

The Challenge of Islam's Critique of Technology

by

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The Western world and the world of Islam share a history but they also differ greatly. The rise of terrorism has once again made us fully aware of that. In these tense times I would like to consider a question that is rarely raised today yet which may be very relevant and very revealing: What attitude do these two worlds take toward technology?

When you examine this question in historical perspective you cannot get around the religious background of technology, both in the Islamic world and in the West. This theme is very popular today : there is a renewed interest in the vitality of religion around the world and in the arguments regarding its influence on culture,¹ and especially in the historical development of technology.

Let me be clear about what I mean by the term "religion." When the media pay attention to "religion" they usually treat it as one of many factors or variables in human life, distinct from, say, sport, politics or science. However, if we look carefully at religious communities and various types of societies around the world we can see that religion is not just a typical function among others but is, rather, the *root* from which the different branches of life sprout and grow and from which they are continually nourished. Religion is of *radical* and *integral* importance : it concerns the

¹ Jürgen Habermas, *Zwischen Naturalismus und Religion* (Frankfurt am Main, 2005).

deepest root of human existence and integrates human life into a coherent whole. I hope to show this once again in our topic for this afternoon.²

My exploration will consist of the following steps. First I shall briefly sketch the history of technology in the Islamic world, after which I shall try to clarify the background of the mounting tensions between Islam and the West. We shall review several Islamic ideologists in whose thinking science and technology play a big role.³ Islamic critique of technology comes from two sides: from the spiritual, peace-loving Muslims, and from the radical, violent branch of Islam. The challenges this poses for the West I shall try to clarify by looking at the internal tensions in Western culture itself. These turn out to be related especially to technology. The tensions have been present for a long time already, but they have been growing in intensity ever since the former Christian culture was secularized under the influence of the Enlightenment, an intellectual movement which wanted to have nothing to do with religion yet which none the less has an integrating effect of its own and whose relation to Christianity has become increasingly strained. The Enlightenment represents the religion of the closed material world that is blind to the non-material dimensions of reality. I say this in order to help us gain insight into the nature of the tensions between Islam, Christianity and Enlightenment in connection with technological development. This will enable us to analyze the problems accurately and to give a start to lessening our cultural quandaries.

Both the critique of technology provided by Christian philosophy and the critique of technology found in Islam challenge Western culture to change. A turnabout is needed in the West's dominant cultural paradigm—in the ethical framework within which Western culture is developed. Such a turnabout is crucial because we are dealing with worldwide problems. It may also lessen tensions with several currents within the Islamic world. Islamic terrorists, however, will not be satisfied with that, because their attitude—as they themselves tell us—concerns a non-negotiable religious position. At best it will take the wind out of their sails by overcoming evil with good.

Technology in Islam

² The present essay is the text of my ex-augural address delivered in the Auditorium of the University of Wageningen on Sept. 20, 2007, on the occasion of my retirement from the endowed chair in Reformational Philosophy. The translation is by Harry Van Dyke.

³ I thank my student and fellow philosopher Mohammed Balali from Iran for his critical comments on the text and for his advice about recent Islamic literature on the subject.

What place does the Islamic world assign to science and technology?

After the death of Mahomet in the year 632, early Islam was strongly influenced by the Greek-Hellenistic world. This created an atmosphere conducive to the development of a distinctively Islamic pursuit and promotion of science.⁴ The pursuit of science was viewed as taking place within the universe created by Allah, a universe that displays order and equilibrium and thus constitutes an aesthetic unity. The philosophy and science based on this view experienced a long period of florescence that lasted for more than 500 years, reaching its zenith in the Arab civilization of the 9th and 10th century and getting further enriched by knowledge imported from Persia, India, and even as far away as China. This growth was in keeping with the lifelong duty of every Muslim to increase in knowledge. Islamic scholars were already well acquainted with scientific experimentation and technological research. In pursuit of these activities, care for nature was deemed as important as a man's care for his family. It gave a boost to the economic sector such as trade and commerce, which in turn fostered further progress in science and technology. Historians speak of a symbiosis at that time between the Islamic religion and (applied) science, as graphically illustrated by the construction in desert countries of monasteries, mosques, schools and irrigation works.

It is clear that in the Middle Ages the Islamic peoples led the West in science and technology. At the start of the Middle Ages, Islam even mediated between the ancient world and the West. In other words, the West owes a great deal to the Arab world for its scientific development.

Following the 11th century, however, the pursuit of science in the Arab countries entered a time of stagnation. For a variety of reasons—mostly political and socio-economic—it went into decline. Since then, the Islamic world has increasingly been characterized by traditionalism and isolation, attended by a loss of political power and a decline in material prosperity. The earlier, positive appreciation of science and technology even turned into a negative one.⁵

In later times as well, during the industrial and post-industrial eras, Arab countries contributed little to science and technology apart from improving the exploration and marketing of crude oil and refining the weapons technology imported from other

⁴ Ansgar Stöcklein et al., eds., *Technik und Religion* (Düsseldorf, 1990), p. 102.

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Ahmad Y. Al-Hassan, "Factors Behind the Decline of Islamic Science after the Sixteenth Century," Epilogue to *Science and Technology in Islam* (UNESCO, 2001); Pervez Hoodbhoy, "Science and the Islamic World – The Quest for Rapprochement," *Physics Today* (Aug. 2007): 49–55.

countries. There are, however, Islamic scholars today who—as we shall see in a moment—wish to promote modern science and technology in the light of Islam’s own past and its original sources.⁶ Their critique is not so much directed at science and technology as such, but rather at the “technological culture” of the West—in other words, at the Western *ethos* of technology.

The Influence of the Enlightenment in the West

Meanwhile the West, under the influence of its belief in progress, particularly in the Age of the Enlightenment, fuelled the prejudicial view that the Islamic world per definition erected more and more roadblocks to arrest science and technology. This was blamed on Islam’s contemplative nature and Arab fatalism. That ethos, although at variance with its original attitude, did indeed acquire much influence in the Islamic world. It even reinforced its resistance to Western science and technology. Since the 12th century, the Islamic world is more oriented to the past than the future. A reversal did take place in the 20th century as a result of the process of globalization. Arabic universities were established, borrowing heavily from the West.⁷ However, it seems as though modern technology is appreciated only insofar as it can be made to serve Islamic religion. Science and technology, it is said, must be brought under the Islamic banner. This goal has not been entirely successful: Western technology comes hand in hand with Western ethos. This continues to meet with resistance, just as in the case of the active belief in progress that forms the backdrop of Western ethos. Acceptance of scientific and technological knowledge—modernization—stands in sharp contrast with resistance to Westernization, secularism, materialism and Western profanity.⁸ Islam will have to furnish modernization with a moral compass.⁹

Reactions inside Islam

It is important, meanwhile, to distinguish between different reactions in Islam. In the case of more than one Muslim country, those reactions go back to the period of

⁶ N. Abu Zayd, *Reformation of Islamic Thought: A Critical-Historical Analysis* (2006), pp. 31–35.

⁷ Samuel Huntington, *The Clash of Civilizations and the Remaking of World Order* (New York, 2001), p. 70; Abdolkarim Soroush, *Reason, Freedom and Democracy in Islam* (Oxford University Press, 2000).

⁸ Soroush, *Reason, Freedom and Democracy in Islam*, p. xvii.

⁹ Wetenschappelijke Raad voor het Regeringsbeleid (Thinktank for Public Policy), *Dynamiek in islamitisch activisme – Aanknopingspunten voor democratisering en mensenrechten* (Dynamics in Islamic activism: Points of contact for democratization and human rights) (Amsterdam University Press, 2006), pp. 38 f. Hereafter cited as WRR.

colonialism. There is first of all the radical, violent, fundamentalist current which rejects science and technology as well as Westernization—the ethos of the Enlightenment. There is also the current which accepts both elements from the West. It is mostly found among those who have political and economic power, but sometimes also among Muslim scholars.¹⁰ Understandably, the first current turns on them as well. This is the reason why terrorist activities occur just as often in Muslim states as in Western countries.

Then there are what Huntington calls the reformists.¹¹ Others see them as spiritually minded and peace-loving. They accept modern developments in science and technology short of the dominant Western ethos. They hold that as the Islamic world embraces Western science and technology a thoroughgoing process of rationalization will have to be accompanied by profound spiritual convictions.¹² Often they advocate a similar approach to adopting a Western-style democracy.¹³

Ideological differences and growing tensions between these three currents may well cause violent protests against the West to escalate as well as heighten cultural tensions within the West, which is being populated by Muslims in ever greater numbers. The choices of the smallest group, the fanatical Muslims, pose a violent threat to Western culture. Their urge to destroy casts a sombre shadow over the world.

Enemies of the West

This destructive urge is explored in a recent study by Buruma and Margalit.¹⁴ They use the term “occidentalism” to refer to the demonization of the West as painted by its enemies. The West, led by America, has blanketed the globe with industrialism, capitalism and economic liberalism. The fanatic Muslim regards this “Americanization” as a machine civilization that destroys cultures. And globalization only reinforces this destructive civilization of machines, which is cold, rationalistic, mechanical and without a soul. Granted, the spirit of the West is able to develop

¹⁰ Hoodbhoy, “Science and the Islamic World,” 55.

¹¹ Huntington, *The Clash of Civilizations*, pp. 118 ff.

¹² Riffat Hassan, “Religion, Ethics and Violence: Developing a New Muslim Discourse,” in Berma Klein Goldewijk, ed., *Religion, International Relations and Development Cooperation* (Wageningen Academic Publishers, 2007); Abdolkarim Soroush, “Ethics and Ethical Critiques,” www.dr.soroush.com (2004).

¹³ Soroush, *Reason, Freedom and Democracy in Islam*; WRR, pp. 29–58.

¹⁴ Ian Buruma and Avishai Margalit, *Occidentalism: The West in the Eyes of Its Enemies* (New York: Penguin, 2004).

technology and raise it to ever higher levels for realizing ever larger economic successes; but it cannot grasp the higher things of life because it is woefully lacking in spirituality. It is helpless and hopeless in the very things which humanly speaking are important, nay all-important. What the spirit of the West exports is *scientism*—the belief in science and technology as the only way to acquire knowledge.¹⁵ In the eyes of Muslims, the religion of the West is materialism, and this religion militates against the worship of the Divine spirit.

The hostility that is directed at the West, according to Buruma and Margalit, is rooted in this resistance to the “technological culture.” The Western spirit suffers from a grave mental illness: it is arrogant, shallow, irreverent, merely efficient, like a computer. Western culture, accordingly, is a spiritless, superficial, materialistic culture of technological presumption, power hunger and greed—a brutish and decadent culture, a culture that deserves to be destroyed. Suicide terrorism has catapulted this hostility against the West to new heights. The suicide bombers, as worshippers of the Divine spirit, send the worshippers of earthly matter to their death with this slogan on their lips: “Death for the sake of Allah is our supreme ambition.”¹⁶ Their war against the West is a holy war.

Islamic terrorism and dialectic tensions in Western culture

As they analyze Occidentalism, Buruma and Margalit try very hard to understand the enemies of the West. They write : “Unless we understand why they hate the West so much, we need not nourish the illusion that we can keep them from destroying mankind.”¹⁷ More than once, as I studied their analysis of Western culture and their search for the reasons behind the undying hatred of our culture, I was reminded of what Reformational philosophy has come to see as the dialectical tension within Western culture. It is striking how often these authors look for an explanation in the internal tensions within Western “technological culture” itself. Ever since globalization has set in, these are tensions that are felt world-wide. Whereas until recently reactions against this culture were confined to the West itself, counter-movements are today found around the world. Jihad terrorism is only the most powerful and the most dangerous expression of it. It often uses critiques of culture

¹⁵ Ibid., pp. 76, 96.

¹⁶ Cited in *ibid.*, p. 73; see also Abd Al-Hamid Al-Ansari, “The Roots of Terrorism Is the Culture of Hate,” www.memri.org/bin/opener-latest.cgi (2007).

¹⁷ Buruma and Margalit, *Occidentalism*, p. 17.

borrowed from Western writers. Popular with many radical Muslims, for example, is the critique of “technological culture” levelled by Martin Heidegger.¹⁸

But what exactly is meant by “dialectical tensions” in Western culture? My first inaugural oration dealt with the cultural tension between technocracy and revolution.¹⁹ Since that time, the dialectic tension or inner conflict in culture, with its constantly altering forms, has been a recurring theme in my lectures. Identifying the dialectic allows us to see what is going on in our culture at a deeper level. It helps us to see the inherent problems, their gravity, but also—seeing their origin and historical development—how they can be, and must be, contained.

Dooyeweerd located the origin of the Western dialectic in the pretended autonomy of man, of the man who is sufficient unto himself, of man without God. This has resulted in experiencing reality as a closed, man-centered world, and history as a purely man-made process. Because our culture is closed shut to the transcendent God, man is thrown back on a this-worldly reality. This dependence, which can occur in a variety of ways, ultimately leaves an orientation to *this* world as the only option. Western man attempts to realize the idea of self-glorifying autonomy by means of science and subsequently to confirm it by means of technology. The idea takes hold that modern technology can bring us the perfect man and the perfect world. This whole development has called up forces that have created tensions of gigantic proportions. The ideal of unprecedented material well-being may have been realized in part, but at the same time it is clear that this prosperity has been attained at the price of human freedom and at the expense of the biosphere, and that with all our prosperity we are standing on the edge of a volcano that is about to erupt. Western culture is a culture that is internally divided. Absolutized freedom is in tension with the absolutization of scientific-technological control, and vice versa. It is a tension that shapes the history of our time.

The development of dialectical tensions

Initially, the dialectical tensions—which are at bottom religious in nature—were confined to philosophical theories. But under the growing influence of the Enlightenment they have entered culture under full sail. It is entirely in the spirit of the Enlightenment, after all, not only to understand reality in terms of rationality, but also to shape the world rationally. The Enlightenment project aims at using the

¹⁸ WRR, p. 45; Zayd, *Reformation of Islamic Thought*.

¹⁹ E. Schuurman, *Reflections on the Technological Society*, 2nd ed. (Toronto, 1983), pp. 1–25.

instrument of reason to create a society in which human freedom can be enjoyed to the full. The actual situation, however, is that the objective structures which autonomous reason designs and then implements take on a life of their own, independent of man, and as such turn against cultural freedom. That threat is all the more menacing as the forces to contend with are developing with accelerating dynamics and increasing complexity, so that people can no longer size them up, let alone alter them.

Throughout my course on Currents in Modern Philosophy I have demonstrated how the powers of science, technology and economics have been recommended and reinforced by dominant philosophical currents like positivism, pragmatism and systems theory. These currents do so especially because they think newer technologies are needed to solve the cultural problems created by the technologies that are now outdated. Opposed to this way of thinking are the philosophical currents representing the dialectical counter-pole. Thus existentialists point out that in a technological society human freedom suffers as man himself is reduced to an object for technical manipulation. Neo-marxists call attention to the fact that the ongoing development of science and technology augment and affirm the influence of economic and political powers, threatening humans as bearers of culture and agents of politics. The advocates of environmentalism demand attention for the oppression of nature and therefore argue for technologies that protect the environment against pollution and destruction. New Age thinkers protest against materialism and argue for a more spiritual stance in life. Finally, naturalists ("deep ecologists") emphasize the meaning of nature as an integral whole, over against the impersonal, artificial and abstract nature of technology.²⁰

All the while, there is not one person living in the technological culture who does not feel the tension, mentally and viscerally. The tension is mounting by the day between infinite technological expansionism and the finite nature of creation and its inherent potentials.

The primacy of the scientific-technological ideal of mastery and control

Why is it that mankind's pursuit of mastery and control always seems to win out over that other pole in the cultural dialectic, namely the ideal of freedom? The reason is that the mastery pole utilizes the *objective* powers that manifest themselves in new scientific and technological possibilities such as systems theory, information science,

²⁰ E. Schuurman, *Faith and Hope in Technology* (Toronto, 2003), pp. 135–61.

computer technology and genetic manipulation. And economic powers only reinforce that process. However much the critiques are mounting, a turnabout of culture has become almost inconceivable. The cause of that lies especially with economic powers that know no bounds, and a public that is caught in consumerism and repeatedly takes the side of the dominant cultural trend in the hope and belief that even more blessings of science and technology will come their way.

The gravity of the current dialectic

It is essential that we emphasize the increasing seriousness of this historical process. Modern technology and the wholesale application of what it can do is going through unprecedented growth and taking on a despotic character. Its mastery and control of the whole world not only curtails human freedom but also threatens to deplete natural resources, pollute the environment, and damage nature beyond repair. Of late, increasing attention is being paid to climate change as well. The unbridled scientific-technological dialectic defies natural, ecological, social and energy limits, causing clashes which, owing to the absence of sufficient concrete outlets for the rising tensions, can rapidly escalate into open conflicts.²¹ The impact of globalizing technical and economic development in the Third World often gives rise to deep feelings of political impotence, combined with a sense of ongoing economic neglect. It does not take long before people experience this as a direct form of humiliation. Western science and technology, riding the current of globalization, put enormous pressure on other cultures. The dialectic easily translates into culture wars, ethnic strife, and international standoffs. Thus political catastrophes may boil over and cultural cataclysms may detonate.

The *new* element in the current situation of the cultural dialectic consists of two components. Thus far, as we saw, resistance remained confined to *subjective* resistance. Because people did not have objective cultural power at their disposal, their resistance could not succeed in changing—at best only in adapting—the “technological culture.” Now the first new component of that resistance to the “technological culture” is coming from the outside, from Islam. But it has nestled itself as it were inside Western culture, and at the same time—this is the second new component—it makes use of *objective* cultural power. Terrorism is all too real. A Western philosopher like Waskow, a revolutionary utopian, was still able in the

²¹ Koo van de Wal and Bob Goudzwaard, eds., *Van grenzen weten: Aanzetten tot een nieuw denken over duurzaamheid* (Budel, 2006), p. 223.

sixties to exclaim that the technical culture had to be violently overthrown,²² but he could get no further than words. Present-day terrorists have a great deal of cultural power at their disposal, including technical possibilities, and form a worldwide network by means of technology—for example, the Internet, precisely the kind of thing they oppose. The attack on the Twin Towers makes clear that they are able to destroy technology with other technology. Events like these are rightly a grave cause for concern.

How do Muslim ideologists react to the current cultural situation?

The critique of Islamic ideologists

One of the most influential Islamic thinkers of the past century, the Egyptian writer Sayyid Qutb, championed a pure Islamic community as a defence against encroaching Americanism which he interpreted as the empty, idolatrous materialism of the West.²³ In the course of his life, the behaviour of the West made him more and more bitter, causing him to be opposed to every form of accommodation. Like all dreams about purity, his ideal of spiritual communion was a fantasy which bore within it the germ of violence and destruction. Qutb became the founder of an Islamic ideology that challenged the main ideologies of the West. His rejoinder to Western arrogance was Islamic intolerance.²⁴ His objectives were the purity of Islam and the destruction of the West. Qutb is a representative of radical Islam which does not flinch from the use of violence in opposing the West, in fact advocates it!²⁵ In him, the cultural dialectic has become the engine of destruction.

Fortunately there are also reformists, Muslims who aim at harmonious co-existence. One of them is Mohammed Iqbal, a writer from Pakistan. Iqbal is no occidentalist. He critiques the West from a Muslim perspective, in particular the unbridled development of science and technology, the financial power of capitalism, the inherent forms of economic exploitation and the secularism attendant upon it. He blames Western influence for detaching people from Allah—thus putting his finger on the worst effect of the Enlightenment—and causing them to serve idols of their own making. Hence he is very critical of Western arrogance, Western imperialism,

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See A. I. Waskow, "Creating the Future in the Present," *Future* 2.4 (1968).

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Buruma and Margalit, *Occidentalism*, pp. 36, 116 f., 124 f., 131.

²⁴ Huntington, *The Clash of Civilizations*, p. 333.

²⁵ Sayyid Qutb, *Milestones* (Indianapolis: American Trust, 1990).

and public morality in the West. Nevertheless, Iqbal does not take distance from science and technology.²⁶ On the contrary, for his ideas on that score he takes as his basis the familiar Muslim concept of the Unity of Allah. That unity has to be reflected in human society in the form of harmony, expressed in justice, equality, solidarity and care for nature and the environment. Thus, in keeping with the spirit of early Islam, he advocates important reforms in science and technology, hoping in this way to reduce the cultural tensions.²⁷

Points of agreement with Islam

In the same vein, the Pakistani Muslim Mohammed Abdus Salam, a winner of the Nobel Prize for physics, has made a plea for accepting technology. In a very readable paper of 1983 he states that Allah has placed everything on earth "at the service of" man.²⁸ Muslim scholars are to acquire insight into the world and thus into Allah's plan. Science must be an integral part of the human community for the purpose of promoting material well-being. Accordingly, Salam orients himself to the universality of science and technology. Their successes should be a cause of gratitude to Allah and of greater conformity from now on to Allah's will. In order to learn about the proper motives for pursuing science and technology, Salam wants to go back to the early beginnings of Islam, when the torch of scientific and technical development was passed on from generation to generation. For him, therefore, Islam is essential for the correct motivation and ethics of science and technology. In this way this Muslim scholar has spoken about the relation or interaction between religion and technology in words which are new in the present-day Muslim world and which are seldom if ever heard in the Enlightenment thinking of the Western world.

Christian philosophy and the critique of technology

That said, reformist Muslims do have a one-sided opinion of Western culture. It is a matter of historical record that the Enlightenment has Christian roots. But this

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Buruma and Margalit, *Occidentalism*, pp. 122, 152.

²⁷ Mohammad Iqbal, *The Reconstruction of Religious Thought in Islam* (Lahore, 1971); see also Richard C. Foltz, et al., eds., *Islam and Ecology: A Bestowed Trust* (Harvard University Press, 2003).

²⁸ Mohammed Abdus Salam, "Science and Technology in the Islamic World," keynote address delivered at the Science and Technology Conference, Islamabad, 1983.

intellectual-spiritual movement, which arose in the eighteenth century, has increasingly taken distance from Christianity, has in fact more than once repudiated it. Accordingly, it is not right of Islam to make little or no distinction between the influence of Christianity and that of the Enlightenment, as if the two would necessarily lead to a similar ethics for technology.²⁹ On the contrary, Christianity, as I have shown, levels a profound criticism at the dialectic tensions inherent in the Enlightenment worldview. In the course of the twentieth century, both ideals of the Enlightenment—the ideal of human freedom and the ideal of scientific-technical control—have reached a crisis which may have disastrous consequences for global culture. Dialectical tensions in culture are building up. Radical and violent Islam is offering ever stronger resistance. In other words, Western culture is increasingly being exposed to threats by internal and external forces alike. No one less than Habermas, at heart an Enlightenment philosopher, has recently shown that the “failed Enlightenment” needs religion.³⁰ Huntington argues that the clash between Islamic and Western civilizations is due to the weakening of Christianity as the central component of the West.³¹ The question is pressing: Can a culture that has lost its religious roots survive?³² A renewal of Western culture would mean that Westerners return to the religious well-spring of the Christian religion and that Christianity embraces its cultural calling and actively pursues it. Christianity, on the basis of a powerful conviction, ought to appeal earnestly and emphatically for a turnaround of Western culture. Thankfully, that call is being answered today from all sides. I am thinking here of the effort of the theologian Hans Küng to arrive at a “global ethics” for science and technology.³³ World organizations of churches, too, have published reports in which developments in Western culture are heavily criticized.³⁴

There is much that is valuable in these calls for change. I do think, however, that they trace the problems and tensions of our culture too much to a disruption of economic relations and view them too little against the backdrop of the twin ideals of the

²⁹ Buruma and Margalit, *Occidentalism*.

³⁰ Habermas, *Zwischen Naturalismus und Religion*.

³¹ Huntington, *The Clash of Civilizations*, p. 335.

³² Russell Hittinger, “Christopher’s Dawson’s Insights: Can a Culture Survive the Loss of Its Religious Roots?” in *Christianity and Western Civilization* (Ft. Collins, CO: Ignatius Press, 1995).

³³ Hans Küng, *Weltethos für Weltpolitik und Weltwirtschaft* (Munich, 1997).

³⁴ Hans Opschoor, “‘Wealth of Nations’ or a ‘Common Future’: Religion-based Responses to Unsustainability and Globalisation,” in Klein Goldewijk, ed., *Religion, International Relations and Development Cooperation*, pp. 247–81.

Enlightenment. Those ideals are in tension with each other. How can that tension be eased? By replacing autonomous freedom with a freedom that answers to values like order, discipline, authority, respect, trust, mutual help, human solidarity—thus a freedom that is linked to responsibility. As well, there must come a new motivation for science and technology. Dominating power must make way for serviceable power with a view to global justice. The norms and values for technology should no longer be derived from the scientific-technological worldview, which leads ultimately to developments without purpose or direction. This realization is essential, because it is precisely technology that lies at the basis of many cultural activities. And to resort without question to technological solutions for problems occasioned by technology is to preprogram, as it were, new problems and threats. That is why a different view of technology opens up the possibility of reducing or even resolving our cultural problems. The lofty flight of technology needs a transcendental anchor. But how?

What we need to do first of all is to acknowledge God as the origin of all things and to recognize man as a responsible creature, made in the image of God and commissioned to unfold God's creation with all he has, including science and technology. Such a recognition makes the meaningfulness of science and technology subservient to the divine meaning and purpose of history, namely the coming of the kingdom of God.³⁵ In the place of the dominant worldview of the Enlightenment must come an orientation to the unfolding of creation in a disclosure of its potentials, a historical process that began in a garden and will end in a garden-city.³⁶ A sustainable and durable society cannot do without religion and spirituality. In short, in its desire for a transformation of "technological culture" Christianity opposes the "religion of matter" as much as does reformist Islam.

For that matter, happily, there are plenty of people outside Christianity and Islam who are keenly aware that Western culture is in need of a fundamental change, a radical shift in direction. A radical change is needed, as we saw, because of gathering clouds within and threats from without, like those from radical Islam. As we work toward this goal, we may expect additional help—despite big differences with Christianity—from reformist Islam on account of its ethos, its care for nature and the environment, and its concern for social justice. Mutual support of this kind could be very useful in bringing about the much needed *paradigm shift* away from "technological culture."

³⁵ Jack Clayton Swearingen, *Beyond Paradise: Technology and the Kingdom of God* (Eugene, OR: Wipf & Stock, 2007), pp. 271 ff.

³⁶ E. Schuurman, *The Technological World-Picture and an Ethics of Responsibility: Struggles in the Ethics of Technology* (Sioux Center, IA: Dordt College Press, 2005).

The paradigm theory of Thomas Kuhn

To make the notion of a “paradigm shift” somewhat clearer, I shall give as an example Thomas Kuhn’s paradigm theory of scientific development. Kuhn has demonstrated on the basis of the *actual* growth of science in history that scientific theories can ultimately be explained in terms of sociological, psychological, economic and even religious factors. His theory explains not only the continual growth of scientific knowledge but especially also its development in spurts. The continual development of science exhibits stability and consensus among scientists. Whenever it reaches a crisis, however, the basic framework –or paradigm–within which science is practiced alters. That is to say, the reigning paradigm will be exchanged for one with greater explanatory power. Not until the new paradigm is firmly established will the crisis in science be resolved, followed by a new period of “normal” scientific work. In the meantime, along with the paradigm shift the truth claims of science are considerably relativized.³⁷

Kuhn shows that during crises in the formation of scientific theories big fundamental questions are abruptly pushed to the surface. The old scientific beliefs are shaken to their foundations. Old assumptions are questioned. Community among scientists erodes. Consensus about values crumbles. The “tacit knowledge” shared by like-minded scholars begins to totter. The old paradigm has had its day. A new development gains ground.³⁸

Could the necessary change in the cultural paradigm be analogous to Kuhn’s view of paradigm shifts in science? Analogies can be helpful but they also have their limitations. Science, for example, is only a branch or component of culture. Culture comprises so much more than science. Yet I feel we have good reasons, precisely because our culture is more and more seen as a “technological culture” or a “scientific culture,” to allow ourselves to be inspired by Kuhn.

The transformation of “technological culture”

One wonders: a relativizing of the current cultural paradigm, leading to its transformation—could it happen in the present cultural development? The reigning paradigm poses many problems in the West. And we are trying to solve these problems by the same means and the same methods that have called them into being in the first place! The solutions turn out to be, owing to economic and political

³⁷ Thomas S. Kuhn, *The Structure of Scientific Revolutions* (University of Chicago Press, 1962).

³⁸ Herman Koningsveld, *Het verschijnsel wetenschap* (Amsterdam, 2006), p. 110 ff.

support, part of the problem. Slowly but surely we are beginning to realize that this cannot go on. Is there a possibility that the crisis will help us find the way to a new phase of culture in which the problems of "technological culture" can really be pushed back?

Any cultural revolution or turnaround, by analogy with a scientific revolution, will be accompanied by tense discussions which will ultimately hark back to what people believe and what they consider to be true. The part that religion plays in all this will become unmistakably evident. Religion, or religions, will offer different critiques of culture or technology, as is the case with Christianity and reformist Islam. The challenge will be to come up with a different cultural paradigm that reduces the cultural dialectic and curtails or even resolves present problems and threats. That will not be easy, because the representatives of the old culture model will not give up on it so quickly: they will hold on to it with a kind of grim stubbornness. I am speaking of economic, political and cultural counterforces. Yet at the same time, the longer current developments continue, the clearer their weakness will become. Surely that is patently evident in the mounting consequences that stem from current scientific-technical-economic thought and are threatening the whole world?

The conflict between industrial and organic farming

Nevertheless, there are possibilities. One concrete example today of a cultural transformation, both in the West and in the Muslim world,³⁹ is the contest—successful or not, convincingly argued or not—between organic farming and industrial agriculture. The latter is giving rise to more and more problems. Chances are that these problems will be taken more seriously and solutions pursued more earnestly as a growing number of opponents of industrial agriculture and proponents of organic farming enter into dialogue with each other and an increasing number of successful alternatives are realized within the as yet vague contours of a new paradigm. Conversely you hear defenders of industrial agriculture arguing for more environmentally friendly ways of farming. Either way, it is evident that people are

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Foltz et al., *Islam and Ecology*, pp. 3 ff.; Attilio Petruccioli, "Nature in Islamic Urbanism: The Garden in Practice and in Metaphor," in Foltz et al., *Islam and Ecology*, pp. 499 ff; Schuurman, *The Technological World-Picture*, pp. 49 ff.

facing up to existing problems and are searching for new, more sustainable methods of agriculture.⁴⁰

Cultural turnaround

Similar turnarounds should address the whole of “technological culture.” Owing to looming problems, we are witnessing a growing interest among politicians and economists in cultural alternatives, sustainable development and socially responsible corporate behaviour. The socio-economic climate is becoming more favourable for drastic change. Recent reports to government from the world of business state that more needs to be done to tackle environmental pollution and climate change.⁴¹ Another catalyst for developing new cultural alternatives is the latest UN Report on Climate, compiled by a global consortium of 2500 researchers who finger man and his technology, economics and consumption as the chief culprits of the enormous emissions of greenhouse gases, with all the risks that this entails.

Attention to climate change, rise in sea levels, shifting climate regions, disruption of ecological systems, loss of biodiversity, new tropical diseases, and so on—all argue for a change in our cultural ethos. So do the activities deployed by men like Bill Clinton and Al Gore. Nor should we underestimate the impact of the many years that the Greenpeace movement has been active. More and more eyes are beginning to see the need for a new cultural paradigm. More and more people are realizing that modern society with its patterns of producing, mastering and consuming is inherently, not coincidentally, unsustainable.⁴² These emerging factors are now undermining the very cultural patterns that exist at the moment. And to the degree that governments work seriously toward levels of sustainability—by introducing the precautionary principle for example—and thus do not allow sustainability to become a mantra or a myth, to that degree the public will begin to doubt whether the prevailing culture is at all sustainable. In this way politics can contribute positively toward a change in the attitude of many toward culture. And if in addition consumers begin to realize how new approaches can help them escape certain dangers and how their quality of life can be improved, conditions will be favourable for a cultural crisis. The much needed cultural turnaround will then become a realistic prospect,

⁴⁰ Petrus Simons, *Tilling the Good Earth: The Impact of Technicism and Economism on Agriculture* (Potchefstroom, 2007), pp. 63, 240 ff., and 374 ff. See also Egbert Schuurman, *Faith and Hope In Technology* (Toronto: 2003), pp. 102 ff., and Egbert Schuurman, *The Technological World-Picture*, pp. 49–59.

⁴¹ Rein Willems et al., *Pleidooi voor een kabinet met een mondiale visie op natuur- en klimaatbehoud* (Plea for a cabinet with a global vision for the preservation of nature and the climate). Open Letter to party leaders in the Dutch parliament, The Hague, Dec. 2006.

⁴² Van de Wal and Goudzwaard, eds., *Van grenzen weten*, pp. 8 ff.

with greater attention for the life of future generations and for the rich variety of countless fellow-creatures, hence for true sustainability. A realistic prospect as well will be that more attention will be paid to the promotion of justice in the face of the injustices intrinsic to current trends in globalization.

Accordingly, it is of paramount importance that the post-industrial culture assists in reducing and resolving the problems and threats of industrial culture. That will have to be a learning process of small and large steps, a process in which serious attention is paid to things that have been blithely ignored in the past or are conveniently being overlooked in the present. I suspect that the heightened interest in religions at the moment has everything to do with it. It is from those religions that long neglected but fundamental questions are back on the table. What is the essence of human life? What is the meaning of culture, technology, the economy? Proceeding from these fundamental questions—from the religious roots of cultures—the consequences are being examined for all culturally formative sectors. In Kuhn's terminology, we can speak by analogy of the great need of a "gestalt switch," a "turnaround," a "revolution." What is needed is nothing less than a "leap." Justly so, for it is "time to run." The cultural experiment that was grounded in the Enlightenment, it is patently clear everywhere, has failed. We need not deny the many good things it has brought us to conclude that, in the large, as a whole, it is leading us to disaster. The tensions and menaces need to be turned back if civilization is to survive. For that to be possible, a firm basic orientation, a fixed anchor—in other words, a meta-historical compass—is required.

Content of a new cultural paradigm

But what should the new cultural paradigm look like? What would it be, essentially? It will have to differ from the previous one and yet incorporate the old in a process of transformation. In the old cultural paradigm, nature is seen as lifeless and, given that framework, is exploited by unbridled manipulation. Thus, if until recently nature, man, environment, plants and animals were viewed from a technical perspective—the so-called "machine model"—, now the overriding viewpoint in cultural formation will have to be the protection of *life*. Science and technology and economics should no longer destroy life in all its multiplicity and rich variety of shapes and forms but, on the contrary, stand in the service of it. When that is done, technology and economics will be able to answer better to their intrinsic meaningfulness. Proceeding from different religious perspectives, Christianity and Islam, however widely they differ religiously and—I emphasize this— however unbridgeable these differences

will remain, both also have much in common, enabling them to get along in working toward such a cultural turnaround.⁴³ The garden model suits both Christianity and Islam.⁴⁴ Both seem to concur with this confession: "We love all creation because of the Creator."⁴⁵ Christian and Islamic culture, each in its own way, can contribute to a globalizing culture in which life is not threatened but enriched and in which greater justice and righteousness is done to ease tensions. For all their great differences, together they can work for greater social cohesion and mutual peace. Christians should be eager to promote forms of collaboration like this, for they are called to be peacemakers.⁴⁶ If, however, Christians lack the power of faith and fail to conclude a moral pact with reformist Islam, then a transformation of culture will not succeed. Then the battle between the competing claims of Enlightenment and radical Islam will intensify and Muslim violence will increase. Then there will be reason enough to remain pessimistic about the future.⁴⁷

Summarizing conclusions

Technical thinking predominates in industrial society. Virtually everything is viewed in terms of the technical model or—more broadly—the machine model. Neither of these models has any room for life as a fundamental and decisive factor. They have guided the application of the power of technology in a tyrannical way. Huge problems have been the result. Today we can see how the "technological culture" threatens *life* itself, to the point of destroying it. A solution to these problems of modern culture is impossible so long as we continue to think and act within the parameters of the technical model. In the new phase of culture and civilization, however, we shall not say farewell to technology as such but we shall have to put it in the service of life and human society. Reality must no longer be viewed as providing mere objects for technical manipulation but must instead be received in love as a prior given, as a divine creation, as a gift from God. Such an attitude will require respect and awe for the Owner of all things; it will call for openness, humility, meekness, wonder, reverence and care. Our appreciation of technology will

⁴³ Günter Rohrmoser, *Islam, die unverstandene Herausforderung* (Bietigheim, 2006).

⁴⁴ Petruccioli, "Nature in Islamic Urbanism," pp. 499 ff.; Schuurman, *The Technological World-Picture*, pp. 37 ff.

⁴⁵ Foltz et al., *Islam and Ecology*, p. 29.

⁴⁶ Cf. Jer. 29 : 7 and Rom. 12 : 18.

⁴⁷ Bruce Bawer, *While Europe Slept: How Radical Islam Is Destroying the West from Within* (New York, 2006).

change completely if the will to power and mastery will be exchanged for respect for all that lives, in all its multi-coloured variety and multiplicity. It will also alter our attitude toward our fellow-man and foster love of the worldwide community of man. The aim of technology should become, not to break down in order to master and control, but to unfold and cause to flourish. For a healthy disclosure of the creation, both Christianity and reformist Islam nurture the perspective of the living and vibrant garden-city, of a culture that takes care of nature and the environment. The preservation of life and well-being is worth more than material prosperity.

A culture whose basic categories are life and love and whose mission is to promote and strengthen the cause of justice and righteousness in the world will orient itself to supra-subjective normative limits. This will make possible a more balanced, sustainable, peaceable and also richly varied development. When people learn to practice moderation tensions and threats will subside, not only within the West itself but also in Western relations with Islamic culture. Given its ethos, it must be possible to win over reformist Islam for a turnaround of culture. To the extent that radical, violent Muslims refuse to go along with this development, political measures will have to cut them off from the objective cultural powers of science, technology and economics, from financial funds and subsidies, and from weapons. In light of the perspective here sketched, world problems and global menaces can be pushed back, terrorist threats can be combatted more effectively, and a more durable and just global development can be realized as we move toward the second decade of the twenty-first century.

About Egbert Schuurman:

Egbert Schuurman (1937) studied civil engineering at the Technological University of Delft as well as philosophy at the Free University in Amsterdam. He is Professor Emeritus in Reformational Philosophy at the Technological Universities of Delft and Eindhoven and at the former Agricultural University of Wageningen. His chief publications in English are *Technology and the Future* (Toronto: Wedge, 1980; reprint, Paideia, 2008), *Faith and Hope in Technology* (Toronto: Clements, 2003) and *The Technological World Picture and an Ethics of Responsibility* (Dordt College Press, 2005). He also co-authored the volume *Responsible Technology* (Grand Rapids: Eerdmans, 1986). Several of these publications have been translated into Korean, Japanese, Chinese and Portuguese. Dr. Schuurman received an honorary doctorate from North-West University, South Africa, and a Templeton Award for his work as an educator in religion, science and technology. He has served as a senator in the Dutch parliament since 1983. He and his wife Lydi have three children and nine grandchildren.