

Towards a definition of biocultural heritage innovations in light of the mainstream innovation literature

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Introduction

The purpose of this short paper is to address the question of how far a definition of biocultural heritage-based innovation should or should not be based upon the mainstream thinking on innovation. Most of the economics of innovation literature focuses on corporations, business sectors and on national policy and regulatory frameworks. This suggests that the context is so different that it will not be of much use to the SIFOR project. Indeed, given the cultural and spiritual values of indigenous peoples and their quite distinct yet varied lifestyles and modes of social organisation, it might be that innovation needs to be understood quite differently. Innovation is universal, but it is highly diverse.

The paper argues that this literature *is* relevant. First, it confirms that innovations do not have to be novel in any strict sense to be “innovations”. Second, innovations are seen as comprising mixtures of insights, practices and natural products and artefacts, and tend to be generated by groups, whether working together or in competition, rather than by individuals working in isolation. This seems like a fair reflection of how innovations are generated within indigenous communities. However, one must not lose sight of a number of differences. First, BCH innovations must by definition be largely endogenously generated, which is to say that they must be primarily local in origin. Business innovations do not have to be. In a sense the currently fashionable concept of “open innovation” actually celebrates the fact that so often they are not. Open innovation advocates claim that research-based companies can succeed better when they let go of the compulsion to generate their own innovations “from the ground up” as it were.

Second, BCH innovations are primarily collective and individual attribution is rarely sought even if an individual was instrumental in achieving the final part of the process. Commercial sector innovations tend to be treated as achievements of individuals, groups of people, or (especially) of businesses regardless of how much “borrowing” was entailed in their production. Third, economists tend to quantify innovations on the basis of statistical units of measurement and comparison that make little sense to indigenous peoples. These include patent counts and research and development spending data. One interesting point to note is that it is much easier to describe an innovation-friendly environment than to prescribe one. Thus, the secrets of Silicon Valley’s success are apparently well documented. However, creating new Silicon Valleys using the real one as a blueprint has proved not to be at all easy. Might this be true for indigenous communities? It will be very interesting to find out.

The SIFOR conception of innovation in the context of biocultural heritage

The SIFOR project concerns innovations in the specific setting of indigenous and local communities. In order to conduct research on small-scale agricultural innovation it is of course necessary to have a clear understanding of what innovations are and to develop criteria

for identifying, distinguishing and categorising them. Three kinds of innovation are being considered: technological, market and institutional innovations. Policy innovations can be seen as a fourth type though they seem to fit into institutional innovations, especially given the rather expansive definition of “institutions” that is common in the economic and political science literature. At the Cuzco Workshop, delegates discussed innovation in the context of biocultural heritage. While the word innovation in itself provoked little debate, defining “biocultural heritage innovations” proved to be more difficult. The following working definition was developed and suggested for possible application to the work of the SIFOR project:

BCHIs [Biocultural Heritage Innovations] are new knowledge, resources, skills and practices, or new combinations of these, which serve to: (a) strengthen and sustain the agro-biodiversity, particularly local seed systems, livelihoods and material and spiritual well-being of communities; (b) adapt to and mitigate risks due to global impacts, especially those of climate change. They are practical, sustainable, and are locally and globally relevant.

BCHIs have their basis in a people’s or community’s BCH but may incorporate external elements. They integrate daily practices with traditional knowledge, spiritual values and customary norms. As such, they are dynamic, continuous, open, adaptive, and gender-sensitive, integrating the creativity of people and nature.

Laudably, the SIFOR project does not re-interpret “innovations”, but rather understands them as being no different essentially from those coming from the more conventionally-recognised innovation sites, such as corporate R&D labs, marketing departments, and policy think-tanks for example. The fact that innovations in indigenous and local communities tend to be seen as informal, collective and anonymous attainments as opposed to those generated by individuals who are professional people earning salaries is of little significance. Nowadays, many innovation and intellectual property scholars are aware that the tendency to downplay the role of groups in favour of prominent individuals who receive most of the credit is problematic. Whether innovations are correctly attributable to individuals or to anonymous groups is largely a matter of scale and demarcation, and not necessarily about culture. Box 1 clarifies this point, whilst suggesting that perceptions may disguise commercial agendas. Although it refers to inventions rather than innovations, and the two should not be treated as synonyms, it is relevant also to the latter.

Box 1: Thunderstorms, thunderbolts, relay races and termites nests

There seem to be four ways in which people understand inventions and their origins, all of which cannot be correct in all cases. The problem is our temptation to generalise.¹

First, inventions can be seen as ‘thunderstorms’ of activity, where the flashes of lightning and the booming thunder represent creative action, but the discrete individual events tend to get lost in the fury of the storm. In other words, inventions are inherently collective, comprising small acts or ideas identifiable to individuals which together make up the whole invention. This notion is convenient for businesses, especially when all of the people concerned are employees of the same firm! Second, inventions might be seen as thunderbolts, or distinctive flashes of individual inspiration, where what was there before the storm is transformed and new. Some of these thunderbolts add value, others transmit energy without any lasting effect and still others lay waste to what previously existed. This is a rather old-fashioned view but it is very persistent. Historically, corporations dislike this conception, since it underpinned the flash of genius test, which the United States Supreme Court at one time

adopted to allow only patents expressing a high degree of creative inspiration to be maintained. Given that inventions almost by their very nature are incremental, this required a bigger inventive step than was commercially convenient for firms seeking to acquire large patent holdings. Third, inventions may be seen as being like a relay race, where the first past the post (either the actual invention in the United States or patent filing elsewhere) wins the prize, regardless of how narrow the margin of victory. Again, inventing is anything but an anonymous activity but it tends to be drawn out. Sometimes the winner is considered to be unfairly taking all when the ‘spoils’ ought to be shared with the other baton carriers who may have run further. Fourth, invention may be seen as being like a termite nest, where too many people are involved for it to be possible to name everybody. Consequently, for anybody to file a patent is tantamount to grabbing a piece of the intellectual commons. Given the wide array of metaphoric interpretations of inventions, it is only reasonable that the scholars and practitioners who work on patents and patent policy have not conclusively established the place, role and function of patents in the global knowledge management system.

Quoted, with minor editing, from: D Castle, PWB Phillips, A Brown, K Culver, D Castrataro, T Bubela, S Harmon, G Dutfield & P Barclay, “Knowledge management and the contextualisation of intellectual property rights in innovation systems”. *SCRIPTED - JOURNAL OF LAW, TECHNOLOGY & SOCIETY* 7(1), 2010

¹ G Dutfield & U Suthersanen, “Creators in biotechnology and culture: Geniuses, or industrial stakeholders?” *Conference on Intellectual Property Rights for Business and Society*. Hosted by DIME Network of Excellence. Birkbeck College, London (2006).

That the bulk of the literature investigates the subject in terms of modern industrial and commercial activity does not make it irrelevant or mean that we should simply ignore it. On the contrary, SIFOR’s adoption of the word “innovation” means that we are *not* confining innovations to the modern industrial economy as if that is the only setting in which innovations take place. What we are saying is that innovation is universal. The fact that this universality is not particularly evident in the literature or in the ways that “innovation” tends to be applied, thereby overlooking much of the innovation happening in the world, does not of itself make this literature irrelevant.

Having said that, though, there are of course quite diverse perspectives concerning how innovations are generated, who is responsible for coming up with them, what the essential elements are of a pro-innovation environment, and what rights and responsibilities people have with respect to them. But it seems reasonable to assume at this stage that defining innovations is not a matter for sharp disagreement.

The economics of innovation

Before going further, it is important to say that “innovation” refers to an activity, *and* to the achievement coming at the end of the process (“*an* innovation”). The latter might be a thing, or it might be a method such as a new or better way to do something. For example, Dyson’s bag-less vacuum cleaner is an innovation: an output arising from innovative activity that starts with an idea in one (or possibly more than one) person’s mind followed by all the mental and practical work to bring the concept to fruition. The idea-output pathway may itself be *an* innovation. Cohen and Boyer’s famous recombinant DNA method enabling the transfer of DNA from one life-form to another was itself an innovation at the time it was first developed, as are the genetically engineered microorganisms arising from its application. Innovation, then, is an uncountable noun when referring to what people do, and a countable noun in the context of outputs; that is to say, there is (i) innovation as activity, and (ii) innovation as an output. One should take care not to confuse the two.

There is in fact a huge body of economic literature on innovation which goes at least as far back as the Austrian economist Joseph Schumpeter. Generally speaking, the mainstream

academic literature on innovation tends to focus on firms and national economies; that is, the world of commerce and industrial policymaking. It is immediately apparent that within the literature there is a great deal of selectivity and bias. This is probably mainly not intended. But it is definitely present. This might suggest that such writings have limited relevance. However, despite this apparent lack of awareness that innovation exists also in radically different contexts from the industrial and scientific ones, there may still be interesting and relevant insights to be gained.

Innovation is of course a much misunderstood word, and there are high economic stakes involved in terms of identifying, demarcating and quantifying innovations. Governments are keen to project a national image of innovativeness. Likewise, companies seek to convey the same impression about themselves. For example, few people would question that Apple Computers is a highly innovative company. This is despite that fact that the innovations which made the company famous such as the graphical user interface and the mouse were “borrowed” from Xerox’s Palo Alto Research Center (PARC). Paradoxically this does not mean Apple was not innovative. Ideas and technologies confined to a laboratory, no matter how ingenious, are not innovations. It is only once they, or the products or services embodying them, “escape” from the lab, workshop or individual farmer’s field and enter the world beyond that they became innovations. The “world beyond” may be just the community or it may be the whole world. It is hard to think of an individual subsistence farmer’s own “innovation”, such as a new cultivation method or plant variety, as being one until it affects other people in some way or another. Innovations must have a societal aspect to be “innovations”. On the other hand, if it turns out that “innovation” came originally from somewhere else, then it is an innovation.

Apple would not have been more innovative had it generated these ideas and technologies internally. To believe otherwise would be to misunderstand the meaning of the word. Good innovators sift, filter and mix useful ideas and techniques wherever they can be found. If they are entirely local or “in-house” that is all well and good, but they do not have to be. An open and outward orientation that neither disregards the local, nor treats it as the only potential source of new ideas and methods, is a pre-condition for a climate of innovation. This is so whether we talk of a firm or a community. Acceptance of this reality explains the current interest in the aforementioned “open innovation” business model. Just as access to the state of the art is an essential element of an innovative environment, so is access to storehouses of ideas, techniques and products brought into being by past generations.

On the other hand, few innovation scholars pay much regard to indigenous and other communities “embodying traditional lifestyles” to use the wording of the Convention on Biological Diversity. In fact, for indigenous communities, innovation is about combining different elements (pieces of knowledge, ideas new and old, customary practices, different techniques, biological materials or artefacts etc.) that may be entirely internally generated but often, if not usually, will not be. Accordingly, while the above-mentioned storehouses of ideas, techniques and products include libraries and patent databases, we must not overlook others such as farmers’ fields, cultural landscapes, and the memories of tribal elders, healers, shamans, cultivators, herders and craftspeople. A rare exception to conventional innovation scholarship is the work of Anil Gupta of the Indian Institute of Management, whose

Honeybee Network documents local innovations in India. However, Gupta's work tends to individualise innovation, and focuses on rural communities rather than indigenous peoples.¹

A very well-known definition of innovation is from the famous and still highly influential economist Joseph A. Schumpeter, who refers to them interestingly as “carrying out new combinations”. Accordingly, innovations comprise:²

- a. “the introduction of a new good ...
- b. the introduction of a new method of production ... which need by no means be founded upon a discovery scientifically new ...
- c. the opening of a new market ...
- d. the conquest of a new source of supply of raw materials ...
- e. the carrying out of the new organization of any industry ...”

Furthermore, Schumpeter notes that innovation does not occur purely within a natural or legal individual but tends to arise from social interaction which involves both creators and other actors. Schumpeter discusses economic leadership where ideas and creations, he says, “are always present, abundantly accumulated by all sorts of people. Often they are also generally known and being discussed by scientific or literary writers”.

On the face of it this discussion on Schumpeter, which appears to cover both innovation as activity and innovation as output, might not look particularly relevant. However, there are a number of common points and inferences that a deeper investigation of the innovation literature is likely to confirm.

First, *innovation is not invention*. Innovation is *not* a synonym of invention despite the fact that some literature conflates the two. For one thing, its meaning is broader. It is a quite separate concept that has nothing necessarily to do with law or property. Assessed from a distance, innovative processes are always collective and do not happen entirely in a single location. They are not susceptible to strict definitions of novelty or originality, as are inventions which are globally unique. It is the making available that constitutes an innovation. Here individuals may play a bigger role. Patenting is largely based on a convenient fiction: that we can break up both inventing and the inventions themselves into discrete units which are attributed to individuals, and can be bought, sold and licensed. But patents protect inventions not innovations.

Second, as Schumpeter claims, *innovations are mixtures, or combinations, and as such are not new in the absolute sense*. It is about “mixing”, whether we talk of things or ways of doing something, innovating is about using and making available what may already be known, practiced or used including new combinations of applied ideas, practices or products. It may entail some transformation in the forms of adaptation or modification but not necessarily to the extent of making it into something else. Recovering traditional potato varieties and bringing them back into cultivation is an innovation just as much as is the

¹ AK Gupta, From sink to source: The Honey Bee Network documents indigenous knowledge and innovations in India. *Innovations: Technology, Governance, Globalization* 1(3), 49-66, 2006; G Dutfield, Promoting local innovation as a development strategy. *Innovations: Technology, Governance, Globalization* 1(3), 67-77, 2006.

² JA Schumpeter, *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Transaction Publishers, 1983 [1934]. The text below draws on G Dutfield and U Suthersanen, *Global Intellectual Property Law*. Edward Elgar, 2008.

breeding and diffusion of new varieties. Using trade marks is a marketing innovation for indigenous peoples despite the fact that they are commonly used in business.

Third, *Indigenous peoples innovate too*. Innovation is capable of arising in a highly diverse range of places. An innovative environment is not one that necessarily requires a formal institutional structure of research and development entities, intellectual property granting offices, courts, etc. Accordingly, innovation takes place everywhere from the fields of traditional farmers to the laboratories of Pfizer. Which innovations are ‘better’ cannot be pre-determined by the setting in which they first arise. Tradition can and does serve as a milieu and a starting point for incremental innovative activity on a large scale. A key difference is that generally individuals and communities do not seek credit or rights of ownership unless others wish to assert rights of ownership against them. Acknowledging the collectivity of innovation does not deny the important role of individuals but it cautions us from overstating it. In modern industrial settings innovations, whether in the form of products or methods, are transacted through intellectual property rights and contracts. It does not matter where innovation takes place or who is doing it. It follows that once ethnocentrism and cultural bias are abandoned, some of the same modes of identification, quantification and analysis can be applied.

Fourth, *innovations are quantifiable*. However, *the conventional methodologies are not very helpful*. Economists tend to use proxy measures such as numbers of patents to assess how innovative an economy or business is. To be fair, many if not most admit that this is not entirely satisfactory. Moreover, quantifying innovations implies that innovations have discrete boundaries. Often this will not be the case. However, the SIFOR project counts innovations directly, and this appears to be a valid exercise. As for qualitative assessment, in the business world that is done by letting the market decide or else by valuing them as business assets. There is much to be said for treating innovations qualitatively by the extent to which they are beneficial for the groups that come up with them perhaps in terms of human development as defined and elaborated by the United Nations Development Programme. However, other criteria are possible.

Box 2 - The political importance of “innovations” in the context of the Convention on Biological Diversity and the Nagoya Protocol

The Convention on Biological Diversity refers to the “knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles”, and requires country parties to “respect, preserve and maintain” them. However, the Nagoya Protocol, whose purpose is to implement the access and benefit sharing-related objective of the Convention uses the term “traditional knowledge”. Presumably, this is meant as shorthand for “knowledge, innovations and practices” but omitting innovations may be a cause for concern. This is because it implicitly downplays the creativity and dynamism of indigenous peoples. Seeing indigenous and local communities as potential or actual storehouses not just of ancestral knowledge serving, among other things, as a ‘raw material’ for industry but also of innovations changes the dynamic, accentuating the novel and hybrid over just the traditional (in the strict sense) and the purely local. Indigenous peoples are not just knowledge holders: they are innovators. Governments and policymaking forums such as the Conference of the Parties to the above Convention should not be allowed to lose sight of this.

Conclusion

So how does this discussion translate into useful insights for the SIFOR project? Once we have an understanding of what innovation is and isn't, a number of questions arise: Can innovation be quantified for the purposes of measurement and comparison? Is there a realistic way to distinguish and class innovations by their relative quality? Are quality considerations a matter of how transformative they are with respect to the enhancement of social welfare or some other public good? Or is a high quality innovation determined by the extent to which it triggers a cascade or follow on innovations that are either dependent or complementary which otherwise would not have arisen, at least in that time or place? If its quality is measurable, can it be integrated with a quantitative framework? Some of these questions have been answered. The others appear to be well worth investigating.

Finally, one may need to be cautious before assuming that a successful innovation in one setting may be easily transferrable to a completely different setting. Certain key factors may be left out. It may be that an innovation is so bound to local cultural and spiritual values as well as social and economic conditions that its transplantation to another location would simply be impossible. The characteristics of a conducive environment for innovation are often evident only in hindsight, and the possibility for such an environment to be transferrable is not something to be relied upon. What makes for an innovative environment may be hard to explain, whether we are talking of agricultural communities or business parks, but it is a great deal harder to reproduce and with successful results. This might be a useful point for the SIFOR project members to consider.