Institution: University of Hull

Unit of Assessment: C19: Business and Management Studies

Title of case study: Managing complexity in practice: A viable system model (VSM) intervention in an Irish eco-community

1. Summary of the impact (indicative maximum 100 words)

Using her self-transformation methodology [5], Dr Angela Espinosa worked with an Irish eco-community, which had previously tried to self-organise with little success, to help community members identify and develop new structures, systems and mechanisms that improved performance and contributed to dealing with key viability threats. They acquired skills in community self-transformation, allowing them to: a) improve the community organisation; b) enhance connectivity and communications; c) complete the expansion of the ecovillage, d) sell and build more eco-houses, overcoming financial threats; and e) design and develop several new green businesses.

2. Underpinning research (indicative maximum 500 words)

The research underlying this eco-community case study was from an EPSRC project funded within the UK Emergence and Complexity Network, entitled 'Defying the rules: how self-regulation works in social systems' (2007-2011). It included a highly interdisciplinary research team of 5 senior researchers and 3 PhD students from mathematics, computing and business schools in 4 partner universities (Imperial College; University of the West of England; University of Wales - Newport; and University of Hull). It developed tools for measuring and observing different aspects of self-organisation and division of labour within different experimental domains (biological, social and artificial).

A Espinosa (Senior Lecturer, 2002 to present) and PP Cardoso (PhD student, 2007-2010) from Hull University Business School led the eco-community action research project. Dr J Walker – an invited Viable System Model (VSM) practitioner - shared with Espinosa the facilitation of some VSM workshops and the production of reports. They used an innovative 'soft OR' multi-methodological approach, inspired by the VSM and modern theories of complexity [1,2], to facilitate a process of self-organisation in the eco-community [5].

The underpinning research was undertaken within the context of the Centre of Systems Studies (CSS) at Hull University Business School. The core aim of CSS is to develop methodologies and tools to systemically improve and evaluate organisational and community performance. During the period 2008-2010, Espinosa and Walker facilitated learning in the eco-community about their organisation, and supported development of skills to achieve their purposes, which were to build the eco-village and develop local businesses to make their community sustainable. 25 of the 100 community members, including representatives from the Board of Directors and the Coordinators Team, were actively involved in the project, through periodic workshops with the researchers and an in-house 3 month visit from Cardoso.

During the first year a toolkit was produced. Development of this was founded on further elaboration of the original VSM theory to address issues of sustainability and self-regulation in communities, business and societies [1, 2]. The researchers also produced a methodology to facilitate organisational transformations, based on providing community members with VSM-inspired 'meta-questions' focusing on issues of sustainability and governance [2, 4]. A new way of evaluating organisational transformations was also developed: i.e. using a novel method to assess network dynamics in processes of self-organisation during a VSM intervention, through narrative, longitudinal, and social network (SNA) analyses [3]. The multi-methodological approach developed through the research has provided insights into the process of self-organisation of communities, and has provided a rigorous way to assess results from a VSM-oriented change process not found in other soft OR applications [3].

3. References to the research (indicative maximum of six references)

1. Espinosa, A., Harnden, R., Walker, J. (2008). A Complexity Approach to Sustainability: Stafford Beer revisited. (Vol 187, pp. 636-651). European Journal of Operational Research. DOI: 10.1016/j.ejor.2007.03.023
2. Espinosa, A., Walker, J. (2011). 'A Complexity Approach to Sustainability: Theory and Application' Invited Research Monograph. Book Series on Complexity. Ed: Imperial College Press. DOI 10.1142/9781848165298
3. Espinosa, A, Cardoso, PP, Arcaute, E, Christensen, K. (2011). Complexity approaches to self-organisation: a case study from an Irish eco-village. Invited paper. Special Issue. Kybernetes 40(3/4); p. 536-558. DOI: 10.1108/03684921111133737
4. Espinosa, A., Walker, J. (2013). Complexity Management in Practice: A VSM Intervention in an Irish Eco-Community. European Journal of Operational Research. Volume 225(1); 118-129. DOI: 10.1016/j.ejor.2012.09.015

Notes:

- [1] and [3]; these are 3* journals on the ABS list;
- [2] the book was fully refereed;
- [4] the journal is a 2* on the ABS list, and this paper got the 'Highly Commended Paper' Award from Emerald Literati in 2002;
- The EPSRC grant (YMB002, in HUBS) was awarded to A Espinosa from February 2007 to January 2011 (approximate value GBP 180,000).

4. Details of the impact (indicative maximum 750 words)

Through the period of intervention (2008-2010), the Ecovillage's 'Process Group' (responsible for the Ecovillage's organisation) led the internal learning process between the researchers' visits, and implemented an entirely new organisational structure, using the research tools discussed earlier to facilitate its design. By the end of 2008, the role of the Board of Directors had been clarified and changed to focus on policy issues; the 22 original working groups in the eco-village were re-grouped into 7 Primary Activity Groups; and a monthly 'Coordination' meeting was created to look for synergies and resolve conflicts. By the end of 2009, adaptation systems were introduced and discussed at the Coordination meetings, and accountability mechanisms were put in place. Evidence collected in 2010 (through multiple interviews, focus groups, a longitudinal analysis based on narratives, and social network analysis) shows many significant improvements in the levels of communication and self-regulation of the community.

Some examples are (Espinosa et al 2011, pp. 16, 17):

- The use of VSM distinctions enabled the construction of a very rich narrative about the ongoing and desirable organisational transformations. The intervention succeeded in embedding core complexity management principles into people's understandings of the interactions between different roles, allowing them to design improvements to their self-organising principles and practices, such as new roles, new decision making structures and information sharing mechanisms **[A],** [Cardoso (2011), p. 255-290, Appendix 3, Espinosa & Walker, 2013], **[C].**
- Structured observations showed that the intervention helped the community members to create and share models of their organisation. This resulted in improved communications, role definitions, connectivity and performance, all of which contributed to improved viability and sustainability of the community [Espinosa & Walker (2013), pp. 126-128 and Appendix 3]**.**
- Choices made by the community members about working groups and meta-systemic management positively affected the connectivity and communications within them. For example, matching of members' expertise to the skills required for particular tasks changed from 9% to 21%; members became closer to each other (reciprocity improved from 38% to 59% during the intervention); and there were faster flows of communication taking place between roles at the end than at the beginning of the intervention **[B]** - Cardoso (2011), pp. 168-195]; [Espinosa & Walker (2013), pp. 126-128].

- The above statistical evidence coincided with the views expressed by interviewed members, who recognised that improvements in performance, task identification and connectivity were related to sharing a clear model of the organisation - resulting from the intervention of the researchers [Cardoso (2011), pp. 255-290]**, [E, F, G].**
- Once internal organisation improved, the eco-village developed successfully. In a recent visit (2013), there were over 50 houses built and more than 100 new members had come to live at the Village. Now they needed to create work opportunities in order to live sustainably. We had discussed seed ideas for new businesses during the 2009 and 2010 workshops. While in 2008 the only green business was the community development project, in 2011 there were 25 new local green business initiatives: e.g. an organic farm, a sustainability education initiative, a service company, a hostel and an eco-build company [Espinosa & Walker (2013, pp. 125]. In 2013, in addition to these 25 businesses, several more were under discussion. Some of the members who participated in the intervention have used the suggested organisational design principles for designing and running their new businesses (e.g. the Village Farm and the Educational NGO), which demonstrates the continuing impact of this research **[G].**

This approach and toolkit for supporting self-transformation in communities aiming to improve their resilience has potential for great reach, as there are multiple communities in the world also aiming to self-organise and work in a cooperative, flat organisation, better suited to adapt and improve resilience in a rapidly changing socio-ecological environment. An example of this is the Transition Network project that originated in Devon, UK, and now has hundreds of branches across the UK and in several countries around the world. They have begun to experiment using this approach in one of their regional branches (Diss Transition Town) and a local branch (Marsden and Slaithwaite Transition Town – MASTT **[H]**). In 2012-2013, a large Latin-American building corporation experienced Espinosa's methodology for improving their organisational structure, with very positive results **[I].** Furthermore, in 2012, a new project started in the UK – with the UK Permaculture Association (PMA) - and this has already produced positive improvements in the organisation **[J].** The European Association of PMA is now using this methodology, so the influence of the research continues to spread **[J]**.

5. Sources to corroborate the impact (indicative maximum of 10 references)

A. Consultancy reports provided to the community after each visit – which can corroborate impacts on organisational changes – are available on a confidential basis on request from the management at Sustainable Projects Ireland (the NGO leading the Ecovillage Project, Cloughjordan, Tipperary, Ireland) and from Espinosa.

B. Extensive details of the surveys, interviews, focus groups and social network analysis are available in **[**Cardoso, P.P. (2011). Facilitating self-organization in non-hierarchical communities: a methodology for regeneration programs. Doctoral Thesis, Hull University Business School, UK]. It also includes appendices with a sample of interviews with members of the community where they recognise that improvements in performance, task identification and connectivity are related to sharing a clear model of the organisation – resulting from the VSM-inspired research.

C. The impact of the action research has been the subject of comment on the Ecovillage's web-site (section: *Our Organisational Structure*) available at: http://thevillage.ie/joom15/index.php?option=com_content&view=article&id=73

D. Details on improvements in connectivity between members of the different teams can be seen in Espinosa et al (2011: pages 559-553).

Members of the community and different working groups at the eco-village who have provided testimonials or could be contacted to verify impacts at the level of the organisation are:

E. A community leader – testimonial on file.

F. A member of the Process Group – testimonial on file.

G. A green business leader who can provide evidence of extended impact – testimonial on file.

H. A MASTT Steering Committee Member – willing to be contacted.

I. The CEO of the UK Permaculture Association – testimonial on file.