of giving meaning to human life; and *effectiveness*, viewed as ways of linking thought and action, ideas and practice, to accomplish the imagined, and to put in practice the values agreed upon.

Trust, a basic human disposition that can be conceived as attachment to others, as the fundamental bond that holds societies together, underlies these four enabling conditions for value reinterpretation, creation and realization. It is based on the belief that individuals, collectives and institutions will act in a benign and not in a harmful way, and that they will be reliable and behave as anticipated. Mediated by symbolic systems and institutions that create mutual interdependence, trust informs the cognitive and decision-making capacities required for joint human action (Hosking, 2014: 27–28, 201). A minimum level of trust is a necessary condition for the enablers of value change—responsibility, tolerance, knowledge and effectiveness—to initiate and sustain the moral dialogues that will lead to a redefinition of development through the reinterpretation, creation and realization of values.

In addition, trust, responsibility, tolerance, knowledge and effectiveness also require the Aristotelian virtue of *moderation*. Too little trust leads to “obstinately vicious circles of distrust, from which escape is extremely difficult,” and excessive trust can be counterproductive, for “trust in the untrustworthy is at best unrewarding, at worst pernicious” (Hosking, 2014: 200). Similarly, inordinate degrees of responsibility deprive others of agency, while the opposite extreme breeds callousness and indifference. Too much tolerance leads to extreme relativism in which anything and everything is acceptable, while too little fosters sectarian behavior and exclusion (Drummond, 2006; Popper, 1971). Aspiring to exceedingly high levels of knowledge may cause paralysis by analysis, while ignorance ensures counterproductive errors. Focusing intently on effectiveness may disregard human transcendental impulses, while neglecting it leads to idle speculation, wastefulness and frustration.⁴

8. Concluding remarks

In addition to redefining development as the reinterpretation, creation and realization of values, a process that is now under way, at the dawn of the post-Baconian age we must also embark in the search for a new program for humanity. The five components of Bacon's program guided extraordinarily successful efforts to improve the human condition, but they ended up undermining its foundations. Perhaps it will take several decades before a new program emerges with the clarity and the coherence that we can now—nearly four hundred years after the fact—retrospectively attribute to Bacon's program. This search must build on the achievements of the Baconian age, taking advantage of its enormous success, but at the same time acknowledging its limitations.

Two indications suggest a possible direction for our search. First, there is a need to expand what became a rather narrow range of considerations, referred primarily to the exercise of our rational faculties, that were fully incorporated into the implementation of the Baconian program. Perhaps this calls for putting ethical, emotional, aesthetic and transcendence aspirations,—this is, feelings and the search of meaning—, on equal footing with reason integrating all of them into attempts at envisaging and outlining a new program (Bronner, 2006; Damasio, 2018). Such an exercise requires eschewing the excesses of rationalism that have been pointed out by critics of the Enlightenment, who highlight its association with authoritarianism and with its disregard of religion (Appiah, 2019; Lilla, 2008, 2016), and who argue for bringing back feelings and emotion into our understanding of social organization and politics (Davis, 2019).

Second, in the process of putting the Baconian program in practice, Western civilization took the world by storm. In just a few centuries it altered all aspects of the human condition. Other cultures and civilizations had to absorb, adapt to and respond to the advances of the Western worldview. Along the way, the potential contribution of the outlooks and mindsets of other cultures was lost or ignored. It is time to reconsider this state of affairs and begin to recover a diversity of cultural perspectives on the human condition (Anderson, 2003).

The future of humanity over the next centuries will be determined by our success in devising a new program to guide humanity into the post-Baconian age. The complexity and interconnectedness of the world we live in at the beginning of the twenty-first century implies that, in contrast with the achievements of Bacon, this new program will not be designed by a gifted individual. It will be a collective learning process, a construction emerging out of a multiplicity of human interactions that will integrate many different perspectives and perhaps take decades to articulate.

The collective search for a new program will lead, as inevitable corollaries, to renewed conceptions of progress and development, which will emerge out of evolved sets of values that are appropriate to guide social choices in the post-Baconian age. The crises, turbulence, instability, uncertainty and bewilderment that characterize our times are symptoms of an epochal transformation. Wrenching adjustments in mindsets, conceptions, habits and practices will be required from all of us, together with extraordinary

⁴ An ideological document of a recently created political party in Peru, the Partido Morado, provides an example of these values finding their way into political action at the national level. Individual freedom, collective action, environmental sustainability, and transcendence and self-improvement are its four ideological pillars, while trust, responsibility, tolerance, knowledge, effectiveness and moderation are the criteria defined and advocated by the political party for judging the suitability and adequacy of its public policy proposals (Partido Morado, n.d.).

efforts to open our minds and apprehend the human predicament as we move deeper into the twenty-first century.

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