Editorial: Living in a time of change

Everything changes, nothing remains still
(attributed to Heraclitus)

Cybernetics is a discipline of change and flow. Since the field coalesced and was given a name in the 1940s, it has been focused on the processes by which things move and adapt. So it is remarkable that one of the field's major publishing outlets has been extremely stable in its editorship, with just two editors in its forty years of existence, and the same editor for twenty-five years. But as with everything, this journal cannot remain stable, and as you may have seen, the previous issue, 41(10), was the final issue under the editorship of Brian Rudall.

This is the first issue under the new editorial team of Kybernetes, and as such we wanted to give thanks to the outgoing editor, to introduce ourselves, and to provide readers with a sense of our editorial policy as we move forward into the next decade (or even the next 40 years) of the journal. We are very honoured to have been offered the role, and mindful of the need to retain the journal's reputation for quality and breadth, while taking it into various new areas as we will discuss later in this editorial.

The core strengths of the journal (in our view) are that it is highly interdisciplinary, publishes a broad range of papers from different sources, has strong links with various academic communities around cybernetics, and publishes consistently interesting and accessible articles. Although always published within Britain, and to some extent grounded in the British tradition of cybernetics (a tradition well discussed by Pickering, 2010), it also has an impressive international reach in both the authorship and the editorial board.

The journal also has a proud history of having been published for forty years, and thus having contributed to very many of the trends in cybernetics. It manages to span a wide range of approaches to cybernetics, from engineering and mathematical work to philosophical and epistemological articles, and to include second-order cybernetics without being dominated by that approach.

These are great strengths that we will seek to maintain and build upon.

One administrative note before proceeding. In the past, the journal has used a postal submission system direct to the editor. We have now made the transition to an online submission system, using the industry-standard tool ScholarOne Manuscripts. This provides significant advantages to authors, reviewers, editors and publishers over a manual system, not

least because it allows for easy tracking of articles at each stage of the process from submission to publication. The system is now fully running, and all future articles should be submitted via ScholarOne, at http://mc.manuscriptcentral.com/kyb. Articles should follow the journal's author guidelines which can be found at http://www.emeraldinsight.com/products/journals/author_guidelines.htm?id=k (and at the back of this volume if you have the print edition of the journal).

Call for reviewers

Of all elements in the socio-technical system that is an academic journal, none is more key than the panel of expert reviewers. Timely and knowledgable refereeing of papers submitted for publication is a *sine qua non* of academic publishing, the only way in which the academic quality of a journal may be maintained.

New people with appropriate expertise will always be welcome to join the bank of Kybernetes reviewers, but there is an especial need at this time of transition.   If you are interested in becoming a reviewer please send a one-page résumé of your qualifications, experience and areas of expertise to one of us (or just provide us with your name and email address, and a URL of a website where we can find out more about you). Our contact details can be found on the journal website, at http://www.emeraldinsight.com/products/journals/editorial_team.htm?id=k, or in the printed journal.

Thanks to the previous editor

As we have discussed above, the editorship of Kybernetes has been very stable. There have been only two previous editors of the journal. The journal was founded in 1972 by Jeremy Rose who carried on as editor until 1987. Brian Rudall has been involved with the journal since its inception, and has been editor-in-chief since 1987. Forty-one years of work on a journal is a very long time indeed, and we salute Brian's work on the journal with enormous gratitude. The whole field of cybernetics and systems owes Brian a great debt of thanks for being its steersman (in the best cybernetic sense) for such a long period of time. He will be a hard act to follow.

During the 40th anniversary volume, and in particular in issue 40(9/10), in late 2011, many retrospectives and tributes were published to the journal for its distinguished history. We will not repeat those tributes here, but it is clear that they apply to Brian as much as to the journal as a whole, and we urge readers to look at that issue for further details of the distinguished contribution of Brian Rudall to Kybernetes.

Introducing the new editorial team

The new editors are working as a close team - we are all based in the same department at The Open University in Milton Keynes, UK and have worked together on a number of projects in the past. The Open University (OU), the largest university in the UK with over 200,000 students, is focused around supported distance learning as its means of teaching, based on high-quality multimedia course materials. These course materials are produced through intensive work by multidisciplinary course teams, involving 'critical reading' of multiple drafts.

The three editors each have considerable experience of working within (and chairing) course production teams in various subjects. This experience will be our model for editing Kybernetes. Each of us will be equally responsible for the editing of the journal, but part of the OU experience is that these teams work best when chaired by a named individual. Accordingly, one of us (Magnus Ramage) is editor-in-chief, and the main point of contact; the other two (Chris Bissell and David Chapman) are co-editors. All of us together are responsible for the journal's editorial policy and decisions to accept articles, although in practice a single editor is responsible for any given paper.

As is the case with academics at other universities, the primary role of academics at the OU is teaching and research, but there are also some unique features to working at the OU. One of these is the opportunity to work in collaboration with the BBC (British Broadcasting Corporation) on the production of television and radio programmes. In the early days the OU worked with the BBC to produce lectures that were broadcast during late-night slots as part of the teaching associated with individual university modules. More recently the collaboration has produced programmes broadcast in prime-time slots for a general audience, as part of the educational remit of the BBC. Magnus, Chris and David have been academic advisors for a number of these programmes, and a recent notable example is The Virtual Revolution, broadcast in the UK in 2010. This series of four TV programmes on the development and current nature of the World-Wide Web won the 2010 Digital Emmy for Best Digital Program: Non-Fiction and the 2010 BAFTA (British Academy of Film and Television Arts) television award for New Media.

We will now describe the background of each of the editors (and their experience in cybernetics) in turn.

Magnus Ramage

Magnus has an educational background in computer science, beginning with a fairly mathematical approach in his BA at the University of Cambridge (awarded in 1992). He became progressively more interested in the impact of computers upon broader areas, studying an MSc in Human-Centred Computer Systems at the University of Sussex (awarded 1994), and a PhD in the systemic evaluation of cooperative technologies, using techniques from organisational theory, systems thinking and information systems, from the University of Lancaster (awarded 1999). It was during his time at Sussex that he first encountered systems and cybernetics ideas, initially through the work of authors such as Peter Checkland, Gregory Bateson and Stafford Beer, each of whose writings continue to have a great impact on his ideas. He subsequently worked at a researcher on the sociotechnical redesign of legacy information systems at the

University of Durham, while also conducting action research in scenario planning and organisational learning.

Magnus joined the Open University in 2000, initially based in its then Systems Department. He has written and chaired modules in the fields of systems thinking, the evolution of information systems, cooperative technologies, environmental management, and sociotechnical systems.

His research at the Open University is in two main areas: the history of systems, and the nature of information. First, he jointly led (with Karen Shipp) a major research project over a period of seven years examining the history of systems and cybernetics, through a study of the lives and works of its major thinkers. This led to the authoring of a significant book (Ramage and Shipp, 2009) which profiles the lives and work of thirty of the most significant thinkers in systems and cybernetics, along with extracts from their work.

Second, Magnus has worked (with David Chapman) on an investigation of the nature of information, starting from the premise that information is both pervasive in our society and its self-understanding, and also central to a significant number of academic disciplines, but is understood very differently within many of those disciplines. A major goal of the work has been to bring people together with a common interest in information from a number of different academic disciplines, and to have them share their understanding of information and compare how their approaches differ from each other. This has been conducted through the organisation of two significant multi-disciplinary workshops, the first in 2007 (which led to the edited collection of papers in Ramage and Chapman, 2011) and the second in 2011 (which will lead to a special issue of the online journal tripleC - Chapman and Ramage, forthcoming). Magnus and David are currently organising a further international workshop on the nature of information, *The Difference that Makes a Difference 2013*, to be held in Milton Keynes, UK in April 2013.

Chris Bissell

Chris Bissell has been at the Open University since 1980, and became Professor of Telematics in 1999. In the early 1990s he was Associate Dean of the OU Faculty of Technology, and from the mid 1990s to the mid 2000s Head of Department of Telematics (later the Department of ICT).

Chris's teaching interests have included control engineering, signal processing, telecommunications, media studies, and mathematics – all of which are highly relevant to cybernetics. His research has included engineering education, as well as mathematical modelling, but has concentrated most intensively on the history of automation and control. In the latter area he has studied the history of developments in Germany and the former USSR, complementing work by others on the USA and the UK. This historical work has involved significant archival research in Zürich, Berlin, Moscow, and St Petersburg. Some of his recent publications have examined the work of a number of control engineers who, like Norbert Wiener, turned to what became called cybernetics. Most important of these was Hermann

Schmidt, a near contemporary of Wiener, who developed many similar ideas to those of Wiener during the 1940s.

Chris was book reviews editor of IEEE *Control Systems Magazine* for a number of years and has authored, co-authored, or edited a number of books relating to cybernetics: *Control Engineering* (Van Nostrand Reinhold, 1988), *Digital Signal Processing* (Cambridge University Press, 1992 – co-authored with David Chapman) and *Ways of Thinking, Ways of Seeing* (Springer, 2012 – co-edited with Chris Dillon). He also wrote a chapter on the history of automatic control in the Springer *Handbook of Automation.*

David Chapman

After graduating with a BA in Physics from the University of Oxford in 1980, David worked on the design of optical fibre communication systems at what was then Plessey Telecommunications, in Nottingham. While working for Plessey he also studied for an MSc in Electrical Engineering (Telecommunications Technology) at Aston University, then in 1986 he moved to the Open University as a Lecturer in Electronics. At the OU he has contributed to distancing teaching material on telecommunications and ICT.

David's research interests were initially in the field of optical fibre communications and optical fibre sensors. He studied part time for an OU PhD, investigating the design of an optical fibre LAN with a bus topology, code division multiplexing and the novel 'dark signalling' technique, in which the continuous-wave output of an unmodulated laser is interrupted to generate dark pulses. Following the award of his PhD in 2002, however, and after a number of years during which he had little time for research due to significant management responsibilities as programme director and then head of department, the main focus of his research shifted to a topic that he had long been interested in: the nature of information. Since 2007 he has been maintaining a blog on his personal exploration into the nature of information at intropy.co.uk and has been working with Magnus on the projects described above, within the Society and Information Research Group (SIRG) of the OU.

In his teaching he has increasingly seen the importance of emphasising the human and social factors of technology, and he has a scholarship interest in understanding technology in the context of socio-technical systems. This coming together of science, technology, people, systems and society, with the motivation of seeking an understanding of the nature of information, has led inexorably to cybernetics.

New direction of the journal

We have outlined above our views of the present strengths of the journal, and we will be actively seeking to preserve those strengths. In particular, we value highly the journal's breadth of perspectives from within cybernetics, systems and management science - it really does manage to span the whole field - and will seek to maintain that breadth. We are concerned, however, to ensure that articles in the journal are comprehensible to the bulk of the readership of

Kybernetes, so that the interdisciplinarity of cybernetics (and Kybernetes) can be maintained as a conversation rather than just a set of loosely connected sub-fields.

We therefore ask that authors are always mindful of the non-specialist reader of their article, and we specifically ask authors to ensure that the introductory section of their paper provides a high level overview of the context, nature and significance of their paper, written in a style that should be accessible to all readers of the journal.

As a result of this view, we have also formulated an early editorial policy in one particular area. We will require highly mathematical articles to make the cybernetic context of the mathematics explicit. We will expect articles whose main focus is mathematical to demonstrate their connection to past work in cybernetics/systems through clear references (to this or other relevant journals, or established books in the field); or alternatively to give a clear demonstration of the significance of their work in an English-language description, which shows the application of the work to some practical area. Articles received which are purely mathematical with neither cybernetic nor practical contextualisation will be returned to their authors without review, with an explanation of this policy.

This does not mean we will reject papers with a strong mathematical content. Norbert Wiener himself was a mathematician, and there have been much excellent work in cybernetics and systems with considerable amount of mathematics. It merely means we wish to see mathematical articles in Kybernetes to be distinctively cybernetic, rather than those which could just as well fit into a maths journal.

While it has clear roots in cybernetics, we reaffirm the journal's commitment to the related areas of cybernetics, systems and management science, and welcome articles in each of these areas. Although they each have a separate history and there are certain important areas of disagreement (for example, key thinkers in systems have long accused cybernetics of reductionism, while cyberneticians argue for the importance of circular causality and feedback, areas in which systems is weak), they clearly form part of a related movement. Ramage and Shipp (2009) referred to this movement as 'systems thinking', but it could equally well be called by a number of other terms. It is striking, for example, that the two premier organisations in their respective fields in North America, the American Society for Cybernetics and the International Society for the Systems Sciences, have in recent years decided to hold their conferences (while still clearly separate) at a similar time and in a similar geographical area, so that participants may attend both if they wish.

We also reaffirm the journal's international focus as a particular strength of Kybernetes. We both welcome and encourage articles from around the world. In both cybernetics and systems, the field can sometimes be over-focused on the North American tradition (including central European emigrés to North America) that begins with the Macy Conferences and the founding of the Society for General Systems Research (SGSR). These were both crucial events, and the North American tradition is an extremely important one. However, there are many other forms of cybernetics and systems, not all of which began with Macy or the SGSR. Some of these comes

from other European countries - we have already mentioned Pickering's work on the distinctively British tradition of cybernetics, and in other work we have written on German and Russian cybernetics (Bissell, 2009, 2010). Many other traditions from other cultures of cybernetics and systems exist. We are therefore well aware of the need to draw upon traditions in cybernetics and systems that come from outside the North American (or more general the Anglo-American) sphere of ideas - Kybernetes has done this successfully in the past, and we intend to continue doing so.

We intend to strengthen the journal's coverage in three particular areas in which Kybernetes has previously published but has not emphasised as core areas of the journal:

1. The treatment of *information* as an important interdisciplinary area. Clearly, the idea of information is one which has been central to cybernetics since its inception, and the journal has published much which relates to information. However, there is considerable interest at the present time in information as a topic (something on which we have written ourselves, as outlined above), and we will seek to make Kybernetes a venue for that debate.
2. While there has been healthy coverage in the journal of sociocybernetics, there has been rather less coverage on the *social implications* of cybernetics and related fields, an area which has recently been growing in interest (for example in the semi-popular book by Harkin, 2009).
3. The journal has an excellent track record of publishing festschrifts and memorial issues about key authors in the field. We seek to maintain and strengthen this focus on the individuals involved in the field, and will develop profiles of thinkers in cybernetics, systems and management science, both past (especially those who are less well-known) and present.

We intend to continue the journal's explicit relationship with the World Organisation of Systems and Cybernetics (WOSC) and The Cybernetics Society, as well the looser relationship we have with the American Society for Cybernetics. We would welcome dialogue with other international bodies in the field of cybernetics, systems and management science.

Last, a slightly sensitive issue. One of the key metrics in deciding the merit of academic journals is the Journal Impact Factor, calculated and published by Thomson-Reuters. Although impact factors can be questioned as a statistical tool, there is little doubt that they are used as a means of academic judgement. It is no secret that the impact factor of Kybernetes could be higher, and a low impact factor makes the journal less attractive both to authors and to those who judge academic standards. This is not a desirable situation, and it is something that we are deeply committed to addressing, although it is something that is rather difficult to change.

If we have a single goal for the journal, it is to make it one of the first places that anyone active in the fields of cybernetics, systems and management science, will consider as a place to publish; and where people active in those fields will want to look for some of the best new articles.

We would be very pleased to hear from readers about our plans for the journal, and the direction the journal is moving in as these plans take shape.

In this issue

This issue illustrates well the breadth that we have discussed above, both in terms of the range of topics addressed and the international nature of the journal. There are nine papers from eight different countries, ranging from several locations across Europe, to China, Taiwan, Turkey and Fiji.

The Systemic Leaders: New Leaders in the Global Economy by Jon-Arild Johannessen is a thought-provoking conceptual paper that uses systemic thinking to address the question of how to develop a new type of leadership in the knowledge economy. Johannessen describes the concept of the creative energy field as enabling innovation in both new and established organisations, and explores the nature and role of innovation leaders.

The remaining papers are research papers.

Statistical versus optimal partitioning for block entropies by Ioannis Mistakidis, Kostas Karamanos and Simeon Mistakidis looks at the behaviour of complex systems to address the question: given a time-series, what is the best partitioning of the state space in order to obtain reasonable values for the block entropies? The paper provides a simple, approximate, answer in the form of an algorithm.

A New Method for Mining Area Ecological Environment Assessment Based on Credibility Measure by Jiqang Chen, Litao Ma and Hong Zang applies an established body of knowledge in a highly important domain. It demonstrates the use of credibility theory for processing fuzzy variables in order to assess, and therefore help minimise, the environmental damage due to mining.

Multi-criteria decision-making in creative problem solving by Vesna Čančer and Matjaz Mulej presents an interesting combination of creative problem solving and multi-criteria decision making (in particular using an original weighting algorithm), and applies these ideas to practical problems in organisations.

In *A Two-Layer Scheme for Membership and Classification Querying* by Heng Ma and Hung-Yu Chen, the two layers comprise a layer of Bloom filter for membership checking and a second layer based on a neural network for dealing with the classification requirement. The scheme provides highly effective searching and indexing and dramatically reduces false positives.

On visualizing the number comparison scheme in grey extent analysis by Ozan Çakır describes a method of visualising grey number comparisons on simple diagrams constructed on a Cartesian coordinate system. In examples, the technique obtained exactly the same probability

information as that calculated using the original comparison principles and formulae of grey extent analysis, but in a way that was more time-efficient and much easier to comprehend.

Degenerated simplex search method to optimize neural network error function by Shamsuddin Ahmed describes an artificial neural network training algorithm, the degenerated simplex algorithm (DSA), that is shown through simulation results to work better than the random simplex algorithm (RSM) and back propagation training method (BPM). The algorithm is suitable for classification, forecasting and optimization problems.

Introducing Managers to the VSM using a Personal VSM by David Robinson presents the results of a short research study that introduced a group of busy managers in an organisation in turmoil to Stafford Beer's Viable System Model (VSM) through the use of a personal version of the VSM that was developed by Allenna Leonard.

Macroeconomics of Privacy and Security for Identity Management and Surveillance by Vasilios Katos, Frank Stowell and Peter Bednar seeks to develop an approach for investigating the impact of surveillance technologies used to facilitate security and its effect upon privacy. They develop a methodology by drawing on an isomorphy of concepts from the discipline of Macroeconomics, and, reflecting upon Ashby's Law of Requisite Variety, they conclude that surveillance policies will not meet espoused ends, and they investigate an alternative strategy for policy making.

We hope you enjoy this issue.

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