Regional Scale Development Issues

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Abstract: Collectively, to date, we have made considerable progress in building integrated models and decision support systems of regional-scale environmental-economic systems. We have learnt discipline specific content or knowledge and skills. We have evolved appropriate processes with which to develop, test and validate this discipline specific content or knowledge and these skills. For the purpose of this paper I would like to pick on two issues that I see that we have learnt from our content or knowledge research to date and from our process and skills experience to date. First, that we usually underestimate the complexity of the systems that we study and second that learning is important, that is once we have finished a given study, if we had to do it again we would do it differently. My choice is based on my perception that in practice, in reference to the next generation of practitioners we have three, not two systems that interact. We have the regional scale environmental systems, we have regional scale economic systems and we have the next generation of practitioners' learning systems. Given the above two issues of underestimating complexity and the importance of learning, what can we learn from our progress to date that will help us determine how we should prepare the next generation of practitioners? Do we prepare the next generation of practitioners the same way, as we were prepared? Or can we do better? If so how? The aim of this paper is to seek feedback from the session participants. The paper first outlines seven perspectives or aspects to help focus participant feedback and then asks participants two specific questions.

Keywords: *Learning; Regional development; Practitioners*

1. INTRODUCTION

I would expect that most of the papers in this session would be about the science and the social science aspects of the session topic (Regional-scale Environmental-economic Systems). This paper is very related but different in that it seeks feedback from the participants on the training of the next generation of practitioners to follow-on from the current generation of practitioners.

The issue of the training of future graduates has historically nearly always been an unresolved issue between the main stakeholders (including agents, practitioners and policy advisers who are informing decision makers). Never the less the training of future graduates continually attracts a significant amount of stakeholder good will, time and resources. Thus, the opportunity for getting feedback from stakeholder participants in session B1 is too good to be missed. A survey of the main stakeholder institutions is being planned to complement the stakeholder participant feedback. The more significant aspects of current curricula are now readily available electronically. It is expected that when they are put together and shared among stakeholders that they will make a contribution towards advancing the understanding of such an important issue.

This paper first outlines a few perspectives or aspects to help focus participant feedback and then asks participants two specific questions.

The seven perspectives or aspects outlined to help focus participant feedback are:

1. The discipline content (from science and social science) perspective or aspect
2. The regional development perspective or aspect
3. The systems thinking perspective or aspect
4. The complexity perspective or aspect
5. The learning perspective or aspect
6. The practitioner perspective or aspect
7. The institutional perspective or aspect.

The two specific questions are: Given your experience and your expectations:

1. What sort of attributes would you suggest that a good beginning honours graduate should have when they start their first job?
2. What sort of attributes would you suggest that a good beginning honours graduate does NOT need to have when they start their first

job? (Largely because they will develop these attributes during their employment).

2. THE PERSPECTIVES

The above seven perspectives or aspects fall into four groups.

- The first group of one (Discipline content) is an outline of a relatively general discipline content framework (from science and social science) for the administrative delivery of content learning that students need to obtain during their study. Its main contribution to the paper is to be a starting point to think about your feedback to the two questions.
- The second group (Regional development and Systems thinking) are two of the areas of the literature that can provide part of the intellectual context through which the detailed discipline content (from science and social science) acquires meaning, grounding and everyday relevance. Their main contribution to the paper is to be a link between the discipline content and the broader understanding usually displayed by better graduates.
- The third group (Complexity and learning) are two perspectives that I suggest have come out of our learning to date. Their main contribution to the paper is to provide a reminder both of our past successes and of our still significant challenges. And thus a reality check in discussing our future graduates and your feedback to the two questions.
- The fourth group (Practitioner and institutional) are two perspectives that will help maintain the largely successful and on going discussion based on a significant amount of stakeholder good will, time and resources. These two perspectives are not covered in this paper. However, I hope that each participant will use your own experience on the matter to provide you with a wider awareness within which to think about your feedback to the two questions.

3. DISCIPLINE CONTENT

There are important differences between graduates. For example: between good honours graduates, good research only Ph D graduates and good course-work and dissertation Ph D graduates. However, for the purpose of this paper, and for simplicity let us focus on honours graduates. May I suggest that we can divide the honours graduates' discipline specific content or knowledge and skills into the following groups?

3.1. Introductory and intermediate content

This could include introductory (first year) and intermediate (second year) content. For example: Environmental systems 1A and 1B. Economic systems 1A and 1B. Triple-bottom-line systems 1A and 1B. There are excellent introductory and intermediate textbooks for both environmental systems and for economic systems. However there are few on triple-bottom-line systems.

3.2. Discipline content and applications

The challenge with discipline specific content or knowledge and skills and applications would appear to be the trade-off between training for the short-term benefits of employment in a specific discipline area and the longer-term benefits of getting an education that would allow the graduate to seek employment in a range of areas. Discipline specific content or knowledge and applications could include one or more from for example: development in small regional economies, urban and regional planning, developing countries, sensitive environment regions, water limited regions, energy limited regions, employment limited regions, globalization impacted regions, international trade impacted regions, domestic policy impacted regions, overseas policy impacted regions, and the historical and evolutionary process by which each specific discipline has arrived at its current state.

3.3. Technical skills

The challenge with technical skills would appear to be the trade-off between graduates knowing the strengths and weaknesses of a wide range of available technical skills and graduates being able to use a number of these skills very competently. Furthermore, this needs to be done within the space available within their degree program. Some are for example: GIS, differential equation mathematical modeling, experimental design, and data mining.

3.4. Explicit generic skills

Generic skills are usually difficult to define, identify and assess. For the purpose of this paper generic skills are those skills that allow graduates

to apply their discipline specific content or knowledge and skills and applications in a variety of relatively new contexts. Most universities have a set of generic skills. For example ours at James Cook University are: Critical thinking, problem solving, working with others, communication, use of IT, information literacy and management, learning, and social and cultural awareness. The challenges with explicit generic skills would appear to be two: first the trade-off between graduates knowing discipline specific content or knowledge and skills and applications and graduates being able to apply their discipline specific content or knowledge and skills and applications in a variety of relatively new contexts. Secondly, the students' ability to make explicit their generic skills so that they become portable rather than their generic skills being contextualized to their specific discipline area.

To close this section, the main contribution to the paper of this discipline content (from science and social science) section is to be a starting point to think about your feedback to the two questions.

4. REGIONAL DEVELOPMENT

Regional development has been in the literature for a long time. Since Adam Smith in the early days of industrialization in Europe theories to try to explain why some regions grow and other do not, have been put and refuted. However, to date there is still little consensus about a general theory. What has evolved are many well-documented "case studies" for a given region or country, for a given chronological time period, and for a given stage of development. These case studies have been extensively used to support recommendations for good or best practice in doing regional development.

One more focused aspect of the regional development literature is the factors that appear to matter in achieving sustainable development of small regional economies in developed countries like Australia. The two most relevant references are Coombs (2001) and Stimson, Stough and Roberts (2002). For other significant references please see the references and further reading.

Three pieces of current wisdom (about regional development in small regional economies) are (Coombs 2001, pp 346-352):

- Sustainable development in small regional economies is like a combination lock. Certain factors need to be in place before it happens.
- Regions should do what comes naturally to the region.
- There are opportunities in all regions. They have not all been picked-up through arbitrage.

The factors that appear to matter in sustainable development in small regional economies in countries like Australia can be divided into two groups: the basics and the factors that help us to catch-up to the leading regions.

4.1. The basics

The seven factors that appear to be just basic to understanding regional economic growth are: Production and efficiency, supply side factors of production (labour and capital); productivity growth, the role of export and domestic demand, critical events and triggers, the life cycles of the main products and technologies, and available natural endowments.

4.2. The catch-ups

The five factors that appear to offer the deep and fundamental understanding (upon which policy advice can be made) on how to catch-up and how to match the pace of the leading regions are:

- In a globalized world promoting regional development is increasingly a key element in promoting national development. Linkages between regions have now often taken over from the linkages between nations as the focal point for economic and community development opportunities.
- Regional development is about more than economic development. Sustainable regional development, rather than just economic development is what is needed.
- Regional development critically depends on regions themselves leading the process of developing strategies and plans for realizing the region's potential.
- There is nothing unique (that applies to all regions) about the drivers of sustainable regional development. Small regional economies (like all economies) basically grow or decline according both to the demand for and supply of the natural and human resources to which they have access and according to the investments that businesses are prepared to make (in the region).
- The institutions, policies, and social and cultural values of the community, the way in

which firms and individuals organize to work together, and how firms and individuals relate with the external environment. These factors are the fundamental drivers that form the structure or framework within which incentives are created for bad or good economic behaviour.

4.3. The next step

A few suggestions to help a region on how or where to take their next step are:

- What changes are happening? And how do you understand how they affect the competitive advantage of your regional economy? And how can your regional economy prosper from these changes?
- Regional development strategies need to remain relevant by regular review and re-engineering (every 3-5 years). Monitoring and benchmarking of appropriate indicators helps. (Stimson, Stough and Roberts 2002, p 199). What is the practice in your regional economy?
- There are no set rules for formulating successful regional development strategies. However there are emerging good or best practice. (Stimson, Stough and Roberts 2002, p 195). What is the practice in your regional economy?
- Small regional economies are emerging as the natural units of competition. Competitive advantages are now less defined by economies of scale in production than by the region's ability to match the changing and diverging consumer tastes through small production runs of specialized consumer products. (Coombs 2001, p 23). What is the practice in your regional economy?
- Small regional economies are being increasingly exposed to powerful external forces. Regions need to respond to these forces building on their competitive advantage and hoping that they are smart and nimble enough to prosper in the rapidly changing global environment. (Coombs 2001, p 23). What is the practice in your regional economy?

To close this section, the main contribution to the paper of this regional development section is to be a link between the discipline content (from science and social science) and the broader understanding usually displayed by better graduates.

5. SYSTEMS THINKING

Systems thinking, action research and experiential learning are often used to help us understand, to help us make relevant and to help us manage complex systems. We have three such systems: the regional scale environmental systems, the regional scale economic systems and the next generation of practitioners' learning systems. Thus a very short review of relevant systems literature is appropriate.

The current literature has a large wealth of material from which to draw a clear vision of what is currently possible and what is still beyond our grasp. Thus this accumulated effort and our benefit of hindsight has provided us with a wide range of methodologies from which to choose in order to approach current problems. For example Checkland and Scholes (1990), Flood (1990), Senge (1990).

For the purpose of this paper a system or systems thinking: Is a collection of parts that interact with one another to function as a whole. Is more than the sum of its parts. Is a product of the interactions between its parts. Subsumes its parts and can itself be part of a larger system (Maani and Cavana 2000 p6, Flood 1990 p217).

For our three systems we could draw specifically on the systems literature for: General concepts and practice (Maani and Cavana 2000 chapters 2, 3, 4 and 7 and Gaynor 1998 chapter 10). A conceptual framework that through collaboration the stakeholders (in the system) can develop a critical heuristic that could lead to a transformation in the way that they go about making sense of the system (Bawden and Packham 1998). Facilitation to conceptualize the learning about the system and to help stakeholders' interests to emerge rather than to be determined in advance (Callo and Packham 1999). Methodological pluralism to integrate understanding in a complex situation (Bruce-Smith 2000) and to connect the system's dynamics into the overall learning heuristic (Linard and McLucas 1999). For other significant references please see the references and further reading.

To close this section, the main contribution to the paper of this systems thinking section is to be a link between the discipline content (from science and social science) and the broader understanding usually displayed by better graduates.

6. COMPLEXITY

For the purpose of this paper, may I suggest that one of the issues that I see that we have learnt from our content or knowledge research to date and from our process and skills experience to date is that we usually underestimate the complexity of the systems that we study.

I suggest that this is relatively easy to solve for new graduates by discussing, at university, this perspective or aspect with students and by then providing real cases where, with the benefit of hindsight, this has happened in fields related to the students' interests.

To close this section, the main contribution to the paper of this complexity section is to provide a reality check in discussing our future graduates and your feedback to the two questions.

7. LEARNING

There are two aspects to learning. On the one hand there is time spent on learning content or knowledge. On the other hand there is time spent in reflection on the process of learning to learn. Most lecturers recognize the importance of learning and most students understand that they have to know content or knowledge. But in practice implementing a supportive learning environment in the lecture room, that is a learning environment in which there is a balance between time spent on learning the content or knowledge and time spent in reflection on the process of learning to learn, is difficult. One reason why this is difficult is the need for lecturers to cover content or knowledge in large classes. Another reason is that most students have limited experience in undertaking reflection. In reality the outcome is that in many lecture rooms the implementation of the learning model, both for the lecturer, and for the student, is to see learning as mainly the transfer of content or knowledge from the lecturer to the students with little or no reflection on the process of learning how to learn by the student.

One of the significant implications of implementing a learning to learn environment in the lecture room is that students have to be allowed to make mistakes. The challenge for lecturers developing such an environment in their lecture room is drawing the line between when to let students make a mistake and when to intervene.

There is a significant literature on this topic. See for example Bryant and Nunez (1997), Cowen (1998), Fox (1997), Lancaster (1999) and Salner (1986). For other significant references please see the references and further reading.

To close this section, the main contribution to the paper of this learning section is to provide a reality check in discussing our future graduates and your feedback to the two questions.

8. CONCLUSIONS

Collectively, to date, we have made considerable progress in building integrated models and decision support systems of regional-scale environmental-economic systems. We have learnt discipline specific content or knowledge and skills. We have evolved appropriate processes with which to develop, test and validate this discipline specific content or knowledge and these skills. Given the two issues of underestimating system complexity and the importance of learning, I suggest that in general we prepare the next generation of practitioners in very much the same way, as we were prepared. However, I do suggest first, that we can do a better job in their technical skills by them having a better overall awareness of both the wide range of technical skills available and of the strengths and weaknesses of each. Secondly, we can also do a better job in their explicit generic skills by them having a better ability to make explicit their generic skills so that they become portable rather than their generic skills being contextualized to their specific discipline area. However these both need to be done within the space available within their degree program.

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