



*Edited by*  
Gary Bell · Rosane Pagano  
Jon Warwick · Carlos Sato

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# Problem Structuring Approaches for the Management of Projects

## Demonstrating Successful Practice

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*Editors*

Gary Bell  
University of Sussex Business School  
University of Sussex  
Brighton, UK

Rosane Pagano  
Faculty of Business and Law  
Manchester Metropolitan University  
Manchester, UK

Jon Warwick  
Faculty of Business  
London South Bank University  
London, UK

Carlos Sato  
University of Sussex Business School  
University of Sussex  
Brighton, UK

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# Notes on Contributors

**Gary Bell** is a teaching fellow at the University of Sussex Business School. He has taught various modules such as fundamentals of PRINCE2 project management, fundamentals of Agile project management, the business case, and research methodology. Bell is interested in the connectivity of Problem Structuring Methods and Value Creation with the Management of Projects paradigm.

**Garry Blair** is a principal lecturer in Project Management at Manchester Metropolitan University. He is a Foundation Year Programme Leader and Supervisor for Masters and PhD students. He worked in the information technology (IT) industry for over 20 years. As the Systems Manager of the Greater Manchester Pension Fund, his work comprised the maintenance and development of computerized systems, and involved management, project management, and systems and programming tasks. Blair's qualifications include Doctor of Philosophy; Master of Arts (Management); Diploma in Management Studies; Bachelor of Arts (Honours) in Economics; Postgraduate Certificate in Academic Practice. He is a member of the British Computer Society, a member of the Association of Accounting Technicians, and a Fellow of the Higher Education Academy.

**Andrew Carlin** is a research consultant in the higher education sector, with a background in information science and in sociology. He is interested in ethnomethodological studies of work, which informs his approach to credibility analysis, evaluation, information industries, and security studies. His recent research has examined auspices of foundationalism in contemporary urban and

visual analyses. He is studying potentials of retrievable data-sets at the University of Macau.

**María Castellini** received a degree in Industrial Engineering from Universidad de Buenos Aires, Argentina (UBA), an MSc degree in Economy from Universities of Pisa (Italy) and Nacional de Salta (UNSa), Argentina. She is a doctoral student in Engineering at UBA and a Full Professor of Operations Research (OR) at Universidad de Belgrano (UB). Maria was Director of the Industrial Engineering (IE) Carrer at Universidad Nacional de Salta and Full Professor at that University up to 2015. She leads a research and development (R&D) group in the fields of Optimization and Management at UB, in the areas of Decision Models and Quality Management, oriented to production and services in small enterprises, including mathematical models (hard operation research), problem structuring methods (soft operation research), and quality management.

**Josie Coburn** is a research assistant at SPRU (Science Policy Research Unit) at the University of Sussex. Coburn's research interests include multi-criteria mapping; science and technology policy appraisal and foresight; antimicrobial resistance and diagnostics; energy policy for sustainability; artificial intelligence and evolutionary systems; information systems; and the management of science and technology-based risk, uncertainty, and ignorance. Coburn teaches information systems and multi-criteria mapping and prior to joining SPRU, she was an analyst programmer and systems analyst.

**Diane Hart** has been a senior lecturer in Information Systems Strategy at Manchester Metropolitan University since 2009. Her prior experiences include heading the examination and records function at a UK university and evaluating teaching quality enhancement projects in higher education, with particular emphasis on technology enhanced learning. Her research interest is in the application of systems thinking in evaluation and action research, particularly in the context of higher education quality enhancement activity and the evaluation of technology-supported learning, organizational learning, and knowledge management. Her current research focus is on evaluating dashboards supporting quality enhancement processes in higher education.

**Stephen Little** is an External Supervisor at the University of Bolton, having retired from the Open University Business School in 2013 where he was Head of the Centre for Innovation Knowledge and Enterprise and Co-Director, Centre for Innovation, Knowledge and Development. He has held appointments at Griffith University Queensland, the University of Wollongong NSW,

and Manchester Metropolitan University, UK. Visiting appointments included the Australian National University and Erasmus University, Netherlands. He is also Fellow of the Regional Studies Association and his research interests include the global migration of skilled labor, the contribution of large science projects to innovation in the wider economy, and the role of place-branding and heritage in regional development.

**Sheena Murdoch** is a senior lecturer in Organisational Behaviour & Human Resource Management (HRM) at London South Bank University. Her background is in the sociology of work and organizations and she specializes in qualitative research methods, project evaluation, organizational culture, and the management of change. She is interested in symbolic interactionist and ethnomethodological studies of work and organizations which inform her approach to studying the production and maintenance of organizational cultures.

**Rosane Pagano** is a principal lecturer in the Faculty of Business and Law at Manchester Metropolitan University. She has many years of experience in teaching project management, modelling and simulation, and operations management. Her research interests are in higher education management, systems thinking, and sustainability in projects. She worked for over a decade in the IT industry as information systems developer.

**Alberto Paucar-Caceres** is Professor of Management Systems at Manchester Metropolitan University (MMU). He has more than 200 publications to his name. His work has been published in a number of international journals including the *Journal of Operational Research*, *OMEGA*, *Systems Research and Behavioural Research*, and *Systemic Practice and Action Research*. Before coming to England, Paucar-Caceres earned a BSc (Hons) in Industrial Engineering and worked as a Senior Operational Research Analyst for Petroperu—the Peruvian state oil enterprise. He holds an MBA from Monterrey Institute of Technology and Higher Education (ITESM), Mexico, an MA from Lancaster University, an MPhil from Warwick University, and a PhD from MMU.

**Shah Saadi** is a career civil servant of the government of Bangladesh for over 12 years. He did an MA in English Literature from the University of Dhaka, Bangladesh in 2001. Also, Saadi has completed an MSc in Project Management from the University of Sussex, UK in 2017. He has extensive experience in project management in the public arena both at policy and operational levels. He is serving as a Deputy Secretary of the Bangladesh Government and is tasked with guiding and monitoring development projects for local government bodies. As

a project management practitioner, Saadi is keenly interested in making change happen through innovations and project undertakings especially in public organizations.

**Lee Sarnoe** is an Experienced Procurement Specialist with a demonstrated history of working in the research industry. He manages and motivates a team of operational buyers to ensure that the 'procure to pay' process operates effectively and that standards are maintained in line with published Service Level Agreement /Operational Level Agreement. Sarnoe holds an MSc Project Management and a BA (HON) focused in Business Administration and Management.

**Carlos Sato** is lecturer in Management at the University of Sussex Business School—Science Policy Research Unit (SPRU). He holds a PhD in Technology and Innovation Management from the University of Sussex/SPRU. His research and teaching interests include project, innovation, and change management. He is particularly interested in project business and in the management of large-scale projects (interfacing business strategy and government policy). Before joining academia full-time, he worked in the industry for about 12 years after earning a degree in Computer Engineering. He worked as an R&D and Systems Engineer as well as Head of Department and Project Manager in the telecommunications and energy sectors.

**Andy Stirling** Based at the Science Policy Research Unit at Sussex University, Andy Stirling's interdisciplinary work addresses many issues in policy and politics around science and technology. Co-directing among other projects the ESRC STEPS (Economic and Social Research Council; Social Technological and Environmental Pathways to Sustainability) Centre, he is especially concerned with exploring global pathways to sustainability. A Fellow of the UK Academy of Social Science, he has worked with many industry organizations and served on the board of Greenpeace as well as multiple science advisory bodies for the EU, UK, and other governments and agencies.

**Paul Summers** is senior lecturer in Project and Operations Management at the University of Winchester and teaches operations management, project management, and strategy at a number of southern English universities. Summers has worked for more than 40 years in a range of different organizations across the private and public sectors. This experience is in the fields of projects, IT, and business improvement. Summers' research interests are in the areas of systems thinking, projects, learning, and improvement. In 2014, he co-chaired the UKSS (United Kingdom Systems Society) 18th International conference at the

University of Hull. He has been awarded APM, PMQ, PRINCE2 practitioner, and Microsoft Certified Professional qualifications.

**Jon Warwick** is Professor of Educational Development in the Mathematical Sciences in the School of Business at London South Bank University. He has many years of experience in teaching operational research and mathematical modeling and has research interests in business decision support and systems thinking as well as higher education management and planning.

**Christine Welch** is a visiting fellow in Portsmouth Business School, following more than 30 years' service in further and higher education. She holds a doctorate in Systems Analysis and has research interests in Systems Theory/Practice, Information Systems, and Organizational Learning, in which she has published many conference papers, articles, and book chapters. She is a former director and president of the UK Systems Society. Welch serves on the Editorial Boards of several journals and has chaired a number of conferences and major conference tracks. She is also a co-convenor of a community of practice of process improvement professionals in the South of England.

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# Introduction

The focus of this book lies at the confluence of two streams of developing business practice. The first is the use of Problem Structuring Approaches (PSAs), which are finding applications within a wide range of business management activities, and the second is the evolving nature of project management and of the projects themselves.

PSAs have come to be recognized as tools and techniques which enable learning about, and structuring of, complex business and management problems. Nowadays, decision-makers within organizations are often working within environments characterized as information-rich and highly complex, where change happens rapidly sometimes invoking instability and uncertainty. The most challenging aspect of any manager's craft is in the framing and definition of the critical issues that constitute the decision problem and in understanding the systematic relationships between these issues. PSAs are modeling approaches that "foster dialogue, reflection and learning about the critical issues, in order to reach a shared understanding and joint agreements regarding these key issues" (Shaw et al., 2006, p. 757). Thus in a world of increasing complexity, PSAs can offer a way of exploring the issues, from multiple stakeholder perspectives, before crucial decisions are made. There are many examples in the literature of the use of PSAs in business management but for readers new to such methods an excellent and accessible account is given by Rosenhead (2001).

Turning now to the evolving nature of projects and project management, there has been a move in recent years towards characterizing some business activities as projects and to the use of projects as change agents within organizations. Managers within business who are engaged with change management activities are usually undertaking projects—although until recently they were not necessarily recognized as such. The undertaking of such projects requires a reappraisal of the extent to which projects, at every stage from their inception to delivery, are woven into the fabric of the organization's business processes and its strategic plans. In other words, conceptualizing project management is not just a matter of ensuring that we are “doing the project right”, it is a matter of ensuring that we are “doing the right project” as well. Furthermore, the notion of project success needs to be revised, so that we might stipulate that a successful project will:

- (a) Certainly deliver on time and within budget;
- (b) Meet project goals, with deliverables completed to specification and quality requirements;
- (c) Have outcomes that embed successfully within the organization and are resourced and maintainable;
- (d) Satisfy the requirements of all stakeholders;
- (e) Add value to the organization in a variety of ways which may include contribution to the bottom line.

Increasing the likelihood of project success means that we need to be clear about addressing items (c)–(e) above and here there are significant advantages to be gained from the use of PSAs. We believe that the discipline of project management should develop towards an equal appreciation of the “traditional” well-established tools for project management and the developing range of PSAs which can help deal with the complexity of the human activities taking place within the organization in which the project is operating.

The purpose of this book is to illustrate the benefits to be gained in project management from the use of PSAs and hopefully to inspire those working in project teams to consider adopting these methods. The chapters in this book each illustrate the application of a PSA within the project

management domain. Taken together they emphasize the value that can be added to project management practice through the use of PSAs and, in particular, the breadth of understanding that can be achieved at all stages of the project lifecycle through the judicious application of PSAs.

Two common themes running through the chapters are of dealing with the complexity of the environment within which many projects are located, and of understanding the views and requirements of project stakeholders. Both of these are key contributors to project success. In addition to this, there are examples of the use of PSAs in project evaluation; the importance of both project task and institutional orientations (considering culture, value, and interests) in project success; developing an understanding of organizational change and change processes that may result from a project; and managing the alignment of project objectives and outcomes.

Contributors to this book all illustrate the benefits to be gained by the use of PSAs and each chapter blends both theory and practice within project management. We are very grateful to all the authors for sharing their work and hope that this book will stimulate readers into exploring PSAs and how they can be used to enhance the practice of project management.

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# 1

## A Systemic 'Theories of Change' Approach for Projects and Change Initiatives in the Context of Quality Enhancement Activity in Higher Education

Diane Hart

### Introduction

Theories of Change (ToC) is an evaluation approach emerging in the context of community change initiatives in the USA (Connell and Kubisch 1998). It has since been used more widely in other countries and sectors, for example health (Sullivan et al. 2002; Barnes et al. 2003; Mackenzie and Blamey 2005; Sullivan and Stewart 2006; Breuer et al. 2016), education and higher education (Hart et al. 2009a, b; Levy 2012; Richards et al. 2016), community development (Archibald et al. 2016), crime (Hopkins and Wickson 2013), and agriculture (Mayne and Johnson 2015; Thornton et al. 2017). Although ToC has evolved in the discipline of evaluation theory and practice, it is not restricted to this

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D. Hart (✉)

Faculty of Business and Law, Manchester Metropolitan University,  
Manchester, UK

e-mail: [d.hart@mmu.ac.uk](mailto:d.hart@mmu.ac.uk)

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purpose. The approach involves facilitated development of models that can form the basis for planning implementation *and* evaluation activity, and reflecting on the results of evaluation, to inform decisions about further improvement. Those familiar with soft operational research (OR) and problem structuring methods will recognise elements of the approach. However, it is anticipated that it will be new to practitioners more familiar with project management methodologies.

The examples used in this chapter to illustrate the application of ToC are from educational development activity in the context of a large UK university. The term *educational development* is used to mean “*systematic and scholarly support for improving both educational process and practices and capabilities of educators*” (Stefani 2003, p. 10). UK universities are expected to undertake a process of systematic continuous improvement of their educational provision (Higher Education and Research Act 2017) guided by a quality code (Quality Assurance Agency 2017). However, there continues to be debate about methods and measures to inform improvement efforts (Gibbs 2010). There has been much criticism of these efforts focusing on a narrow range of sector-wide quality assurance measures (Harvey and Williams 2010a, b).

The approach illustrated here is intended to help practitioners understand how their change strategies are working in the specific contexts of application. However, it is adapted with some systems thinking to improve connection with the wider environment and higher-level strategies. Systems thinking involves exploring a situation of interest ‘as if it were’ a complex adaptive system. The theoretical basis for this is explored in the next section. This is followed by a description of ToC applications in educational development projects, and finally a personal critical reflection on the learning from these applications.

## Theoretical Background

The theoretical model of organisational learning typically relied on to underpin quality enhancement processes in higher education is that of the reflective practitioner (Schön 1983; Kolb 1984). From this perspective, improvement action is assumed to be informed by practitioners

actively engaged in attempting to understand how and why their implemented teaching strategies work (or not) in specific contexts of implementation. It is argued that through their everyday activity practitioners develop mental models about the complex dynamics of the situations in which they practise. These models have been termed 'theories of change' (or variations on this), and in reflective practice these theories are consciously and continuously tested and revised through learning cycles of planning, action, evaluation, and reflection. More recently it has been argued that there is a need to develop improved and explicit ToC (Trowler et al. 2014) with joined up thinking about the connection between change at different levels of organisation (Trowler et al. 2005, 2014). This organisation-wide learning and change requires this process to be undertaken collectively (Biggs 2001, Vince 2002) and through rigorous action research (Argyris and Schön 1996; Kember 2002; Marks-Maran 2015). However, a more formal and collective approach to educational action research has been acknowledged to present significant challenges in terms of the complexity of the social and political processes (Trowler et al. 2005). For example in motivating and engaging participants (Greenbank 2007), establishing shared goals and vocabulary for collaborative work (Jacobs 2016), and producing outputs that are more widely transferable and usable (Saunders 2012).

Programme evaluation aims to improve ToC about how intervention programmes work in practice in specific contexts and is used to inform decisions and actions to improve these situations (Funnell and Rogers 2011; Patton 2012). Typically this type of approach involves some sort of 'modelling' or 'problem structuring' of the situation of interest, which helps in framing the planning of data generation, analysis, and interpretation. The approach is not prescribed, and there is much debate about how decisions about the evaluation design affect what is learnt and how evaluation is used to influence improvement. In addition to decisions about, for example methods, data, and participants, there are core decisions about whose theories are tested, and whose questions are answered. These choices can reflect fundamentally different assumptions about the complexity of improving organised activity and learning about how this can be achieved. For example the reflective practitioner or action research mode of inquiry described earlier is often considered to lack rigour

because the investigator is too closely involved in the situation, and has a vested interest in the findings and outcomes, which may bias their interpretation of them. The use of external ‘experts’ is often used to introduce this rigour. In the OR literature, Franco and Montibeller (2010) identify this *expert* mode as the most common and traditional approach to OR intervention. In this mode, the assumption is that an (external) ‘expert’ can straightforwardly define ‘success’ and use objective and scientific methods of inquiry to measure success, discover how activity and other factors are influencing success, and therefore recommend solutions. However, the risk associated with this mode is that the prioritisation of the expert’s definition and criteria of success will lead to findings not thought to be relevant or useful by other stakeholders, and will not be used (Patton 1986). This approach therefore does not appear compatible with enhancement processes, where improvement needs to be understood from the perspective of a wide range of stakeholders and is dependent on the actions of many actors. From a utilisation-focused perspective (Patton 1986), the inquiry should help decision makers and others that have the ability to influence change in a situation to arrive at their own judgements about, and commitment to, the improvement needed. This suggests a more facilitated and developmental approach is needed. In the *facilitated* mode of OR intervention (Franco and Montibeller 2010), consultants facilitate a participative process of problem structuring with stakeholders to guide their intervention and inquiry. It is accepted that different stakeholders and actors involved will have different notions of success and how to achieve it, based on their previous experiences, learning, values, motivations, and the information to which they have access. Cause-effect relationships in these situations are therefore understood more as producer-product relationships that are socially constructed, that is through people’s actions based on their own mental models of their effects in the complex contexts in which they act. Models are probabilistic rather than predictive, and the more complex the situation, the more uncertain the outcomes. In developmental approaches (Fetterman 1994; Patton 1994), the facilitator also helps in capacity building for organisational learning within the intervention context.

In the ToC approach (Connell and Kubisch 1998), the starting point is that the facilitator engages stakeholders in articulating a ‘plausible,

doable and testable' model representing the desired change. There is no prescribed format for this model, other than it needs to capture sufficient relevant detail to communicate the key dimensions of the change process. What counts as sufficient and relevant is something for the participants to critically reflect on in the specific inquiry context. It can be used in the planning stages, to develop clarity and refinement of plans, and communicate about these prior to and during implementation. The premise is that stakeholders will have a better understanding of, and commitment to, the change and their role in it, they are more likely to work collaboratively, and more likely to consider an intervention successful if it goes according to plan to achieve the desired changes. The approach also fits with the concept of developmental evaluation, with the potential to build capacity for organisational learning.

The benefits experienced by users of ToC have been variously reported. At the project level it has been found a useful framework for developing and documenting the evaluation strategy and different participants' perspectives, and to guide inquiry to focus on relevant questions, data collection and analysis, and to make sense of data collected (Mason and Barnes 2007). A review of ToC in the charity sector (James 2011) found that there were different approaches to implementing ToC in practice, which broadly fell into two categories. In the first category the focus was more on change that the project or programme brings. The second category involved approaches that were more exploratory in attempting to understand the process of change for a particular situation of interest, as well as the role of the programme or project in enabling this. In particular, the following were found helpful:

- consideration of the project or programme's connection with the wider organisation/context of change.
- use of wider relevant learning from outside the project/programme (research and practice).
- involvement of diverse stakeholders taking ownership of the process.
- consideration of how key actors are influencing processes.
- simple models prioritising what is relevant.
- ongoing reflection and learning, rather than one-off workshops.

This may require facilitation by those with knowledge and skills associated more with those required for change management. This may be particularly challenging for project managers, as “*except in projects where there is very little behavioral change required, the Project/Program Manager will not have the time or bandwidth to carry out all the change management activities required to ensure a successful outcome*” (Crawford and Namheis, p. 409). This chapter therefore attempts to provide some insight into the practical implementation of the approach.

The challenges of ToC in practice were found to be (i) developing a process of ongoing reflection, and (ii) getting an appropriate balance in the model so that it was neither overly simple nor complex from the perspective of stakeholders (James 2011). Facilitators also found it helpful to avoid jargon, particularly “*the term ‘theory of change’ – especially in the early stages of discussion – framing the process as one of reflection and learning*” (James 2011, p. 30). Other issues are the importance of flexibility in adapting its use to be appropriate to the scale and complexity of change (Davies 2004), and usability so it is not overly burdensome for stakeholders (Thornton et al. 2017). Associated project management processes also need to be more flexible (Archibald et al. 2016). The need for improving the ability to connect change between different levels has been highlighted (Archibald et al. 2016). As with all participative approaches, there needs to be trust between stakeholders (Archibald et al. 2016). It has been suggested that in most complex situations the aspiration of a fully participative process cannot be realised as there will always be a power dynamic influencing this. Instead it may be better to recognise different ‘types’ of ownership and participation in the methodology that may be useful for different purposes and different situations (Sullivan and Stewart 2006).

There is criticism in the literature that participative and facilitated approaches more generally are problematic with respect to the assumption that participants can be straightforwardly identified and their perspectives included (Ulrich 1987; Pawson and Tilley 1997; Mason and Barnes 2007; Midgley 2000). Someone’s perspective will always be privileged in decisions about the process of stakeholder identification, and when perspective-seeking should cease. In order for action to be taken there is an “*inevitability of argument break-off*” (Ulrich 1987, p. 277).

Modelling may also be problematic in new, uncertain, and complex situations where participants have no experience on which to base their judgements (Patton 2012), and stakeholders may not always be willing or able to participate (Ulrich 1987).

## 'Systemic' Theories of Change

In the academic literature there is some discussion about what distinguishes 'project' and 'programme' (Crawford and Nahmias 2010; Gareis 2010), with case studies finding that practitioners often use the terms interchangeably (Crawford and Nahmias 2010). In this chapter, use of the terms fits with the definition of programme as "*a group of related projects and change management activities that together achieve beneficial change for an organisation*" (APM 2017), and project as "*a unique, transient endeavour undertaken to achieve planned objectives*" (APM 2017). Change is something that is managed by a project or programme, it is not the project or programme per se (Gareis 2010). In order to manage change, it is necessary to conceptually set a boundary between a 'change object' and its context, and to consider the relevant internal and external elements and their relationships and dimensions. This "*creates the basis for designing the change and planning the required change management interventions*" (Gareis 2010, p. 320).

This process of making **boundary judgements** is one that can be recognised in systemic inquiry. Using a lens of complex adaptive system to explore a situation of interest, it can be considered as having various components interacting together to co-produce 'something' or effect some change that they could not achieve individually. Systems also have a relationship with a wider environment, which has an influence on the activity undertaken, and the activity and transformation effected in turn influences the conditions in the environment. In human activity, the interacting components are people whose behaviour is influenced by their subjective motivations and interpretations, in turn influenced by their history and context. Bringing together multiple stakeholders to undertake some 'organised' activity is assumed to be inherently complex because this subjectivity in **perspective** influences each actor's contribution to the

activity. This makes it highly subject to contextual influences and means that outcomes are uncertain. In systemic inquiry, subjective value judgements are made about the boundaries, scoping who and what is relevant to include in a situation of interest, and how boundaries are nested and interact. The inquiry attempts to interpret how these different perspectives on boundaries influence the dynamics of a situation through a process of boundary critique.

Churchman (1971) suggested that for any organised human activity, the following concepts could be used to guide this process of boundary critique. The aim is to provide insight that can inform decisions about change.

***Purpose*** That is the change that the organised activity affects. In learning and teaching activity this might be some improvement in students' knowledge or skills, or ability to contribute to society in some way. The intended change might be explicitly stated (e.g. as intended learning outcomes in a module handbook). Any stakeholder (e.g. teachers, learners, parents, employers...) may have their own interpretations of this purpose, and participants will have their own motivations and expectations of what they want to get out of being involved. This may or may not be aligned with the stated purpose, but it will affect how they behave in the activity, or how they judge it to be successful.

***Measures of Performance*** These reflect assumptions about progress or success in relation to the stated purpose. It is participants' interpretation of this that often guides their behaviour. One of the challenges faced in relation to learning and teaching enhancement is in actually defining what is meant by 'enhancement' (Kirkwood and Price 2014; Gunn and Fisk 2013) and the criteria used to measure this to be relevant to different stakeholders and different contexts (Gibbs 2010; Barefoot et al. 2016).

***Client*** The purpose and performance is in relation to serving their interests. Theory about good teaching practice in organised learning activity is that it should be student-centred (Biggs and Tang 2011). However, this may not be the perception of all stakeholders.

**Component Activities** These work together, directed towards achieving the purpose. These are undertaken by actors each with their own perceptions and motivations with respect to their role and performance in this role.

**Environment** This is the context of the organised activity. This influences interpretations of 'relevance' of purpose in terms of the relationship with the wider environment, and therefore the sustainability of the activity. As well as being affected by contextual conditions, the activity also contributes to creating these conditions. How this relationship is working in practice is a value judgement. There is a common assumption in the UK that higher education seeks to ensure a future workforce with appropriate knowledge and skills to meet the needs of UK employers so that the UK can compete in a global economy (UKCES 2014; DBIS 2016). The extent to which this is the case, or indeed relevant, for any organised learning activity is a value judgement from each stakeholder's perspective.

**Decision Maker** This role organises activity and allocates resources towards achieving the purpose. It communicates purpose and performance measures to participants. Roles and responsibilities may not be interpreted in the same way by all stakeholders. Similarly communications may not be interpreted or responded to in the way intended. In learning and teaching activity, students may come into contact with e.g. module leaders, contributing tutors, heads of department, administrators, other students. Communication about the purpose, organisation, assessment etc, may not be consistent from different sources. Students may also have different frames of reference influencing their interpretations, based on subjects previously studied, institutions previously attended, their home department and programme.

**Designer** The designer's role is to advise the decision maker on the relevancy of the purpose of the organised activity to being sustainable in its environment, and on the different ways activity *could be* organised and its performance evaluated, and the potential implications of these decisions. This role supports the decision maker in making informed decisions

about implementation and change. It therefore undertakes intelligence gathering and analysis. In practice the role of designer and decision maker can be undertaken by the same individual(s). In learning and teaching, an example might be the module leader. The identification of these as two separate *roles* rather than individuals also focuses inquiry into how this relationship is working in practice. In the example of learning and teaching enhancement projects, this raises questions about how the initial project designs are informed, how the implementation compares to the initial design, how this is evaluated and how useful the project leader finds this evaluation in informing their improvement plans.

***Stability*** There is an assumption that the activity is stable enough for the designer to make sense of data and information about its state, and to experientially learn over time about the likely connections between activity and outcomes in particular contexts, thus reducing the uncertainty about the implications of future action. Changes in the wider environment can be destabilising. Saunders et al. (2005) argued that one of the benefits of modelling and evaluation is their use as ‘bridging tools’ during periods of instability. They can provide stakeholders with a common frame of reference, bringing some ‘provisional stability’ from which to make sense of experience, data and information, in order to plan change.

During the last 20 years there has been growing interest in how the fields of systems and evaluation are connected (Imam et al. 2007; Hummelbrunner 2011), and how systems thinking can inform evaluation practice (Gates 2017). It has been argued that systems thinking could help with some of the challenges identified with evaluating complex interventions, providing concepts to guide inquiry into how specific situations are constructed and understood by multiple stakeholders, and how multiple ‘levels’ of change are connected (Barnes et al. 2003; Virtanen and Uusikylä 2004), and to help critically reflect on the relationship between the evaluation and the intervention being evaluated (Midgely 2000). There has also been some exploration of the application of systems thinking to higher education quality processes, in particular concepts associated with complex adaptive systems (Davis and Sumara 2005; Radford 2006, 2008; Houston 2008a, b). However, there

are limited case studies that actually illustrate and critically reflect applications in higher education (Hart and Paucar-Caceres 2017).

It is outside the scope of this chapter to provide a more in-depth explanation of systems theory and critique its various interpretations in methodology and approaches. For this, interested readers can investigate some of the original source material (e.g. Ackoff 1981; Beer 1985; Churchman 1971; Checkland 1981; Jackson 2003; Midgley 2000). The following section illustrates application of systems thinking to ToC in educational development projects in a UK university, and provides a critical reflection on these cases.

## Application to Case Studies

### Organisational Context

The case studies discussed in this chapter were all projects incentivised by institutional resource specifically earmarked for innovative learning and teaching enhancement projects. Individuals or teams of academic staff would bid for additional resources to help develop, implement, and evaluate new ideas. Criteria for successful bids were based on the potential for projects to contribute to strategic priorities for enhancement and learning about good practice identified by government and the institution. Much of the resource provided was in the form of skills, expertise, and labour provided by specialist professional staff employed by the university, for example educational developers and advisors.

The ToC approach was introduced to address a number of problems perceived by university management to be linked to organisational learning about enhancement activity (see Hart et al. 2009a for further detail). The intention was to improve this activity by engaging staff in a more systematic and institutional approach to organisational learning about how innovation and change in teaching practice was influencing enhancement. These problems, and how to address them, continue to be discussed within the wider higher education sector (e.g. Biggs 2001; Trowler et al. 2005, 2014; Houston 2008a; Gibbs 2010; Bamber and Anderson 2012).