

Ockwell and Byrne are not opposed to cross-national application of innovation practices, merely the over-universalising of them. Learning from others with appropriate adaptation is instead core to their understanding. They equally reject being pushed into the opposite position of valuing only what is developed at home. The middle position they adopt is harder to assert within the noise of simpler — read that as ultimately simplistic — affirmations of Western-type entrepreneurship and the undermining effects of high-carbon economic thinking. Being able to respond to the importance of ‘context-specificities’ (p. 181) is the harder but eventually more realistic route to economic development of the low-carbon and sustainable power options they advocate.

Environmental educators will see much to reflect on here from the detailed discussion of this real-world, long-term, national-scale case study. Perhaps like a lot of education it is a matter not altogether about learning new things, but unlearning old certainties, so that interstitial insights that emerge in the trial and error of cultural and technological change can indeed be recognised and allowed to come to fruition over time in other places. Sure, the book deals with only one specific energy type, but that focus is better read as its strength, given that even in that space the complexity of policy, participants and economic influences takes time to absorb.

Ockwell and Byrne’s book emphasises energy sustainability interactions and contestation within a poorer developing economy. Agriculturalists and ecologists will rightly want to talk about implications in Kenya — and more generally — for soils, sustainable farming practices, and existing ecological pressures that new energy forms, even SPV, bring to bear on this region. But that is to criticise good effort and thinking for the complexity facing not just one country but global human society. More positively, learning some important lessons here and applying these to re-educate ourselves and leaders and followers around us, would add other necessary elements to efforts for the pro-poor sustainable world that is work for us all.

We know that technologies to capture solar power, as the most abundant of all renewable energy sources, have been steadily reducing in cost. Arguments today that these are passing conventional fossil forms in cost-effectiveness suggest this decades-long story of Kenya may in time be seen as the early stages of a very different modernisation sequence for African countries. My sense is that any generalisations made have the built-in limitation that we are in a digital-global revolution as significant as the first industrial revolution. The consequences of this change might be assisted, but they are beyond the explanatory reach of individual models. Technology, entrepreneurship, innovation, strategies of whatever hue, interact with socio-cultural and socio-economic drivers beyond national and regional confines.

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Learning to make change: developing innovation competence for recreating the African university of the 21st century

Paul Kibwika, Wageningen: Wageningen Academic Publishers, 2006

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Paul Kibwika’s book, which was published more than a decade ago, focuses on agriculture university education in Uganda. Kibwika’s main intention in this work is to transform how agriculture is taught

so lecturers and students acquire the relevant competences to respond more effectively to developmental challenges. In Sub-Saharan Africa, most of the population is dependent on farming. In Uganda itself, at the time of this publication in 2006, around 77% of the population were dependent on farming, and even more in regional areas. There was also endemic poverty. This led to a growing demand in Uganda for agriculture universities to become more involved in national development programs to help reduce poverty levels. Several factors contributed to poverty: resource and environmental degradation from over-intensive use of land; dramatic fluctuations in the price of traditional cash crops (such as tobacco and coffee) in international markets, which brought even more people into a poverty trap; and a population explosion that saw Uganda double from 13 million people in the 1980s to 26 million people in 2006.

Kibwika claims that the tendency of agriculture universities in the Sub-Saharan region to carry out 'technical' rather than 'developmental' programs impacts the wellbeing of Ugandan farmers, as the combined expertise of technology and knowledge would better alleviate poverty. He identifies the source of the problem as an entrenched top-down 'hierarchical model' by which information is passed from universities to farmers. Experts see their role as primarily one of instructing cash crop farmers about systems or new technologies. Conditions leading to poverty are rarely taken into consideration.

For Kibwika, the 'agricultural professional' is an outdated idea built on systems in place for traditional cash crops. It does not match the current needs of farmers who are experimenting with new forms of cash crops. Kibwika calls for universities to adopt a holistic model to accommodate current realities in the farming industry. He brilliantly demonstrates this with an account of Ugandan cash crop farmers who taught themselves how to grow vanilla, which can be sold for more money than traditional cash crops. The farmers learnt to grow vanilla crops through a process Kibwika labels as 'social learning' (p. 68), which he argues has enabled them to adapt to external opportunities much faster than from bureaucratic government policy, and they continue to grow vanilla as a sustainable farming practice.

Kibwika suggest that there is a place for agricultural professionals. In his view, however, their role needs to be rethought to fit the realities of autonomous social learning practices. Ideally, agricultural professionals would be enlisted to facilitate and iron out any deficiencies arising from social learning. The old model of 'technical experts' from universities instructing farmers, he argues, should be replaced by 'change makers'. These change makers in agriculture universities would not only possess sound technical knowledge in agriculture, but also 'innovation competences' (p. 167). For Kibwika, this means soft skills and management skills to work with farmers to build sustainable businesses and farmer organisations.

The necessary skills to be change makers are largely missing in Ugandan university agricultural education, according to Kibwika. As a result, agricultural graduates are ill-prepared to work within the context of social learning in which the hierarchical power relations are reversed; that is, where farmers are presumed to be the experts, not agricultural professionals, since they have first-hand knowledge of the crops. Before it is even possible to redesign the curricula of agricultural education to better suit social learning, Kibwika believes it is necessary to inculcate in lecturers 'innovation competences'. Thus, as the first step in the process of bridging the gap between the current 'expert' agricultural professionals and the desired 'change makers', Kibwika proposes 'a personal mastery and soft skills development programme' (p. 91) for university lecturers. As a trigger for change, this mastery and skill-set would be then passed on down through the different generations of students and in turn see the university over time become more developmentally oriented in its approach to farming systems — that is, producing graduates who are more responsive to the developmental challenges in an agrarian context. In sum, whether one is a lecturer, a student, or a farmer, the theme of Kibwika's work is one of 'learning to learn'. Hence the pedagogical nature and title of his book, *Learning to Make Change*.

The book is a published doctoral thesis. It has not been updated or rewritten to suit a more commercial book format for publication. It contains eight chapters accompanied by many

business-like figures, tables and boxes. The core of the book is made up of three interrelated case studies, the first of which focuses on how smallholder farmers in Uganda learned through the processes of social learning to produce vanilla for export. The second is aimed at the analysis of a workshop and of various documents on the challenges that are faced by agricultural professionals when working with farmers. Based on those two case studies, Kibwika deduces the roles that the agricultural professionals should play in order to enhance the processes of social learning, and also delineates the competences and skills required to perform those roles. According to Kibwika, agricultural professionals should become primarily facilitators and knowledge brokers who are able to: develop farmers' entrepreneurial skills and attitudes (this involves, for instance, educating them about quality standards and market dynamics); assist them in creating various platforms for the exchange of information and knowledge; facilitate multi-stakeholder dialogues, such as those between farmers and international buyers; and work together with farmers in joint experimentation and learning aimed at knowledge and technology development. In the third case study, Kibwika draws heavily on management literature, in particular on Peter Senghe's book, *The Fifth Discipline* (1990), which he uses to formulate 'a personal mastery and soft skills development programme' for university lecturers. With the aim of this program being to inculcate in university lecturers the required competences and skills (to be passed on to generations of students), it should produce lecturers who possess good facilitation, teamwork and communication skills and who are not afraid to try new things. The trial experiment at Makerere University demonstrates how such a program can be designed, run and evaluated. The trial lasted for 8 months and had 26 participants from agriculture-related faculties. It was organised around six thematic areas (personal development, team development, facilitation techniques, organisational development, research and consultancy, and communication and problem solving) and consisted of various learning workshops that included peer- and self-learning and practical exercises.

I would like to note that for environmental educators, Kibwika's book does not address the questions of environmental sustainability. Even though he mentions environmental issues in several places, and even claims that agricultural professionals should 'bring to consciousness other critical factors such as environmental sustainability' (p. 83), the book is primarily centred on business sustainability. This is also reflected in the 'personal mastery and soft skills development programme' for the university lecturers. The program, as outlined by Kibwika, makes no mention of environmental sustainability.

I enjoyed reading the first case study on farmers and social learning, which from my perspective is the most valuable part of the book. It was a fascinating insight into how the farmers, through experimentation, created their own knowledge systems around growing vanilla crops (i.e., he makes mention of an innovative radio program called 'Vanilla is Gold' that farmers themselves set up). The first case study also demonstrates very well the challenges of the processes of social learning among farmers. For instance, competition between one another in many cases blocked exchanges of knowledge from which all vanilla farmers could benefit, and farmers were unable to unite in their expertise in finding solutions to difficulties they encountered growing vanilla. It also illustrates various problems the farmers faced when they tried to sell vanilla to international buyers. I expected that there would be more excerpts from the 20 farmer interviews. Nevertheless, the case study supports Kibwika's assertion that social learning is the future of farming practices, and it offers very useful insights into how agricultural professionals can be helpful within the context of social learning. The second case study adds little to the first.

The third case study on the competence development program, with its aims to coach lecturers on matters relevant to social learning, does provide some insights for professionals wishing to replicate it at other universities. However, I found the case study uninteresting. Compared to some other parts his work, Kibwika here rather mechanically demonstrated how the program could be executed. His conclusion about how the program was successful likewise also falls short of expectations. Using various excerpts from interviews that were done with the program's participants, he discusses how the activities in the program such as the Johari window and other exercises helped

them uncover their strengths and weaknesses, and acquire solid communication, team work and facilitation skills, but he does not state whether the program 'laid the foundations for a new kind of poverty-alleviating professionalism among the Ugandan agricultural professionals' (p. 175). Thus we do not know whether such a program will be a solid step toward making African universities more developmental; that is, whether it will have any impact on how agricultural students are educated so they too possess the competences and skills for facilitating social learning. The project feels somewhat unfinished, as if some of his assumptions needed to be further tested. This may leave some readers unsatisfied and doubting Kibwika's approach. However, for my mind, Kibwika's wonderful insights into the social learning systems of farmers counterbalance this. That itself bodes well for the future of farming in the Sub-Sahara. My hope is that since the time of this book's writing some advances have been made in the university agricultural profession responding to and complementing the type of social learning Kibwika describes.

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A primer for teaching environmental history: ten design principles

Emily Wakild and Michelle K. Berry, Durham: Duke University Press, 2018

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Unusually for academics, the authors consider that it is important for the reader to appreciate the context of their writing. To do so they provide a Preface, titled 'How to make use of this book', in which they outline their relationships to teaching environmental history at university level, and to the natural environment. Equally unusually, they provide considerable detail about the way they structure their course/subjects, and that this structuring is based on the development of objectives for the students' learning. While this may seem 'basic', in many descriptions of curriculum it is not common to see any clarity about the purpose of that curriculum, in terms of what students are expected to gain.

With this promising start I was disappointed to find that the writing style did not appeal — to me. The narrative style makes finding the key insight hard to identify, and return to. However, others may prefer the style. Since the book is titled a 'primer', I anticipated that critical information would be made to stand out; in this case, subheadings would greatly assist. Yet, as I persisted, I found that the authors 'won me over' with their passion and intelligent thoughts on teaching complexities of the environment. To a large degree there is not a lot in the *Primer* that is new; emphasis on the systemic nature of environment and environmental issues, and the importance of deep-learning (through involving students in group projects around current, relatable, topics) are both key elements of environment and sustainability education. But the authors have provided tangible examples of how these concepts, which can be obscure and threatening to the 'uninitiated', can be made the bedrock of undergraduate teaching.

The authors both have a strong background in the discipline of history, teaching students of history in small-to-medium sized classes, and their main aim is 'to provide strategies for designing a new course on environmental history' (p. 3). Also, they teach in the United States, so almost the entire focus of the *Primer* is on this discipline, and this geography. The role of other