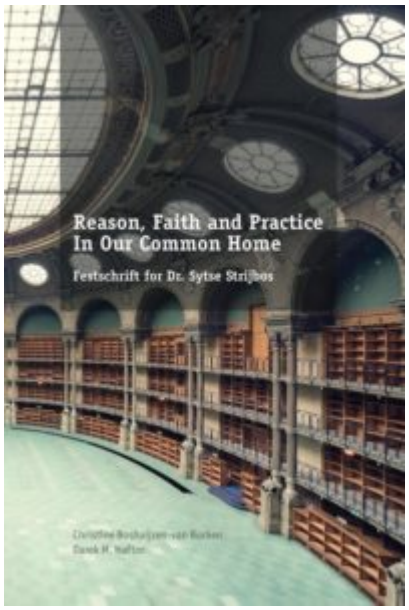
Christine Boshuijzen-van Burken & Darek M. Haftor (Eds) ~ Reason, Faith And Practice In Our Common Home – Festschrift for Dr. Sytse Strijbos ~ Content & List of Contributors



Content

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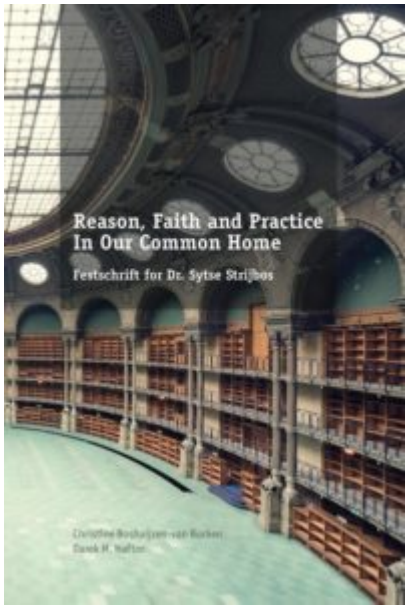
Christine Boshuijzen-van Burken

& Darek M. Haftor (Eds) ~ Reason, Faith And Practice In Our Common Home – Festschrift for Dr. Sytse Strijbos ~ Introduction



Juni, 1 2018 – Reason, Faith and Practice In Our Common Home – Festschrift for Dr. Sytse Strijbos – Will be online within a few weeks

Introduction

This book is devoted to Dr. Sytse Strijbos, in our appreciation of his unique, devoted, and selfless efforts and contributions to the betterment of the world we live in.

The present age, often understood as either late modernity or postmodernity, seems to have manifested a developmental paradox. The invention and use of science and technologies has brought material well-being never experienced in human history. Much of the modern world is characterized by economic growth and reflected in advanced housing, schools, healthcare systems, transportation and communication infrastructure, safe and secure workplaces, social insurances of various types, pharmaceuticals that save the lives of millions—all bringing human comfort and fueling a consumption economy. Normatively regarded, however, there seems to be a blurred image. The development of societal institutions, based on some form of democratic rationality, is important in its striving for human equality and participation as well as the elimination of

coercions and oppressions.
Yet, we witness constant news about social, religious, political, and economic polarizations, with terrorist attacks and local wars killing innocent civilians, with global warming effects and microplastics in the oceans, with so-called “alternative truths” and challenges democratic institutions, including at its very heart the elections. More people than ever are consuming antidepressant pharmaceuticals and committing suicide. This imbalance between material development and normative advancement can be understood as the paradox of modernity and was brought to the surface eloquently by Max Horkheimer and Theodor W. Adorno in their seminal “Dialektik der Aufklärung” (Eng. “Dialectic of Enlightenment”). They challenge the myth of enlightenment and its progress, based solely on human reason, as reflected in rational bureaucratic organizations, science, and technology.

Raised in Dutch society during the World War II recovery effort, Strijbos is part of this paradox of modernity. He has witnessed the economic and material developments of his country and Europe, and the normative challenges of their societies. Strijbos has been exposed to several influences: a version of the Christian faith that promotes love and compassion, the power of intellect in science and technology, and the importance of action in entrepreneurship and businesses. Unlike most engaged people, he does not assume a stand for one of these three poles. Drawing on the intellectual tradition of Abraham Kuyper and Herman Dooyeweerd, he seeks and formulates an integrative vision and approach that can be characterized in terms of three poles, where each pole interacts with the other two and in that manner aims toward human dignity and justice. His message is that only in that manner can we firstly understand the roots of modernity and its paradox and then redirect our societies.
Strijbos characterizes this integrative approach as disclosure, understood as “a process in which norms take shape that do justice to human life and society in its diversity. Disclosure accordingly goes together with recognition of the distinctive character and intrinsic normativity of the various terrains of life.” This concept is founded on the view that “human actions and interventions must be a positive response to a normative order that is itself anchored in the world.” [1]

Over nearly three decades, after changing his career from developing new technologies through advanced applied research at Philips laboratories into an academic career based at the Department of Philosophy at Vrije Universiteit

Amsterdam, Strijbos' integrative visions and approach are manifested in his unique leadership. While occupied with his devotion to family life and university lecturing, he has managed to conceive of, initiate, establish, and govern several independent organizations (e.g., "the Centre for Technology and Social Systems" and "International Institute for Development and Ethics")
that aim to advance this integrative vision. The uniqueness of these efforts is that without any granted external resources, he motivates people in various parts of the world (e.g., the Netherlands, the United Kingdom (UK), Sweden, and South Africa) to pursue intellectual and practical activities also aimed at advancing this integrative vision, where attempts are made to relate faith and conviction to thinking and intellect, and to actions and practices. These efforts have formulated tentative bridges of several kinds. One kind is in the academia among the various specialized disciplines, typically isolated from each other, and with philosophy and theology. The other kind of bridges are between the academic world of thinking and the world of practices and actions, be it firms, entrepreneurship, hospitals, or aid agencies.

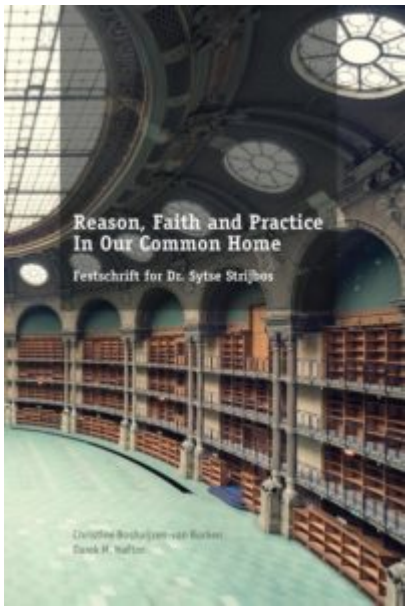
In the course of three decades, Sytse Strijbos has provided organizational and intellectual leadership that has contributed uniquely to the development of young people and scholars, several of which are today full professors and a university rector. In this book, students and colleagues of Strijbos have taken time to author a text with a message that in one way or another relates to the integrative vision proposed by Strijbos. These contributions are diverse, which only reflects the multidisciplinary impact of Strijbos' work and efforts and one of its underlying messages: the root cause of modernity and its paradox can neither be understood in terms of one or a few aspects only, nor in terms of the assumptions held by modernity. Rather, an integrated view is needed where faith should be related to thinking and science, which must be related to actions and practices – any separated approach is deemed to produce a partial diagnosis and thus a faulty remedy. Therefore, the title of this Festschrift that celebrates Sytse Strijbos is *"Reason, Faith and Practice in Our Common Home."*
Thank you, Sytse!

Spring 2018,
Christine Boshuijzen-van Burken, The Netherlands
Darek M. Haftor, Sweden

NOTES

[1] Both from: Strijbos, S. (2003). Systems Thinking and the Disclosure of a technological Society: Some Philosophical reflections. Systems Research and Behavioral Science, 20, 119-131. (p.128)
[2] The editors are grateful for the contributions of Harma Strijbos and dr. Carools Reinecke who provided many details about Strijbos' life and career.
[3] https://en.wikipedia.org/wiki/Philips_Natuurkundig_Laboratorium
[4] Some data can be found in manuals on ceramic technology: R.J. Brook (ed.) Concise Encyclopedia of Advanced Ceramic Materials, Pergamon Press, Oxford, 1991, page 113-117 and page 383-384. And also in: M.N. Rahaman, Ceramic Processing,Taylor & Francis, London/New York, 2007.

Christine Boshuijzen-van Burken & Darek M. Haftor (Eds) ~ Reason, Faith And Practice In Our Common Home – Festschrift for Dr. Sytse Strijbos ~ Biography Of Dr. Sytse Strijbos



Dr. Sytse Strijbos was born in Rotterdam, Netherlands, on March 28, 1944. He is the seventh child in a family of eight children, where the eldest and youngest were girls. His father was a hardworking tailor, and his mother worked as a nurse before she married. When Strijbos was about one year old, he stayed temporarily with relatives outside Rotterdam to recover from the effects of the Dutch famine winter at the end of the World War II. Strijbos was raised in the Calvinist faith, and in his youth, was shaped by the postwar Dutch mentality that emphasized citizens' contribution to the reconstruction of society, and an attitude that disciplined work is central in life.

In September 1961, after finishing high school, the young Strijbos moved to Delft, where he started his studies in applied physics at Delft University of Technology. He defended his master's dissertation at the Department of Physical Transport Phenomena, in April 1967. During his years as a student, the young Strijbos was an active member of the student society *Civitas Studiosorum Reformatorum*, where he was the president of the board from 1964 to 1965. Still, each year, he meets former board members and colleague students. Those younger years shaped Strijbos' thinking and attitude. This shaping would later influence Strijbos to search for an *integrative approach*, where the Christian faith's tenets of human dignity and compassion are combined with the human intellectual capabilities to reason and the human intentional action that transforms and intervenes in our reality – the crucial step from thinking and believing to action and the consequences thereof.

Philips Years

After his graduation in 1967, Strijbos started his career as a researcher at Philips *Natuurkundig Laboratorium Eindhoven*. [i] About one year later, in December 1968, Strijbos married Harma Bosker, whom he met in the Reformed Church in Delft. They started their married life near Eindhoven, first in Heeze and later in Aalst-Waalre. The first three of their four children were born there. During his studies in Delft, Strijbos was strongly inspired by the philosophy classes of Professor Hendrik van Riessen. Shortly after his marriage, he decided to enroll as a student of philosophy at the *Vrije Universiteit Amsterdam*. He studied almost all

evenings and on his days off, in addition to his fulltime job at Philips. About five years later, in the spring of 1975, he received his master's degree in philosophy.

At Philips Research Laboratories, Strijbos conducted applied research in the research group on "*ceramic materials*" led by Professor Stuijts. One of the topics he worked on was compaction of powders, that is, one of the stages in the fabrication process of advanced ceramic materials.[ii] Initially, he planned to write a doctoral dissertation on this topic; however, he abandon this plan without much hesitation when he was unexpectedly invited to apply for a job at the *Vrije Universiteit Amsterdam*. Strijbos left Philips Eindhoven after ten years and took up the position as assistant professor in the Department *Systematic Philosophy and Cultural Philosophy*, led by Professor Van Riessen. In the summer of 1977, the family moved to Maarssen, a small city near Utrecht.

Academic Years
During his career in the Faculty of Philosophy at *Vrije Universiteit Amsterdam*, Strijbos established and managed several teaching and research initiatives in cooperation with other faculties and universities, which would clearly manifest his search for the integration of thinking, believing, and action. An initial and important initiative was the cooperation with the *Faculty of Dentistry*, now known as *Academic Centre for Dentistry Amsterdam,* (ACTA), which is a joint venture of the *Faculty of Dentistry of the University of Amsterdam*, the *Vrije Universiteit Amsterdam*, and the *Faculty of**[iii]** Exact Sciences* for students of computer science and artificial intelligence. On behalf of the ACTA, Strijbos developed a special ethics education program in cooperation with colleagues from social dentistry and the clinical staff. Eventually, this program led to an important achievement, namely, the publication of "*Kiezen en Keuzen: Ethiek in de Tandheelkundige Praktijk*," the first book on dental ethics in the Dutch language.[iv]

Almost at the beginning of his work at the *Vrije Universiteit Amsterdam*, Strijbos conceived a plan to conduct a doctoral research project on *Systems Thinking*, which was a quickly and strongly emerging field. An initial impetus for this research direction was from a conference held in 1979 at the *Vrije Universiteit Amsterdam* on "*Systems Thinking and Societal Problems,*" that was held on the occasion of the third anniversary of the *Faculty of Philosophy* [v]. In the initial years of his doctoral research, Strijbos attempted "*to build a bridge to the special sciences and seriously address the problems that arise there,*" he writes in the

preface of his doctoral dissertation. He was specifically faced with the challenge of delving into the fields of dentistry and medicine, which were unknown fields to him. Strijbos writes in the preface of his dissertation, *"In order to become familiar with the problems of health care I not only processed much professional literature in recent years, but I also had many discussions with dentists and doctors."* Supervised by Professor Sander Griffioen and cosupervised by Professor Egbert Schuurman, Strijbos received his doctoral degree in 1988 with a dissertation entitled *"Het technische wereldbeeld: een wijsgerig onderzoek van het systeemdenken"* (Eng. *"The technological worldview: a philosophical study of systems thinking"*).[vi] Partly inspired by his contacts at the *Vrije Universiteit Amsterdam*, in particular the physician and medical historian Professor Gerrit Arie Lindeboom [vii], he devoted the last chapter of his dissertation to a comprehensive analysis of the "*technologization process*" (Dutch "*vertechniseringsproces*") of modern medicine. This is a further development of his earlier reflections on medicine and medical ethics, which he published earlier in 1985, in the book "*Nieuwe Medische Ethiek*" (Eng. *"New Medical Ethics"*) [viii].

The retirement of Professor Van Riessen at the *Vrije Universiteit Amsterdam*, followed shortly by the departure of his younger colleague and pupil Dr. Egbert Schuurman, also meant a change for Strijbos. More specifically, Strijbos' initial plan to further develop the pioneering work of Van Riessen's philosophy of technology and culture together with Prof. Van Riessen had to be changed. Instead, Strijbos joined then the Department of *Social-Cultural Philosophy*, headed by Professor Griffioen. At about the same time, Strijbos sought international cooperation with colleagues with whom he could share his philosophical interest in systems thinking and the philosophy of technology. One of the first contacts was with Donald de Raadt, whom he traced through a publication in an academic journal in the field of systems thinking. This contact and subsequent dialogs led to their establishment of the *Centre for Philosophy, Technology and Social Systems* (CPTS), in 1995, an international, interdisciplinary academic cooperation in the fields of philosophy, technology, social sciences in a framework of systems thinking.

Centre for Philosophy Technology and Social Systems

In 1995, Strijbos was the principal organizer of the annual conference of the International Society for Systems Sciences (ISSS) at the *Vrije Universiteit*

Amsterdam. Donald de Raadt was then the president of the ISSS. The dialogs with Donald de Raadt culminated in a long-term collaboration. Strijbos presented courses on systems thinking at Luleå University of Technology, Sweden, where Donald de Raadt resided. Andrew Basden, from Salford University, UK, who also had a keen interest in philosophy and the use of information and communication technologies, soon joined this cooperation. In this cooperation, Amsterdam, Luleå, and Salford expanded to include a dozen doctoral students, with annual working conferences held in Maarssen, Netherlands. Central to this cooperation was the three founders' shared interest in the philosophy of Herman Dooyeweerd. The CPTS initiative can be regarded as a second major achievement (the ACTA initiative was the first), and represents an integration of faith and theology with thinking, where philosophy interacts with several specialized disciplines and their actions.

At the ISSS conference in Budapest in 1996, Strijbos met Professor Dries de Wet and Dr. Annemarie Potas from the Potchefstroom University for Christian Higher Education, Vaal Triangle Campus, South Africa (now known as the North-West University). They shared similar interests and the view that science and faith should not be isolated. This relationship was formally established in 1997, through an interdisciplinary research project where Strijbos cooperated with his new South African colleagues. At that time, Strijbos formulated his ideas and termed them "*disclosive systems thinking,*" on which he wrote scholarly contributions[ix] that attracted several scholars from the Centre of Science and Faith at North-West University to participate in the annual working conferences of the CPTS in Maarssen. This long-lasting cooperation with South African communities manifested another dimension of the integration pursued by Strijbos: an integration between the Southern and Northern hemispheres, with all their peculiarities.

From the Netherlands, there was a keen interest in the CPTS' unique cooperation and attempted integration from the *Institute for Culture Ethics,* especially from Dr. Jan van der Stoep. The intellectual cooperation between researchers within the CPTS resulted in a millstone publication of a book in 2016, edited by Sytse Strijbos and Andrew Basden, entitled *"In Search of an Integrative Vision for Technology."* For the first time, this volume presents, in a systematic and comprehensive manner, the unique research program of the CPTS. This program proses a conception of humans, society, and technology and its use in an

alternative mode to the prevalent contemporary approaches and their straggle between the intentional-constructivist and the material-determinist approaches. After a decade of operations, the CPTS was transformed into the current "*International Institute for Developmental Ethics*" (IIDE).

International Institute for Developmental Ethics
Encouraged by his entrepreneurial brother Aad Strijbos, and with support from Aad's company CHR Investment B.V., based in Rotterdam, Strijbos started an initiative that led to the establishment of the IIDE in 2004. The IIDE is a scholarly institute with a practical mission, researching the extent, nature, and normative aspects of poverty, inequality, and injustice through local, regional, national, and international channels. In that sense, Strijbos succeeded in achieving a fuller integration of the concrete action, with faith and reason dominating the endeavors of the CPTS.

Although the IIDE is a fully independent organization without ties to any religious denomination, it takes Christian principles and values as its primary source for guidance and reference. As such, its views on Christian social responsibility lead the way to its vision, its mission, and its concrete services and products for the benefit of society. The IIDE's mission is to offer expert capabilities to enable people and organizations in the development environment to become more caring, creative, and free in the context of development, by operating on the basis of Christian values, such as service, love, justice, equality, freedom, human dignity, and solidarity.

The IIDE has two legally independent departments: one in South Africa and one in the Netherlands. The department in South Africa resulted from Strijbos' collaboration with Rev. Kiepie Jaftha, then chief director of community service at the University of the Free State (Bloemfontein), and his interactions with North-West University, based on an informal level and through personal contacts and incidental conferences on developmental issues. Prof. Annette Combrink, then rector at North-West University, served as one of the board members of the IIDE. Strijbos' leadership is manifested by the memoires of Prof. Lucius Botes, as follows:
"When I think of Sytse Strijbos when he first approached me while I was the Director of the Centre for Development Support at the University of the Free State, South Africa the following thoughts and impressions came to mind. I was immediately impressed with Sytse's knowledge of the South African faith-based

development scene. At that stage, he already networked with some 80 plus people and organizations in South Africa. I was also struck by his focus that we should create some space where faith-based development practice should reflect on the ethics of the practice. He constantly reminded me how important it is to pursue an engaged scholarship that attempts at bridging the gap between scholarly and conceptual views and practical experience. This means mobilizing practitioners to have more theoretical reflections on their practice and encourage development scholars to reach out to practitioners."
Professor Lucius Botes, former "Director of the Centre for Development Support" and Dean Faculty of the Humanities, University of the Free State, South Africa.

Strijbos succeeded in engaging the "*Noaber Foundation"* as a donor and investor for the projects pursued in South Africa, such as helping small business owners in Qua Qua with their start-up investments. That work produced an academic book titled "*From Our Side,*" 2008, edited by Steve De Gruchy, Nico Koopman, and Sytse Strijbos. In the book, several scholars from South Africa and the Netherlands present their vision of social and cultural development.

International Engagements
In his academic work, Strijbos has been invited to deliver lectures and full courses on various aspects of normativity, technology, and systems thinking in various countries for a number of years. On an invitation from Professor Donald de Raadt, one major engagement toward the end of 1990's was the development and annual delivery of a unique course on systems thinking to undergraduate students at Luleå University of Technology in Sweden. He has delivered multiple guest lectures in Asia, for example, in China at the invitation of the Chinese Academy of Social Sciences and at several universities in South Korea and Japan. He also has presented guest lectures in North America.

From 1997 to 2014, Strijbos visited South Africa two to three times per year, usually for two weeks. In that context, Strijbos was appointed as an associated professor in the newly established *Centre of Science and Faith* at North-West University, providing him with the context where science and faith could be addressed in an integrated manner. Together with the director of this centre, Professor Pieter Potgieter, Strijbos developed annual workshops for newly appointed academic staff at North-West University, that is, workshops addressing the relation between science and faith.

At the beginning of the 2000s, the government of South Africa introduced a new educational mode for institutions of higher education called the "The South African Qualifications Authority" (SAQA), which required all academic staff to have had exposure to the following:
Identifying and solving problems in which responses display that responsible decisions using creative and critical thinking have been made.
Using science and technology effectively and critically, showing responsibility toward the environment and health of others.
Demonstrating an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.
Contributing to the full personal development of the learner and the social and economic development of society at large, by making it the underlying intention of any program of learning to make the individual aware of:
– participating as responsible citizens in the life of local, national, and global communities;
– being culturally and aesthetically sensitive across a range of social contexts.

Prof. Daan van Wyk, dean of the Faculty of Natural Science of North-West University, appointed the then retired rector of the PU vir CHO, Prof. Carools Reinecke, to develop new material for the prescribed course in philosophy of science for third-year undergraduate students to comply with the new SAQA regulations. Moreover, all the students in the Faculties of Natural Science, Health Sciences, and Engineering had to pass that course. Prof. Reinecke recommended that Strijbos act as an advisor and collaborator in the development of the new course. Based on his wide experience in this field, Strijbos proposed an alternative focus to the course: Science, Technology, and Society (STS). In addition, he advised that at least four other collaborators from the Netherlands be appointed by the university to partake in the development of the new course – a proposal approved by the university. Strijbos acted as scientific coordinator and Prof. C. Reinecke as managerial coordinator of a team that included Dr. Ir. F.K. Boersma (*Vrije Universiteit Amsterdam*), Prof. Dr. M. de Vries (Technical University Eindhoven and Technical University, Delft), Dr. H. Jochemsen (Director of the Centre for Medical Ethics at the G.A. Lindeboom Institute, Ede), and Dr. J. van der Stoep (Director of the Institute for Cultural Ethics, Amersfoort). Under Strijbos' initiative North-West University was the first institution that formally complied with the new SAQA requirements.[x]

Strijbos' social awareness has been well known throughout his academic life, through his continuous focus on practice-oriented research and additional activities. Among others, he was a guest lecturer for several years at the *Foundation of Christian Philosophy*, where he taught courses at the University of Twente and Wageningen University, Netherlands. He has served as member of the Provinciale Staten in Utrecht (States-Provincial, which is the provincial parliament in the Netherlands), acted as an external advisor of a hospital ethics committee in the Utrecht region, and served many years as elder in the local church community.

Strijbos has always been interested in the relation between technology, philosophy, and theology. His primary hobby is reading books that are intellectually challenging or about history. He enjoys reading to his grandchildren and loves hiking and multiday tours.

Strijbos' Message

Strijbos' book on the ethics of dentistry is a bold manifestation of his vision for the interaction between faith, intellect, and action. A starting point is that theoretical reflection should begin with a pretheoretical concern in the context of human affairs, which is fed into an intellectual reflection unconditionally founded on creedal convictions that require critical reflection. The results from such intellectual reasoning should be fed back into social intervention for the sake of humans flourishing. Strijbos is not against the use of technology and development of social affairs but is always critical about the way development and technology are conceived, used, and pursued in human affairs; he stresses the importance of an explication of a normative direction of development and the use of technology. His book on the ethics of dentistry contains a plea for a modern version of professional dentistry that applies to any profession. Its pages provide a guide, not a solution, for normative reflection on daily professional practices, where emphasis is placed on the practical situation and contact with the patient in the sociocultural context, where the latter conditions human actions in the clinical practice.

Notes

[i] https://en.wikipedia.org/wiki/Philips_Natuurkundig_Laboratorium

[ii] Some data can be found in manuals on ceramic technology: R.J. Brook (ed.) Concise Encyclopedia of Advanced Ceramic Materials, Pergamon Press, Oxford, 1991, page 113-117 and page 383-384. And also in: M.N. Rahaman, Ceramic

Processing,Taylor & Francis, London/New York, 2007.

[iii]

[iv] Kiezen en Keuzen: Ethiek in de tandheelkundige praktijk. Houten/Diegem, Bohn, Stafleu, Van Loghum, 1999. – In Dutch, the word "kiezen" translates both as "choosing" and as "molars"; thus, the title can be translated as "Choosing (or Molars) and Choices: Ethics in Dental Practice"

[v] From this congress resulted the volume "Systeemdenken en samenlevingsproblematiek," edited by S. Strijbos, VU Boekhandel, Amsterdam, 1981.

[vi] S. Strijbos, "Het technische wereldbeeld: Een wijsgerig onderzoek van het systeemdenken". Amsterdam, Buijten & Schipperheijn. An English summary can be found here: http://hdl.handle.net/1871/15599

[vii] See introductory Chapter 1 in the volume "De Medische Ethiek in de branding, Een keuze uit het werk van Gerrit Arie Lindeboom," edited by S. Strijbos, Buijten & Schipperheijn, Amsterdam, 1992.

[viii] See Chapters 2, 3, and 7 in "Nieuwe Medische Ethiek," edited by S.Strijbos, Buijten & Schipperheijn, Amsterdam, 1985

[ix] Strijbos S. 2003 Systems Thinking and the Disclosure of a Technological Society: Some Philosophical Reflections in *Systems Research and Behavioral Science* 20: 119-131.

[x] The positive outcomes of the innovative approach to education are documented in Proceedings of the Annual Working Conference of the CPTS (Reinecke, C. (2008). Critical cross-field outcomes for all graduate education at the North West University of South Africa. In: *Proceedings of the 13/14th Annual Working Conference of CPTS*, Basden, A., Eriksson, D., Strijbos, S. (eds). CPTS: Maarssen, 66-81).

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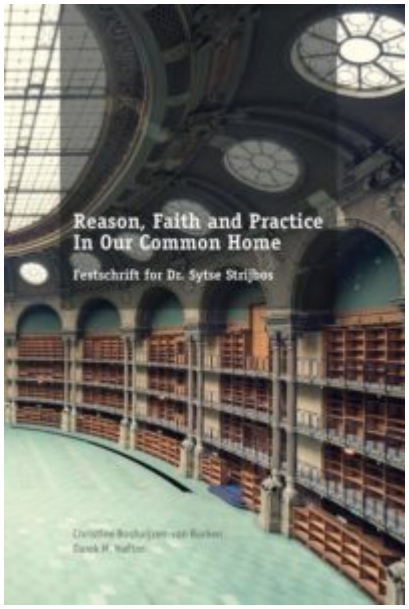

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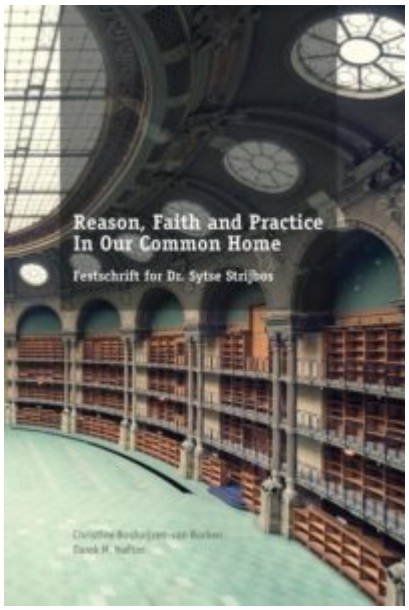
Social Change In Our Technology-Based World. Festschrift for Dr. Sytse Strijbos



Introduction

The following text was written as an introduction to the proceedings of the annual conference of the Centre for Philosophy, Technology, and Social systems, an international and interdisciplinary research cooperation cofounded by Strijbos. The chief motive for the inclusion of this text in this Dr. Sytse Strijbos Festschrift is to provide the reader with a short illustration of the kind of thinking that occupied Strijbos, and the research collaboration that he coestablished and governed.

Integrative framework

With slight exaggeration, one can say that change is the only constant factor in today's society, where everything is in flux – continuing change seems to be a basic condition for living in modern times. These extreme dynamics and fluidity of society (Bauman 2000) have been directly related to the complex of Science, Technology, and Economy since the Industrial Revolution of the 19th century in Europe. In past decades, the study of this complex has become a vast field of interdisciplinary research with many ramifications and approaches (*see e.g., the Encyclopedia of Science, Technology and Ethics*.)

To understand social change in a technology-based society first requires a

conceptualization of the main terms “technology” and “society”. One should realize, however, that both terms are container concepts or collective names and do not refer to a specific object. Furthermore, one must be aware that by distinguishing between such a thing as “technology” on the one hand and “society” on the other, one might already start from a false view of technology, namely, as something separate from society. Aiming for an integrative vision of technology and society, one should consider that technology is about people and thus a part of society, not unlike a meteorite that impinges from outside on our human lives and society. “We know that technology does not determine society: it is society. Society shapes technology according to the needs, values, and interests of people who use the technology.” (Castells and Cardoso 2005: 3)

Figure 1 provides a schematic of an integrative vision, in which the lower part of the diagram represents “technology” and the upper part “society.” In everyday language, technology usually refers to material artifacts, such as a cell phone, car, or laptop. Usually, we are unaware that each of these artifacts is, for its functioning, dependent on a comprehensive system, for example, to use a car, a system of roads, petrol stations, legal regulations, and numerous other amenities required. Characteristic of modern science-based technology is that a fundamental transition has taken place in the relation between technology and society, namely, from technology that consists of separate artifacts in the hands of individuals to technology as a total environment in which we live. This new relationship between technology and society concerns the “how” or foundation of the various human and social practices in which our daily life unfolds. These practices have become dependent on their realization of organized “sociotechnical systems,” such as transportation from the mobility system, medical support from the health care system, and schooling and training from the educational system. The transition from a traditional to modern society thus goes along with a fundamental and irreversible change of our living environment. Technology has become a new habitat for people, a technotope.

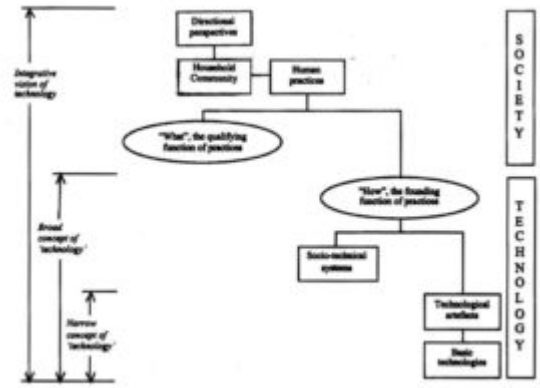


FIGURE 1 Schematic representation of technology as the founding of society

This fundamental transition to a modern technological world also has profound

implications for the economic sphere of society and politics. Referring to Figure 1, one could observe that the sociotechnical systems that provide the foundation for societal life in its variety of practices also include the economic and political dimension, for example, the health care system. Since about the 1980s, the economy of health care has become a recurring matter of public debate. Notably, the traditional ethical relationship of medical practice between physician and patient has been dyadic. This situation has changed profoundly because this relationship is intertwined within a broader nexus in which several other parties are involved. This means, among other things for the physician, that their obligations to each patient must be balanced in a network of competing obligations and conflicting interests (see e.g. Haavi Morreim 1991).

Let us now turn our attention to "society" at large, the upper part of Figure 1. Through the centuries, the household has been the fundamental building block of human society – within the household and family is where the exchange between the generations and their care for each other takes place. The fabric of society around the household has fundamentally changed since the rise of the Industrial Revolution. As long as the household as the fundamental unit of society persists, a broad range of human practices has gradually differentiated from the household, a process that began with the organization of labor and technical production in factories. The challenge for social change in a modernizing society can now be understood as the dual task of preserving the household as the ethical core of society and opening up the household and the potential of the various human practices for the benefit of society. This means that the shaping of the "how," the technical-organizational foundation of society, should enable concretization of the specific "what" of each domain of human life along with the sustenance of healthy households in society.

It is difficult to ignore that peoples' behavior patterns vary among regions and distinct cultural backgrounds. The role of culture and religion is therefore a hotly debated topic, in particular, the debate related to the economic development of a society. In recent years, the debate has been triggered by the study *Culture matters: How values shape human progress* (2000), edited by Harrison and Huntington, and some later publications. In the scheme of Figure 1, the role of culture and religion for the development of our technology-based societies is accounted for by "directional perspectives." Traditionally, the household and local community play key roles in the transfer of basic cultural values, formation

directional perspectives on human life, and communication about the world from one generation to the next. In a differentiated society, human practices must play a complementary role in the transfer of specific values, or echoing MacIntyre (1981: 178), in developing and maintaining the so-called “internal good”’ of these practices.

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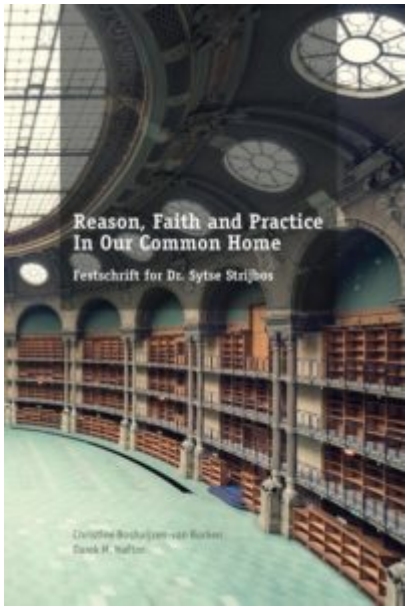
Reflections On The CPTS Model Of Interdisciplinarity ~ Festschrift

for Dr. Sytse Strijbos



Introduction

In this short paper, I adopt the role of 'critical friend' to the Centre for Philosophy Technology and Social Systems (CPTS)[i] research programme, and the contribution of Sytse Strijbos in particular: I believe the CPTS model of interdisciplinarity has some significant strengths, and also some potential weaknesses that the researchers taking it forward might wish to address. Most of my critique refers to Strijbos and Basden (2006a), as this offers the grounding for the rest of the CPTS research programme. However, my focus on this should not be taken as a sign that I regard other contributions as less significant.

Over the coming pages I will first of all highlight what I see as the strengths of the CPTS model, focusing in particular on the value of the systems approach embodied in it, and its potential applicability to technologies beyond information systems (the practical focus of most CPTS authors to date). I will then offer two critiques. The first points to a gap in the model: the omission of ecological systems as an aspect of analysis. The second critique raises some questions about the nature of the links between research at the levels of the artefact and directional perspectives. I suggest that, when there are significant disagreements on the ethics of a technology, to the extent that some researchers wish to prevent its development and others wish to press ahead, we have to ask whether and how interdisciplinary co-operation should proceed.

The Strengths of the CPTS Model

In my view, the CPTS model of interdisciplinarity has several important strengths: it is explicit about its theoretical underpinnings; is inclusive of ethical debates; takes a useful systems approach to understanding the relationships between fields of inquiry; is potentially applicable to a broad range of technologies; and can enable the incorporation of many more disciplines than are currently included in the CPTS research programme. I discuss each of these strengths in turn below.

2.1 The Value of Explicit Theory

The first strength is that there is an explicit theoretical rationale for the focus on basic technologies, technological artefacts, socio-technical systems, human practices and directional perspectives as the principle concerns flowing into interdisciplinary engagements. As Strijbos and Basden (2006a) make clear, these categories are derived from the philosophy of Dooyeweerd (1955). Although I am not in complete accord with Dooyeweerdian thought, I nevertheless appreciate that there is a coherent set of ideas lying behind the CPTS model. This is important because it takes us a step beyond models that are simply born out of strategic alliances between researchers from two or more disciplines who happen to share common interests. While alliances like these can be useful for pursuing focused projects with particular purposes, it is difficult for them to give rise to more general models of interdisciplinarity unless there is a focus on providing some theory that explains why the model might have utility beyond the immediate local circumstances in which it was generated.

2.2 The Incorporation of Ethical Considerations

In addition to being explicit about theory, the CPTS model is inclusive of ethical considerations under the heading of 'directional perspectives'. This is important because there is a tendency in modern societies for ethical issues (about which ends to pursue and why) to be separated from technical ones (how to implement the ends that have already been pre-determined) (Habermas, 1984a,b). Even some supposedly participative approaches to information technology planning give people scope to debate means (ways to implement technologies) but not ends (the missions of their organisations that give rise to desires for technological solutions) (Willmott, 1995). By incorporating the research domain of 'directional perspectives' into the CPTS model of interdisciplinarity, and by making it clear that these can *frame* debates about technology (as well as being impacted by technological innovations themselves), it becomes much more difficult to marginalise ethical concerns than might be the case if the human dimensions in the model were restricted to socio-technical systems and human practices. Clearly, the strong inclusion of ethical considerations comes about because of the theoretical influence of Dooyeweerd (1955), but it makes the model equally useful from a critical theory standpoint (e.g., Habermas, 1984a,b) or a critical systems perspective (e.g., Ulrich, 1983; Jackson, 1991; Gregory, 1992; Oliga, 1996; Midgley, 2000; Córdoba and Midgley, 2003, 2006, 2008). For most writers on critical systems thinking, ethical reflection and dialogue are essential aspects of inquiry (interdisciplinary or otherwise).

2.3 The Systems Approach

The CPTS model also offers a strong *systemic* conceptualisation of the relationships between the various kinds of research that flow into interdisciplinary practice. Strijbos and Basden (2006a) focus on the *integration* of ideas across the levels of basic technologies, technological artefacts, socio-technical systems, human practices and directional perspectives. Here, they draw upon Boden's (1999) understanding of integration (one discipline learning from another), although there is actually a long tradition of integrative research going back to some of the earliest work in systems science (see, for example, Bogdanov, 1913-17; von Bertalanffy, 1956; Boulding, 1956; Miller, 1978; Troncale, 1985; Bailey, 2001; and Midgley, 2001). Many authors have tried to transcend the limitations imposed on inquiry by seemingly arbitrary disciplinary boundaries. While some of these (e.g., von Bertalanffy, 1956) have viewed integration as the generation of a new 'general system theory' to complement or even replace the old disciplinary ones (Boden, 1999, is critical of this), others take a different view. It is especially interesting to read Boulding (1956), who offers a 'skeleton of science' that is structured into similar levels as the CPTS model, and Boulding even recognises the relevance of spirituality – although there are actually more levels in Boulding's framework (and a tighter hierarchical relationship between them[ii]) because his purpose is to provide a model for use across the disciplinary sciences, not just within the field of technology.

2.4 Applicability to a Broad Range of Technologies

Although the CPTS interdisciplinary research community has taken information systems as its first application domain, Strijbos and Basden (2006a) are explicit that their desire is to generate ideas that can be of use to research a wider set of technologies. I have therefore decided to test the wider applicability of the CPTS model through two simple 'thought experiments'. I have taken two technologies – workplace drug testing and genetically modified organisms (GMOs) of use in food production – to see whether the levels of analysis in the CPTS model are able to account for the various different issues that I am aware are being researched in these areas. I am not a specialist in either of these fields, yet I have taken an interest in some of the issues associated with them. Each is discussed in turn below, starting with workplace drug testing.

The basic technologies of workplace drug testing are chemical markers that indicate the presence of illicit drugs in urine samples. These chemical markers

are the basis for the production of testing kits (artefacts). The kits are deployed within socio-technical systems: organisations wishing to test their employees in order to improve safety in the workplace (drug testing is generally introduced in relation to safety-critical occupations, although some employers use it more widely). Various human practices may be impacted, including personnel selection (drugs testing can become part of the recruitment process), counselling for people with drug and alcohol problems (many testing regimes are introduced alongside rehabilitation programmes) and drug-taking behaviour (people may stop taking drugs, moderate their use, or shift to drugs that are less easy to identify in a urine sample). Finally, at the level of directional perspectives, various ethical issues are relevant: e.g., those surrounding the tension between public safety and personal freedom. It seems to me that the CPTS model can capture all the main concerns of researchers looking at workplace drug testing, and it reveals substantial scope for interdisciplinary engagement.

Next we can look at GMOs. At the level of basic technologies, the functions of various genes have been identified, and new genetic combinations with desired properties have been developed. At the level of the artefact, crops are produced (e.g., genetically modified, disease resistant maize plants) using the results of the basic genetic research. These are then deployed within socio-technical farming systems, and these in turn interact with larger systems, including those associated with retail and international trade. Human practices of farming and eating are affected, as are political practices (e.g., there may be an increase in direct action protests). Finally, at the level of directional perspectives, the ethics of genetic modification are debated in research publications, the media and amongst ordinary citizens.

In the GMO example, I suggest that *most* (but not all) of the relevant research themes are accounted for by the CPTS model (I say 'most' because ecosystem research is not explicitly included, and I'll pick up on this later). Most importantly, the need to link together research at the various levels becomes quite apparent once we explore the connections between them. My own view is that the basic/artefact research on GMOs is still, by and large, overly disconnected from ethical research, despite the fact that many scientific authorities now recognise that the GMO issue (together with some other issues debated in the latter half of the 20th Century) has brought the whole credibility of ethically-disconnected science into question (e.g., ESRC Global Environmental Change Programme,

1999). For some GMO research that seeks to overcome this problem, see Cronin et al (2014).

Based on the two examples above, and the CPTS research on information systems presented elsewhere (Strijbos and Basden, 2006b), I believe it is reasonable to conclude that the CPTS model of interdisciplinarity may well be useful for research across a range of technologies (but with some caveats, to be explained shortly).

2.5 The incorporation of a Wide Range of Disciplines

A final strength of the CPTS model is that it has the potential to incorporate a wide range of disciplinary perspectives from the sciences and humanities. In relation to information systems, the various chapters in Strijbos and Basden (2006b) demonstrate the inclusion of computer engineers, information systems practitioners, management scientists, systems thinkers and philosophers within the CPTS interdisciplinary network. However, this is a relatively limited range of disciplines in comparison with those that might need to be involved in interdisciplinary research on workplace drug testing (biochemists, manufacturing technologists, organisational analysts, economists, psychologists, psychiatrists, social workers, sociologists, policy analysts, systems thinkers and philosophers) or GMOs (biologists, agricultural scientists, economists, political scientists, sociologists, ecologists, systems thinkers, philosophers and theologians). The disciplines in brackets are just my own suggestions for inclusion – the potential scope is no doubt wider.

Critiques of the CPTS Model

Having highlighted what I see as the main strengths of the CPTS model of interdisciplinarity, it is now time to look at two potential weaknesses: the absence of an explicit focus on ecosystems, and what appears to be the assumption that scientific research into basic technologies and artefacts can sit harmoniously alongside philosophical research on directional perspectives, even when philosophers are advocating the abandonment of the technologies in question. I deal with each of these in turn below.

3.1 Ecosystems Research

The ‘thought experiment’ on GMOs that I briefly described above highlights a missing level in the CPTS model: the level of ecosystems. Of course, one could argue that ecosystems research needs to be conducted as part of the existing foci

of the model: at the levels of the artefact (where ecological impacts of GMOs might be assessed), the socio-technical system (which people might claim includes ecological elements alongside the technical and social ones) and directional perspectives (where ecological arguments could be used to support either pro- or anti-GMO positions). However, it is *always* the case that the ecological, ethical, social and technical levels are relevant to one another – it is precisely the point of the CPTS model to demonstrate and formalise this. Therefore, to make the ecological implicit in the technical, ethical or social is to accept an aspect of the reductionist rationality that the CPTS model has been designed to challenge.

Worse than this, I suggest that the marginalisation of ecological concerns is systematically prevalent in Western political (and also many academic) discourses and practices (although thankfully less so than just one generation previously). There is therefore a danger that, left unaltered, the CPTS model will act to reinforce this marginalisation. I say that the marginalisation of ecological concerns is *systematically* prevalent in Western discourses and practices because I believe that marginalisation processes are far from random. Elsewhere, I have written about this at length (Midgley, 1994). Here I shall simply point out that the marginalisation of environmental issues has resulted from the dominance, over several hundred years, of anthropocentrism (seeing humankind as the centre of things, somehow disconnected from our environment) – and Western philosophy has not been exempt from making anthropocentric assumptions. Even some systems thinkers (let alone philosophers) root the origins of rationality in either the individual human mind alone (following Kant, 1787) or linguistic communities (following Habermas, 1984a,b), thereby ignoring Bateson's (1972) insight that both mental and social phenomena interact with ecological systems (Midgley, 2002). From Bateson's (1972) perspective, rationality can be seen as a product of the wider systems we participate in – not a product of human beings or communities in isolation (also see Midgley, 2000).

If the proponents of the CPTS model want to take this point seriously, they will be faced with a dilemma: either remain faithful to their original translation of Dooyeweerdian philosophy into a framework for interdisciplinarity, thereby preserving the marginalisation of ecosystems research, or further develop the model to incorporate the ecosystems focus. Without conducting some new research, I am unsure whether or not this will necessitate revising some of the

original Dooyeweerdian concepts, but in my view the whole issue is worth looking into. As I see it, exploring the ecological impacts of technologies (at local, regional and global levels) is a pressing priority, and we marginalise this at our peril.

3.2 Dealing with Conflicts over Normative Beliefs

My second critique of the CPTS model comes from asking the question, 'what if some researchers wish to prevent the development of a technology?' It seems to me that the CPTS model already pre-supposes the existence of a given technology (such as information systems), and the task of the interdisciplinary research community is to bring their various perspectives to bear on it, supporting each other in making everybody's work more systemic. This is certainly a laudable aim, but what when a technology is at a conceptual or early developmental stage and normative explorations at the level of directional perspectives lead to a conclusion that it is illegitimate? In such circumstances, will philosophers of technology (or others engaged in research on ethics) be expected to co-operate with those whose mission is to bring the 'illegitimate' technology to fruition?

A rejoinder to this question from an advocate of the CPTS model might be that this is *exactly* what needs to happen: without interdisciplinary engagement there will be no systemic thinking about the technology and therefore no chance to affect its development. My problem with this answer is that it is a little naïve with respect to the power relations that surround the production and deployment of technologies. Most technologies are produced by companies who make substantial investments in research and development. While they expect some ideas to fail, they also expect enough to succeed to yield a return for their shareholders. These companies therefore have significant vested interests, and the scientists working for them are rarely immune to commercial pressures: in many research and development divisions, the continued employment of scientists depends on the results they achieve. There is therefore an incentive for people working at the levels of basic technologies and artefacts to draw narrow boundaries around their research and exclude collaboration with people bringing them the very worst kind of 'bad news' – that their new idea might, from some points of view, be considered completely illegitimate.

Again there might be a rejoinder from an advocate of the CPTS model. Surely closing off to this bad news is not *really* in the self-interest of a company developing a new technology. Doesn't a belief in *enlightened* self-interest dictate

that the company should be aware of potential problems with the technology so that they can address them in advance of a commercially damaging crisis? This is certainly the logic I have used myself when discussing the value of systems thinking with managers and policy makers. I believe that, if companies can be persuaded of the utility of a systems approach, then it is usually worthwhile for philosophers of technology (and others with an interest in ethics) to engage with those developing a seemingly 'illegitimate' product – *as long as this engagement is meaningful*. However I suspect that, in the majority of situations, the volatile mixture of commercial self-interest, the desire for secrecy so that the company can gain some competitive advantage over others in the same market, and fear and distrust of people with radically different perspectives will either prevent engagement altogether, or will limit this engagement to a tokenistic recognition of other points of view without there being any real prospect for changing the technology in question. In the case of engagement that is completely blocked, the philosophers of technology (and others with ethical concerns) will know where they stand: they will be better off working independently, or through alliances with other stakeholders, to make their case in various civil society fora. It is the tokenistic form of engagement that is more worrying: it is conceivable that the CPTS model might be used to demonstrate a coherent logic of engagement, thereby allowing ethicists to be 'captured' (or even duped) by those who have no real intention of reflecting meaningfully on their chosen path for action.

The issue is therefore whether use of the CPTS model of interdisciplinarity may, in situations where there is a strong normative conflict, result in a bias towards the values of the developers of a technology, with ethicists getting unwittingly tied up in pseudo-dialogues with their opponents. Anyone who is sceptical about my critique might ask themselves how often scientists with a nascent technology, employed by a company which has invested in its development, knowingly abandon that technology after hearing the arguments of philosophers. I would love to be proven wrong, but I suspect that this is a very rare occurrence indeed.

If the proponents of the CPTS model want to take this point seriously, I suggest it should result, not in the abandonment of the model (it has some significant strengths, and represents an ideal of good practice), but in further critical reflections on when and how it should be used. If we are dealing with less controversial technologies, such as information systems, this is not a major issue: the vast majority of people regard information systems as a 'good thing', and the

need for interdisciplinarity arises because of problems in making the technologies work to their best advantage in social systems (without subordinating human desires to technological dictates or creating unwanted side-effects). The value of the CPTS model is therefore more or less self-evident in this scenario. However, if we are talking about a controversial technology in the early stages of development (such as GMOs before they went into commercial production), this is another matter entirely. If there is a chance of the CPTS model being co-opted to promote pseudo-dialogue rather than meaningful engagement, then social researchers might need to think seriously about how they explore situations characterised by value conflicts and power relationships prior to, alongside of, and/or instead of engaging with technology development. For this purpose, some of the literature on critical systems thinking (e.g., Ulrich, 1983, 2001a,b) and systemic intervention (e.g., Midgley, 2000; Córdoba and Midgley, 2003, 2006, 2008; Pinzón and Midgley, 2011, 2013) may be useful, as writers in these areas have been working with questions of power and participation for over twenty years.

Conclusions

In this short paper, I have sought to reflect on the strengths and weaknesses of the CPTS model of interdisciplinarity so as to support its further development. In my view, there are some significant strengths to the model that make it *worth* developing: in particular, it is explicit about its theoretical underpinnings; is inclusive of ethical debates; proposes systemic relationships between fields of inquiry; is potentially applicable to a broad range of technologies; and can enable the incorporation of many more disciplines than are currently included in the CPTS research programme.

However, there are also some potential weaknesses that only come to the fore once we think of the model in relation to technologies other than those to which it has already been applied. My reflections on the GMO issue have raised a question about where ecosystems research might fit. I suggest that a new 'level' (ecological systems) is needed in the CPTS model, and further work would be useful to see whether this adaptation will necessitate any rethink of the philosophy underpinning the CPTS research programme. The controversial nature of the GMO issue also raises a question about how those developing a technology and those opposing its development could realistically be expected to collaborate on interdisciplinary research. As I see it, the worst case scenario is not a

breakdown of dialogue (then people know where they stand), but co-option of the CPTS model by vested interests to enable a *pseudo*-dialogue that effectively neutralises the perspectives of those arguing that a technology is illegitimate. To avoid this kind of scenario, proponents of the CPTS model may be able to learn more about how to explore situations characterised by value conflicts from people in neighbouring research communities engaged in critical systems thinking and systemic intervention. These are my own interests, and I look forward to a continuing dialogue.

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NOTES

[i] CPTS research program is now under the umbrella of the International Institute for Development and Ethics (IIDE)
[ii] Boulding (1956) proposes a tight hierarchy, with simpler, smaller sub-systems being the 'building blocks' for the emergence of more complex, larger-scale systems. While there is a *general* movement from small to large in Strijbos and Basden's (2006a) list of basic technologies, technological artefacts, socio-technical systems, human practices and directional perspectives, I know these authors are aware that a strict hierarchical representation is problematic. The problems become particularly evident when you look at the relationship between socio-technical systems and human practices. A socio-technical system can be as small as a department within an organisation or as large as the global economy. Therefore, the relationship between socio-technical systems and human practices cannot be described simply as a class of systems (socio-technical ones) within a wider human environment: some socio-technical systems may *contain* human practices, and other human practices will be outside, and mutually influencing, those systems. The exact relationship between socio-technical systems and human practices therefore needs to be defined in a locally meaningful way within each interdisciplinary research project.