

Progress by Enlightenment: Fact or Fiction?¹

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The public use of one's reason must always be free, and it alone can bring about enlightenment among mankind

Immanuel Kant (1784)

Enlightenment is a powerful intellectual and cultural movement which has vigorously promoted the idea of progress. However, the value-laden notion of progress is in many ways ambiguous even when it is restricted to some special area, such as science, art, technology, or politics. Some critics, who otherwise favor the Enlightenment commitment to education and research, have argued that progress is a myth. Some others regard Enlightenment as a transitory period of modernity, already surpassed by disillusioned postmodernism. Considering the philosophical aspects of these debates, my melioristic conclusion in this article is that progress is still a viable possibility or prospect: even though there is no general historical law which would make progress of the humanity necessary, it is up to us to hold up the values of the Enlightenment in our striving for a better world.

History of Progress

In his classic study of the idea of progress, J. B. Bury (1955) argued that the conception of progress in human history was established only by the optimist thinkers of the Enlightenment. In the narrow sense, Enlightenment is defined as an intellectual trend from the mid-seventeenth century to the late eighteenth century (cf. Gay, 1973). Using light as a metaphor,² its advocates argued that education can give freedom from superstition and religious dogmatism, if its content is provided by scientific inquiry.

1 Based on a keynote lecture in the Aboagora symposium in Turku on August 16, 2011.

2 The terms *Aufklärung* (in German), *les Lumières* (in French), *uppläsning* (in Swedish) and *valistus* (in Finnish) have a similar etymology.

Their progressive agenda included freedom of thought and the political rights of citizens.

A broader perspective on the history of progress is given by Robert Nisbet (1980) (see also von Wright 1993). The early modern age already knew many discoveries from the fifteenth and sixteenth century: printing, voyages to new continents, Copernican astronomy, Renaissance art, and the Reformation as a fight against clerical authority. These were continued in the early seventeenth century with the scientific revolution. These developments inspired many philosophers. Francis Bacon in the *Novum Organum* in 1620 formulated a three-fold optimism upon ‘the advancement of learning’: the proper inductive method ensures new scientific discoveries, the growth of knowledge gives us power to control nature, and the new powers ‘help to subdue the necessities and miseries of human life’ (see Bacon 1960). Bacon became the hero of the Royal Society, which established the basic principles of the scientific community in the 1660s. In 1650, Comenius wrote of his ‘pansophism’, which demanded the collection of all human knowledge and thereby education for all. This program was continued in the next century by the French Encyclopedists (Diderot, Voltaire). G. W. Leibniz declared that, in spite of apparently bad events and evil things, we live in ‘the best possible world’. This optimism culminated in Condorcet’s vision of human progress as the completion of civilization, the cognitive and moral perfection of man, while at the same time the French revolution championed the political slogan *liberté, égalité, fraternité*.

The roots of the idea of progress and regress go back to prehistoric myths of paradises and golden ages. In ancient Greece these themes can be found in Hesiod’s poetry and Protagoras’s philosophy of human culture (see Sihvola 1989). The Roman poet Lucretius, in his epic *De rerum natura*, gives a moderately optimistic account of the advance of humanity from primitive origins. An important addition to the early history of the idea of progress is the Judeo-Christian eschatology, which replaced the cyclic conception of time with linear time. An influential version of this doctrine of divine providence, a plan of creation and approach to the last times (the Savior’s Second Coming) was given by Augustine in his *De Civitate Dei* in the early fifth century CE.

Ancient philosophy, Plato’s definition of knowledge (Gr. *episteme*, Lat. *scientia*), Aristotle’s logic, the Greek ideal of *paideia* (education), classical drama and architecture, and Roman justice were important steps in the development of human culture. Transmitted to the medieval Latin scholastics by the Arabs, this heritage was unified with the Christian religion. In spite

of attitudes favoring stagnation and the ruling conservatism, the view of science as collective and cumulative enterprise started to gradually emerge in the medieval universities (cf. Molland 1978).

An illuminating episode is told in Dante's *Divina Commedia* from 1310: when the poet meets Odysseus in the Inferno, the Greek hero tells him that after returning from Troy he directed his crew through the Gibraltar toward the unknown, since man is not created to the life of the brutes but to 'the way of virtues and cognition' (*per sequir virtute et conoscenza*).³ A picture of the same Pillars of Hercules was printed on the cover of Bacon's *Novum Organum* three hundred years later, with a quotation from *Daniel* 12:4: 'Many will go back and forth, and knowledge will increase' (*Multi pertransibunt & augebitur scientia*). Virtues and knowledge are the two ingredients of practical and theoretical wisdom (Gr. *sophia*, Lat. *sapientia*) which were common ideals of ancient philosophers and their followers during the modern age. It is no accident that the German philosopher Immanuel Kant in 1784 defined Enlightenment by the recommendation *Sapere audet*, i.e. 'dare to know', or 'have courage to use your own understanding!'. According to Kant, Enlightenment is 'man's emergence from his self-imposed immaturity' (see Gay 1973, 384). In this sense, ancient philosophers can be regarded as the first representatives of the Enlightenment tradition.

Kant's three critiques made the important distinction between theoretical reason, practical reason, and judgment (taste). The three Platonist values of truth, goodness and beauty, which were intertwined in the Renaissance practices of scholars, thinkers, and artisans, were now split apart as science, ethics, and art. Pure science, the province of universities working with the Humboldtian 1809 program of *Bildung durch Wissenschaft*, was thereby distinguished from technology. Similarly, pure art, studied by the new discipline of aesthetics, was likewise distinguished from useful technologies. After Kant, questions about progress could be discussed separately in the domains of science, art, and politics.⁴

Rationalization, secularization, and disenchantment are often mentioned as characteristics of enlightened modernity (Habermas 1987; von Wright 1993). Kant agreed with sceptical philosophers such as Voltaire and David

³ See the essay 'Dante between Ulysses and Faust' in von Wright (1993, 193–201). Horkheimer and Adorno (1972/1947) also take Odysseus as the starting point of their discussion of the early interrelations between myth and reason.

⁴ Bruno Latour (1993) sees the distinctions between nature and culture, or science and politics, as constitutive of modernity. He concludes, not entirely convincingly, that 'we have never been modern'.

Hume as to the impossibility of rational proof of God's existence, but he acknowledged religion as a postulate of practical reason.

In the meantime, the Industrial Revolution had started in England in the 1760s with the invention of steam engines and weaving machines, opening the way to labor in factories, urbanization, and new forms of transportation and communication. At first these advances were independent of science, but at the end of the nineteenth century engineering and agriculture learned to build their activities upon the Baconian ideal of the 'scientification' of technology and applied science.

Happy End or Cultural Pessimism?

During the nineteenth century, the Enlightenment way of thinking continued and was extended in many different ways. Auguste Comte and his positivism argued in 1830 that humanity has progressed from theology and metaphysics to science. Positive observational knowledge about the laws of phenomena can be rationally applied by the following formula: from science comes prevision, from prevision comes action. Positivist social philosophers had an impact on progressive politics in some countries, such as Mexico. A similar emphasis on practical action was typical of the American school of pragmatism.

Hegel's objective idealism was based on extreme rationalism, but it formulated an influential vision of the dynamic development of mind and culture. Hegel's dialectics as a general theory of change inspired many process metaphysicians, among them the pragmatist Charles S. Peirce. For Hegel history will come to an end at a finite time, when the objective spirit becomes conscious of itself. Variations on this 'endism' were offered by Karl Marx's doctrine of the communist society, revived by Georg Lukacs and Alexandre Kojève in the early twentieth century, and more recently by Francis Fukuyama (1992) as the claim that history has reached its happy end with the victory of the liberal market economy.⁵

Another model of progress was based upon the nineteenth century idea of evolution, which some philosophers, including Herbert Spencer and Peirce, interpreted as a process toward a predestined limit (such as perfect harmony). While Charles Darwin's evolution by natural selection is a process whereby organisms adapt to a changing environment, and thus is not

⁵ In 1620, Bacon presented a theological argument for the progress of science: man's control of nature, lost in Adam's fall, can be gradually regained by science, and history will end with the completion of knowledge.

directed to some pre-determined goal, models of directed evolution were usually conceived of as consisting of an indefinite approach to an end or goal, an approach which may continue forever. Peirce actually defined truth as the ideal limit toward which the ‘opinion’ held by the scientific community, given sufficient investigation, would lead. A counterpart in politics was Eduard Bernstein’s socialist revisionism, which holds the journey to be more important than the destination.

Humanist opposition to science started already with the early Renaissance poet Petrarch, who in the fourteenth century raised the question whether knowledge about nature helps us toward a happy life (Randall 1940, 213). The same question – answered in the negative – was raised by Jean-Jacques Rousseau in 1750, in the heyday of the Enlightenment. The nineteenth century Romantic thinkers emphasized emotion and imagination over reason, unique and particular aspects of history over general laws, individual genius over social community, art and religion over science. Friedrich Nietzsche suggested that in the re-evaluation of all values we have to go ‘beyond good and evil’. The humanist scepticism about technology was expressed by Oswald Spengler in the 1920s in his work on the decline of Western civilization. Warnings about the dangers of technology were issued by Martin Heidegger and Herbert Marcuse. Max Horkheimer and Theodor Adorno (1972/1947) turned this criticism into a questioning of the ‘dialectics of Enlightenment’. In their work, written in the aftermath of the barbarism of the Holocaust, the leading figures of the Frankfurt School claimed that the Enlightenment has betrayed its mission by conceding too much power to ‘technological reason’. Jacques Ellul (1964) argued that we have lost control over technology, which now follows its own internal logic with ‘technological imperatives’. It is no wonder that C. P. Snow, in his thesis of the ‘two cultures’, placed pessimistic literary intellectuals in opposition to optimistic natural scientists.

The Romantic critique of the Enlightenment took new form in the 1980s with the ‘postmodern’ revolt against modernity. Jean-Francois Lyotard (1984) argued that in the postmodern condition ‘grand stories’ or ‘meta-narratives’ have lost their credibility, and that the human mind and culture have been split up into incommensurable language games and unsolvable value conflicts. Philosophy should be reduced to deconstruction (Jacques Derrida) or conversation (Richard Rorty); notions of truth, goodness, and beauty should be treated as ideological constructions. The modernist urge for novelty in science and art should be abandoned in favor of imitations and repetitions of old pastiches.

Postmodernism is no doubt a reflection of the disillusioned multi-cultural media society: an enormous agora for superstition, old myths, and New Age propaganda. The world has turned out to be much more complex and 'messy' than has been envisaged in modern science and politics. There are good reasons to rethink modernity and Enlightenment in the post-industrial information society (cf. Elkana 2000).⁶ In spite of healthy self-criticism and some playful ideas, however, postmodernists often sound as reactionary advocates of a return to a pre-modern culture and society.

It is therefore significant that there are also cultural pessimists who do not accept the lure of postmodernism and who maintain their faith in human reason as our last hope. The Finnish philosopher Georg Henrik von Wright (1916–2003), a champion of logic and analytic philosophy, is a good example of this intellectual quest. In an essay published in 1988, he argued that progress is a myth.⁷ This challenging thesis provoked extensive discussion and protests, as it countered the optimistic trend supported by the science-based projects of economic growth, welfare state and the information society. But already the Club of Rome, in its 1972 publication *The Limits of Growth*, had convincingly shown the impossibility of progress as continuous material growth. As further evidence for von Wright's evaluation we may refer to the dark history of the twentieth century: world wars, violations of human rights, concentration camps, Holocaust, genocide, poverty, hunger, disease, violence, pollution, and the environmental crisis.

Von Wright's argument refutes the notion of the unlimited, continuous and necessary progress of humanity. Similar arguments, with reference to global terrorism and financial crises in the early twenty-first century, serve to refute Fukuyama's thesis of the happy 'end of history'. A more general argument against 'historicism', or the assumption that there are general laws of human history, was presented already by Karl Popper (1957).

Von Wright seems to infer from the premise that progress is not necessary the conclusion that progress is not a fact either. As an expert on modal

6 Two limitations of typical Enlightenment thinkers of the eighteenth century can be mentioned. Newton's paradigm of classical mechanics was enormously successful, but it underestimated the complexity and holism of natural systems, emphasized in a speculative way by Romantic philosophers of nature. Cartesian dualism made a sharp division between the rational soul and irrational passions, failing to recognize the rationality of many emotions and the support that they may give to cognitive actions (see Niiniluoto 2006). However, these limitations can be overcome by relying on Enlightenment values, i.e. by new research concerning quantum theory, field theories, non-predictable chaotic and non-linear dynamic systems, mind-body interactions, neurophysiology and cognitive psychology.

7 See the essay 'The Myth of Progress' in von Wright (1993, 202–28).

logic, he certainly recognized that this inference was not warranted. Rather, his point is that progress is a value notion. To see what this means, it is useful to briefly consider the prospects of progress in the fields of science, art, and society.

Progress in Science

In 1936, the historian of science George Sarton argued that 'the acquisition and systematization of positive knowledge are the only human activities which are truly cumulative and progressive', and that 'progress has no definite and unquestionable meaning in other fields than the field of science'. However, when this positivist cumulative account of scientific progress was challenged by new models of scientific change in the 1960s, it turned out that there was no consensus among philosophers of science about the definition or characterization of advancement in science (see Niiniluoto 2002).

The accumulation-of-truths view ignores the uncertainty of all results of scientific inquiry. Even the best theories may be refuted by new observations and experiments or corrected by new theoretical frameworks. Popper's (1979/1972) fallibilism suggests that science progresses by a succession of theories which are false but which approach increasingly close to the truth. Progress in this sense means increasing truthlikeness or verisimilitude (see Niiniluoto 1984).

According to Thomas Kuhn (1970/1962), during periods of 'normal science' the scientific community agrees on a paradigm, which determines relevant problems and the criteria for their solution. Normal science eventually leads via anomalies to a crisis and a revolutionary paradigm shift. While Popper defended the idea of 'permanent revolution' in science (though not in politics), Kuhn and Paul Feyerabend claimed that new theories are incommensurable with the old ones: new conceptual frameworks change the interpretation of observations and the formulation of facts, from which it follows that there is no such thing as a theory-independent truth. Imre Lakatos proposed a compromise, whereby the development of science is seen as a battle between rival scientific research programmes (see Lakatos & Musgrave 1970). Kuhn and Larry Laudan (1977) suggested that progress could be understood in terms of the problem-solving capacity of research traditions, while the methodological pragmatist Nicholas Rescher (1978) identified progress with new and useful technological applications.

The main lesson to be learnt from this lively debate is that progress in science is a normative value concept, relative to the aims of scientific in-

quiry, such as truth, accuracy, information, explanatory power, simplicity and even beauty. Definition of progress in terms of such 'epistemic utilities' has to be distinguished from indicators of progress which give us reasons for thinking that some actual steps in the development of science in fact are progressive. This distinction between real and apparent progress is important to the realist view which takes seriously the idea that science attempts to describe an external reality (nature, mind, or society), but it is not easy and straightforward to know that progress in this task has actually been achieved. But on the whole the increasing success of scientific theories in predictions and the pragmatic guidance of action is an indicator of the increased truthlikeness of these theories (see Niiniluoto 1999).

Progress in Art

In science there is a fairly general consensus that Einstein's theory of relativity is in some sense an improvement upon Newton's classical mechanics. But is Picasso better than Rembrandt, Stockhausen better than Bach? At the end of the nineteenth century, the Austrian art historian Alois Riegl concluded that the history of art (painting, sculpture, architecture, music) exhibits different styles (*Stilformen*), which cannot be compared with one another. Hence the notions of progress and regress have no application in art. The epistemological anarchist Paul Feyerabend in *Wissenschaft als Kunst* (1984) cheerfully agreed, urging furthermore that Riegl's account is valid in science as well.

At the opposite extreme, the position would be that everything in art is progressive: all creative works which involve something personal, original and/or novel are examples of artistic progress.⁸

When a scientist formulates a new theory, its success is assessed by additional epistemic criteria, such as truth and explanatory power. For art, one might think that beauty could serve as a similar overarching criterion: a work of creative imagination should be beautiful, whether by some objective standard or by personal aesthetic experience. But the notion of beauty is an even more difficult concept to analyze than that of truth.⁹ The fact that old and classic forms of art retain their popularity shows that it is not always

8 The construction of new instruments is a common feature of progress in science and art.

9 Information aesthetics and semiotics promise to provide a general framework for analyzing the inner structure (harmony, complexity) of works of art and their representational capacity. One may hope that the elusive notion of beauty can be captured by these conceptual tools.

easy for radical modernists to educate their audience, who assess works of art by their own taste.

Many theories of art have proposed general principles for the evaluation and criticism of works of art. Realism sees art as the representation of external or internal reality, emotivism as the expression or transmission of emotions. Functionalism treats works of art as artefacts, whose form should follow their practical function. Political art is assessed by its impact on social progress, religious art by its impact on spiritual life. Each of these approaches, in any case, seems to favor a particular perspective on artistic activities.

Riegl's treatment of art resembles the Kuhn–Lakatos picture of scientific change as a competition between rival paradigms and programs – such as realism, symbolism, impressionism, expressionism, and cubism. This makes it possible to speak of progress and regress within the conventions of an artistic program: it is widely agreed that Johann Sebastian Bach was the greatest master of Baroque music. But it is always possible to be an artistic revolutionary or 'modernist' and propose changes in the rules of criticism and evaluation in art. Even postmodern art, in spite of its denial of genuine progress, can be viewed as an attempt to create something new (see Wallis 1984).

Social Progress

According to von Wright (2003, 211), 'no facts about diminishing illiteracy, improved sanitary conditions or increased per capita income' can prove the 'modern Myth of Progress', according to which 'men and their societies will thrive better if they are free to follow Kant's maxim to trust reason rather than authority'. Such facts do not measure progress, since progress is a value concept; thus the sole measure of progress is 'the way people thrive in the circumstances under which they live' (*ibid.*, 223).

Here von Wright seems to forget the lesson from Aldous Huxley's *Brave New World*: satisfaction can be artificially brought about by *soma*, the happiness drug. Whether or not one experiences 'thriving' is based on the relationship between one's goals and their realization; thus satisfaction can be too easily guaranteed by lowering the level of aspiration. As von Wright himself argued in *The Varieties of Goodness* (1963), the value standards of welfare or quality of life should refer both to subjective experiences (emotions, happiness) and objective criteria (social indicators, measurable states of affairs, or social facts).

I agree with von Wright about the significance of the fact–value distinction (see Niiniluoto 2009). From the facts of human history we cannot logically derive the value criteria of a good human life. But values as human constructs are not fictions but real factors, which influence and guide our behavior. So fact–fiction is after all not the right ratio in talking about progress. We have also seen in the context of science and art that factual developments can be assessed as progressive or regressive relative to a given value standard: a step from conditions A to B is progressive if B is better than A by standard S.

In a democratic society it is up to the citizens themselves to decide about their standards S of social progress. This does not mean that S should describe some perfect ideal state: in his defense of ‘piecemeal social engineering’, Popper (1957) argued that utopias have been harmful in human history, and that a better model of political progress is the reformist removal of some concrete defect, such as human suffering.

One important alternative to the traditional method of measuring progress by means of economic growth, the United Nations Development Project (UNDP) has since 1990 compared the UN member states by means of the Human Development Index (HDI), calculated as the mean of three factors: health (life expectancy at birth), education (adult literacy, years of schooling), and living standards (wealth measured by GDP per capita). In 2010 the top countries as ranked by the HDI were Norway, Australia, New Zealand, the USA, and Ireland. Finland is number 16; last in the list were Congo (168) and Zimbabwe (169).

The Genuine Progress Index (GPI), proposed by Redefining Progress, adds to the GDP other economic factors, including income distribution, services outside the market, and the costs of negative effects (crime, resource depletion, pollution, loss of wetland). In Finland GPI per capita has decreased since 1989.

The Prosperity Index, published by the Legatum Institute, includes among its dimensions the economy, entrepreneurship and opportunity, governance, education, health, safety and security, personal freedom, and social capital. In 2010 Norway was leading, Finland was in third place and the USA in tenth; the last is Zimbabwe (110).

The Happy Planet Index (HPI), published by the New Economic Foundation since 2006, takes seriously the value of environmental protection and sustainable development, as measured by the formula ‘life satisfaction × life expectancy per ecological footprint’. Satisfaction is assessed by tests of happiness (the best results are achieved by Costa Rica, Ireland, Norway,

and Denmark). The worst countries in terms of their ecological footprint are Luxembourg, the Arab Emirates, and the USA. In the overall HPI ranking the highest scores are achieved by Costa Rica, the Dominican Republic, and Jamaica; Finland (59) and Norway (86) are in the middle range, and Zimbabwe once again at the bottom (143).

These new indicators have been criticized for difficulties in the reliable measurement of the components and their arbitrary combinations. However, they are all variations of the theme of social progress: data from successive years show whether a nation has made progress relative to the criteria chosen. The governments of many countries – including France, the United Kingdom, and Finland – have seriously discussed the development and use of these indicators.

An interesting example of a complex future-oriented social indicator is the State of the Future Index (SOFI), produced by the Washington University Millennium Project. Using the Delphi method of expert evaluation, it gives predictions for 29 variables, predicting global progress for example in life expectancy, adult literacy, GDP per capita, internet users, and the reduction of conflict, child mortality, and regress in carbon dioxide waste, terrorism, corruption, global warming, and losses of suffrage and employment. The SOFI is calculated as a weighted average of these factors, with variable weights of importance assigned by the panelists.

Conclusion

The clash between optimism and pessimism, or modernism and conservatism, is a pervasive feature of our cultures. Recent illustrations are the books by Matt Ridley (2010) and Roger Scruton (2010): the former is cheerful about economic trade and co-operation as a means toward progress, the latter argues that the constraints and boundaries of human nature and custom make impossible any rational transformation of society. In my view, this clash would best be overcome by the melioristic position, which does not assume any lawlike development of progress or regress. This view is in fact presupposed in the fashionable notion of sustainable development, defined by Brundtland's Commission in 1987 as development that 'meets the needs of the present without compromising the ability of future generations to meet their own needs'. In spite of the ambiguity of the value concept of need, the notion of environmental, economic, and social sustainability is remarkable: it appears to acknowledge that progress is not a necessity but rather an ethical demand for all of us. The critical von Wright (1993, 227)

agrees with this melioristic conclusion, saying that we should not 'abandon work for progress as a task'.

Thus, in spite of many drawbacks and threats, the Enlightenment idea of progress is still alive. While we no longer believe that progress is a lawlike necessity in any sector of human life, it is still a possibility, which partly depends on our own attitudes and activities. In futures studies, methods have been developed for dealing with complex unpredictable systems, where the goals are also local, multidimensional, and revisable in new situations. Typically, the future is seen as an open tree of possibilities, but it can be at least partly influenced and designed by assessing the probability and desirability of alternative scenarios (see Niiniluoto 2001).

Even in a chaotic and unpredictable world, we have every reason to work together in planning and realizing a better future.

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