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## SYSTEMS PRACTICE AT THE UNITED KINGDOMS'S OPEN UNIVERSITY

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### THE OPEN UNIVERSITY

The Open University (OU), the UK's largest University was established in 1969. It has since inception pioneered supported, open distance learning (i.e. all students have a course related tutor and entry is open to all at undergraduate level without prior qualifications). In 1998/99 the OU had 166,000 students of whom 28,000 were in taught post-graduate courses. In all the OU had 200,000 customers in 1998/9; Daniel (1996) has described it as a mega-university. Some other features of the OU include:

- An increasing number of students are from outside the UK (19 % of students in 1998/99);
- The median age of new undergraduates is 34;
- Over 80,000 students study interactively on-line as some component of their courses;
- The Open University of the US (Inc) was established in 1998/99 as an independent subsidiary of the OU(UK);
- It is at the forefront of innovation with technology to support learning; £12.5 million has been allocated in 2000 for further expansion of e-university capacity;
- It is ranked amongst the top Universities in the UK for teaching quality (Technology, including Systems, received 24/24 in sector-wide teaching quality assessments in 1998);
- 26 subject areas have been recognised in UK-wide assessments as having research of international or national excellence.

This chapter relates the emerging focus on systems practice within the Systems Discipline at the Open University. Recent innovations have occurred in the changing environment of the University (Lane 1999), the higher education sector (Ison 1999) and the systems community more generally (Maiteny and Ison 2000).

### SYSTEMS PRACTICE AT THE OPEN UNIVERSITY

The OU has been involved in 'applied' Systems teaching and research for 30 years - some 25,000 students have studied systems courses in that time (see Maiteny and Ison 2000 for an overview). The inspiration for Systems teaching came from the founding Dean of Technology who said:

*"I felt that a concern for and systematic study of the social and environmental aspects of technology was essential. Certainly environmental problems were approachable only by means of systemic and interdisciplinary methods and I felt convinced that any Faculty of Technology that did not concern itself with such problems could not claim to be either modern or responsible, whether socially or academically".*

Systems and Design were therefore seen as key process-disciplines that were to work in close collaboration with the more conventional and analytical subject-disciplines of technology (e.g. electronics, mechanical engineering, materials engineering). The aspiration was that Systems and Design 'would contextualise and synthesise the subject-disciplines and act as catalysts for interdisciplinarity' (Holister, 1974). To a large extent this aspiration has been realised in one of two ways:

1. introducing systems thinking 'by stealth'. This has occurred through the contribution of Systems staff to the design and management of the Faculty's long-running Foundation, or level one course, 'Living with Technology' (OU code T102 and its predecessors T100 and T101) which 31800 students successfully studied from 1989 to 1999. Since its inception this course has situated technology in its social and systemic context. Presentation of this course ceased in 1999 but the strategy has

been perpetuated in at least two of its replacement courses. For example in 2000, 12,000 students are studying the web-delivered course 'You, your computer and the net' (T171) which introduces some systems thinking concepts. A further 1200 students are studying T172, 'Working with our Environment: Technology for a Sustainable Future' which also introduces systems concepts.

2. developing and presenting overtly Systems courses since 1973 (Maiteny and Ison 2000). For example:
  - 10,795 students successfully completed the course 'Complexity Management and Change. A Systems Approach' (T301) from 1983 - 99; this course developed students ability to practise three systems methods: the failures method, the hard systems method and soft systems methodology;
  - 1,006 students had claimed the Undergraduate Diploma in Systems Practice award a year after its introduction in 1998 (this is gained by completion of 120 points of study of specified Systems courses, one-third of the points required for an undergraduate honours degree);
  - Over 300 post-graduate students have studied the core module: 'Environmental decision making. A systems approach' (T860) since the Environmental Decision Making (EDM) postgraduate programme was introduced in 1998.

### **Renewing the curriculum and ourselves**

Over the last six years we have been engaged in a systemic action research process involving:

- curriculum innovation (see below);
- organisational and structural change (following a process of review and sometimes intense internal negotiation, the Systems Department as it existed prior to 1998 was disbanded and replaced by the Centre for Complexity and Change (CCC) with three constituent Disciplines - Systems, Development Policy and Practice and Technology and Manufacturing Management. As argued elsewhere (see Armson and Ison 1996; Ison and Armson forthcoming) this constituted both a change of organisation and constituent structures and has facilitated the emergence of a new conversation about systems resulting in the formulation of a 'systems meta-project' comprising diverse activities (see Lane 1999).
- improving our own systems practice (the Open Systems Group is the umbrella under which we conduct our own systems practice, offering consultancy services, conducting our own staff development and managing these processes so as to develop and enhance our community of practice as if it were a learning organisation).
- building better relationships with our alumni (the Open University Systems Society, or OUSys, the alumni association of the OU had over 350 members as of late 2000).
- recruitment and appointment of new staff (from autumn 2000);
- reviewing the sustainability of our working practices (from 2000).

### **Systems Practice - the OU pedagogical model**

Over the 30 years of our practice as systems educators a discernible pedagogical model has evolved. Four explicit strategies are recognisable:

1. Academics learned quite early that systems concepts need to be grounded as much as possible in the student's own experience. For this reason both continuous and examination assessment asks students to relate the systems thinking and practice in the courses to their own professional and personal contexts. We are aided in this strategy by the fact that most students are working whilst they study and they have a sufficiently rich life experience for the ideas to become meaningful.

2. Case studies of failure (e.g. IT innovations; the UK Child Support Agency etc) have proven to be a way of engaging students' involvement beyond their own experience. This was a lesson which was learned very early (e.g. Bignell et al 1977; Peters 1979) and which continues to be employed.

3. Diagramming (and other modelling) skills are developed and used as a means for students to engage with perceived complexity;

4. Other systems concepts, tools, methods, and methodological approaches are taught so as to develop skills in '*formulating systems of interest.....for purposeful action*'. It is worth noting that in recent courses we have increasingly emphasised that purposeful action has both rational and emotional elements.

In the third level course presented for the first time in 2000 (Managing Complexity. A Systems Approach - T306) the metaphor of the systems practitioner as juggler is introduced to explicate ideas about systems practice (Figure 1).

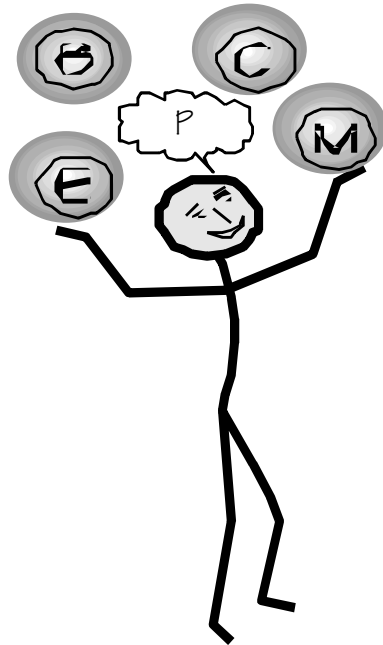


Figure 1. The Systems Practitioner (P) as juggler, juggling the processes of BEING a systems practitioner: the B ball; the situation the practitioner is ENGAGING with: the E-ball; the systems practitioner CONTEXTUALISING the approach they are taking : the C ball; and MANAGING in the situation: the M ball (Source: Open University 2000).

Our courses are designed to develop students' abilities to practise systems. For example in T306, the idea of practice, or practising, is initially a very general one. The dictionary definition of practise is to carry out or perform habitually or constantly . . . to carry out an action. It is assumed that students have some role in which they practise and that most people occupy a number of roles, in their work or in their community. The Course Team assume that this is a role in which a number of issues that need dealing with, improving, resolving, or obviating are experienced. Figure 1 provides the basis for unfolding the metaphor of the juggler who represents the systems practitioner. The case is made that an effective practitioner has to continuously think about, and act to maintain, four elements (the four balls in the air); the processes of Being a practitioner, the situation being Engaged with, putting the approach taken into Context and Managing in the situation.

### **Systems Practice - our domains of focus**

One of the outcomes of our review over the period 1995-98 was to consolidate our systems practice on three particular domains. This has subsequently affected our course design and our staff recruitment strategies. The three domains are:

- (i) Developing Information systems
- (ii) Environment and Sustainable Development
- (iii) Managing in Organisations

Three themes can also be seen to cut across these domains, though it is unlikely that a consensus exists on this interpretation:

- (i) critically reflective systems practice
- (ii) the design of learning systems
- (iii) considering and managing technology within its social and environmental context

Our recent courses and programmes as well as planned new programmes exemplify this new focus.

### **Our main systems courses from 2001**

Lane (1999) reports a heuristic model around which our new curriculum has been developed. Our strategy has been to develop two new core Systems courses at Levels 2 and 3 which when successfully completed can be used to claim an Undergraduate Diploma in Systems Practice. Rather than developing a stand-alone undergraduate named degree in Systems Practice we have attempted to situate Systems courses in as many named degrees as

possible. For example the Systems courses will be part of a new named degree in Business Studies and negotiations continue for entry of the courses into a named degree in Environmental Studies. Another possibility is in the area of Health and Social Welfare.

The model reported by Lane envisages the curriculum progressing from a focus on Systems Thinking and enabling students to search for system in a number of 'messy' situations followed by a third level course focusing on systems practice using a range of systems methods for engaging with complexity so as to design and plan systemic change. A postgraduate programme in Systems Practice is planned which will enable students to explore the philosophical roots of systems thinking as well as further developing their systems practice.

#### Systems Thinking. Principles and Practice (T205)

This second level course is a 60 point course (one year of study) which will commence in 2001. It consists of three sets of resource materials in conventional printed form that are drawn together in a teaching programme that is delivered via the Web and FirstClass). The use of the Web allows the inclusion of interactive and dynamic teaching techniques that are not possible in print, and are particularly appropriate for this subject area. It also allows the structuring and restructuring of the teaching much more responsively. The printed resources include:

- Training resources on Systems thinking, presented in three packs: T551: Systems thinking and practice: a primer; T552: Systems thinking and practice: diagramming (which also includes video- and audio-cassettes); T553: Systems thinking and practice: modelling (which also includes a video). These packs represent a major innovation within the context of the OU as they are generic teaching materials designed for use in all of our courses as well as for sale.

- Concept files derived from various domains, but principally concerned with organisations entitled: Learning, thinking and doing; The individual (workplace and self-development); Groups and teams at work; Managing within organizations; Networks and the organizational environment.

- Case files concerned with: e-commerce and other social issues associated with supermarkets; managing household waste (an example of environmental decision making); the millennium bug or Y2K (as an example of risk management); homelessness. These also share a video-cassette.

The Web-based teaching programme is called:

- The T205 WebZone. It forms the teaching 'spine' of the course, and consists of six consecutive blocks of study activities, each ending in an assignment. They take students through several cycles of systems analytic activity, showing how to take a confusing and complex situation, develop a coherent, practical, view of it, and present that view to others.

#### Managing complexity. A systems approach (T306)

This 60 point third level course, first presented in 2000, applies recent and innovative developments in systems thinking to areas such as information systems, organizational change and learning, sustainable development and the environment and professional practice. The course develops skills to think differently and creatively about issues of perceived complexity, and enables students to appreciate and manage these issues in ways that lead to improvement. The content of the course is practical, chosen to enable students to use an action-learning cycle to intervene usefully in the world. The structure is holistic, exemplifying the same action-learning cycle:

Finding out what's going on

Thinking about what to do about it

Doing what you've thought about

Reflecting on the outcomes

The course draws on and extends a range of approaches to complexity management that have been developed by internationally recognized systems practitioners. They include the soft systems method, the viable systems model and the hard systems method. The introductory Block 1 introduces a case study that exemplifies organizational failure. Students are required to analyse it, drawing on their own experience and a range of systemic diagramming tools. These begin to equip students with some of the preliminary skills of formulating a system of interest and becoming a reflective systems practitioner (a perspective influenced by second-order cybernetic understandings). Block 2 shows how to create and review information systems in order to improve their relevance. Block 3 extends the systems-development methods of Block 2 to include the viable systems approach. Block 4 examines

practical ways of managing sustainable development by taking a learning system approach and adapting mode 2 SSM for use in multiple stakeholder settings. Finally, Block 5 shows what can be gained by making the effort to reflect on the systemic outcomes of one's actions.

#### Experiencing Systems (TXR248)

This is a 10 point for credit course based on our long-running summer school which until 2000 had been an integrated component of our courses. The residential component is the central element of the course. Before attending the school students are required to work through two of the three Systems Packs (T551 and T552 - see above). At the school students are taught the general structure of a systemic analysis, and are offered a range of scenarios within which they can experience the practical problems and benefits of adopting an holistic approach to the analysis of complex problems. After the school, students complete an assignment that tests their understanding of the methods and gives them an opportunity to reflect on what they have learnt. Paton (2000) outlines the course in more detail. We envisage this course being adapted to a range of contexts in the future including consultancy situations.

#### Environmental Decision Making PG programme

This programme has been established to meet the challenges of decision making in environmental and sustainable development contexts. The programme aims to meet the needs of specialists, managers and the public for postgraduate-level environmental education that can address the complexities of environmental issues. Everyday concerns of environmental protection, natural resource management and waste disposal, and rapidly changing environmental legislation and policy are considered in global and local contexts. Courses teach the skills individuals need to unpack the issues and participate creatively in the process of making environmental decisions - in all sectors of society. Students are equipped to use systems or holistic tools and techniques to deal with environmental issues relevant to their own lives and careers. The emphasis is on interdisciplinary interaction.

Students without a prior degree enter the programme by completing an Advanced Diploma in EDM; graduates initially complete 120 points of study including two core modules to gain a Postgraduate Diploma in EDM. To gain a MSc a 60 point Dissertation is then completed.

#### **The Future..??**

As with many people in early 21<sup>st</sup> century organisations we experience considerable stress in the workplace. In part this comes from a period of intense review and subsequent commitment to innovation. However there are longstanding issues, both local and institutional, which raise questions about the sustainability of our working, and thus family lives. For this reason we are actively embarking of an inquiry to examine how we might work more sustainably and ethically (by acting to increase choices for ourselves and our students).

Through such initiatives as the Open Systems group we are also attempting to enhance our own systems practice and to strive to narrow the gap between our espoused theory and our theories in use.

The dynamics of higher education and the increasing prospects of its globalisation mean that all academic groups have to scan the environment with a view to identifying actions that maintain the quality of their 'system-environment relationship'. In the future we will have to make trade-offs between innovations and the health of our working community. Potential innovations now being explored include a MSc in Systems Practice, a MSc in Information Systems (or some new variation of this). As well we have a desire to engage with others in building communities of:

- systems practice
- learning-resource developers for capacity building in systems practice (e.g. by following an open source model of innovation - see Naughton 1999 for a description).

#### **CONCLUDING COMMENTS - SOME 'BIG' QUESTIONS AROUND WHICH AN INTERNATIONAL CONSORTIUM IN SYSTEMS PRACTICE MIGHT ORGANISE**

As outlined by Maiteny and Ison (2000) the institutionalisation of systems thinking and practice within the academy is perhaps now more precarious than at any other time in the last fifty years. It is ironic that this should occur when the interest in, and seeming need for, systems practice in the general community has heightened. It would thus seem that there is a

need to explore new institutional forms for capacity building for systems practice. Perhaps the internet will facilitate the emergence of new communities of practice and thus new, co-operative, institutional forms. Should such consortia emerge I would suggest that there are at least five big questions that need to be brought into the conversation:

1. What constrains or enhances the translation of systems thinking into systems practice and new modes of systems thinking?
2. To what extent does the reification of current 'first-order' conceptions of knowledge, information and 'effective communication' constrain organizational change and the evolution of new communities of practice (for further explication of these ideas see Ison and Russell 2000)?
3. Is it possible to manage for 'self-organization' and emergence and if so how? (And what would 'to manage' mean in this context?)
4. What constitutes an effective pedagogy for building capacity in systems thinking and practice?
5. What constitutes ethical systems practice particularly in relation to the issues of global sustainable development and the threat of enclosure of the 'knowledge/information commons'?

In particular, questions relating to the design of contexts for systems thinking to develop and emerge into systems practice have for too long been ignored within the systems community. It is my aspiration that the Open University will play an active part in addressing these questions in co-operation with others and that together increased capacities to act systemically can be developed.

## ACKNOWLEDGEMENTS

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