***Bottom-up contributions for the construction of the botanical knowledge and participatory initiatives in an epistemic arena: the value of TelaBotanica***

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This text illustrates how “the outcomes of participatory initiatives may create economic value“ (text of the Call for participation). We propose an analysis of the practices of the TelaBotanica collective with a focus on its active participation in an epistemic arena (Knorr-Cetina 1982) in which botanical knowledge is co-constructed and circulated. TelaBotanica proposes an original, innovative organisation and process for integrating the participation of heterogeneous actors in the production of botanical knowledge. It is one actor among many in the larger context of this epistemic activity and its activities should thus be seen in this broader context. In order to participate fully, TelaBotanica has built partnerships, alliances, and more informal cooperation with the major institutions involved in the natural sciences in France – in particular with the Muséum national d’histoire naturelle – as well as with regional environmental groups. TelaBotanica as an entity has made its mark in the botanical world, due in large part to its *modus operandi,* and is known particularly for its expertise in integrating the participation and perspectives of non-traditional actors (participatory science activities). We will argue that the creation of value by TelaBotanica is both economic and symbolic; it is based on a hybrid business model (Battilana & Dorado 2010) in which economic and social logics co-exist. This business model acts as a conceptual and rhetorical instrument (Teece 2010) to enable the articulation of a viable revenue and cost structure with considerations of social ownership and engagement, voluntary participation and epistemic goals. TelaBotanica thus innovates as an organization, and this innovation is grounded in participation.

***The production of economic and symbolic value***

The activities of TelaBotanica’s various contributors produce value. On the one hand, **economic** value results from the collective cognitive activity of the network (crowdsourcing and other collective logics) aimed at producing new knowledge about plants and digitized herbaria. The hybrid business model (discussed shortly) allows the organization to use its members’ contributions to generate revenue by providing contractual services to outside organizations. The profits are then re-injected as internal cross-subsidies into organizational infrastructure or activities that are considered essential to the social, epistemic and associative mission that is the *raison d’être* of the collective (Heaton, Proulx & Millerand 2013). On the other, the value produced by TelaBotanica is **symbolic**. Founded in 2000 with the legal status of a non-profit association, TelaBotanica has always affirmed that its participants contribute willingly and freely using a “gift logic.” It remains to be seen to what extent online contribution as a social form corresponds to the gift model (Proulx 2014). The initial positioning by the founding group was thus strongly normative. From the outset, the idea was to create a network for exchange to revitalise the botanical community, and to use new technologies to do so. There was no mention of profit, simply the desire to increase the visibility and circulation of botanical knowledge in the Francophone world (particularly by promoting popularization activities in associative and educational contexts). TelaBotanica thus represents 21st century botany, a systematic science become cyberscience (Hine 2008).

***Collective creation of a knowledge commons***

Perhaps most importantly, TelaBotanica’s value creation resides in the way it goes about fulfilling its epistemic mission. It illustrates what economist Elinor Ostrom (1990) has theorized as “The Commons”: an organizational space containing activities focused on sharing, voluntary labour, and the production of collective goods. The term “Commons” has been widely used in different contexts, but always tied to information sharing and an ethical and political stance of resistance to neoliberal property systems that privatize and monetize access to collective resources. The concept has taken on increased significance with the proliferation of digital, and thus immaterial and infinitely replicable resources, leading to the development of the idea of a “Knowledge Commons” ((Hess & Ostrom 2007) - botanical knowledge in the case of TelaBotanica.

TelaBotanica’s originality resides in its organization as a collective operating solely via a digital platform. This sociotechnical dispositive provoked the emergence of a set of innovative practices in terms of the production and sharing of botanical knowledge between specialists, but also with amateurs and the general public (Heaton *et al* 2011; Millerand, Heaton & Proulx 2012). It adheres to a commons-based peer production model (Benkler 2002): all of its services and collaborative tools are developed using open source code and distributed free of charge under a Creative Commons license (CC: by-sa). What is more, in terms of content, TelaBotanica, relies on the contributions and involvement of its members in different forms. In some instances, participation may take the form of large numbers of small contributions that would be insignificant without the aggregation and coordination of the platform (crowdsourcing). In others, experts and knowledgeable amateurs willingly contribute significant resources in the spirit of cooperation for the collective good. The Commons concept applies not only to the production of botanical knowledge, but also to its dissemination. Participants in TelaBotanica are in fact both users and producers of a rich quality Knowledge Commons, whose value increases with use, as pieces of knowledge are combined and reused in different ways.

***Hybridation between collective action and a business model***

How does this organization’s business model work? TelaBotanica’s activities are aligned around an online collaborative platform with the goal of encouraging exchange between all those interested in botany, amateurs and professionals alike. The association pursues a scientific mission and a social mission, but relies on a number of business-like activities to generate revenue and sustain its operations. These revenue-generating activities are not simply a means to ensure the association’s survival, but are an integral part of the TelaBotanica business model (Heaton *et al* 2013). Although it is a non-profit organization, from the outset the founders gave themselves permission to integrate for profit activities and to valorize professionals and professional activities within an association aimed at the collective good. The very idea of a “business model” and of approaching TelaBotanica as an enterprise that should meet a need and seek sustainability helps shape the key actors’ understandings of their organization. In a sense, it is enacted as a sort of *recipe* (Baden-Fuller & Morgan 2010), setting the parameters of what would be possible and acceptable actions for the association, while ensuring that it remain faithful to its central mission. This combination of revenue generation with a collective action model has had far-reaching consequences for TelaBotanica’s operations and governance, and for its relations with the surrounding socioeconomic environment. For example, the use of the term “business model” as a rhetorical device may sometimes be used to justify strategic decisions that might otherwise be contested by some association members. Thus, from a pragmatic standpoint, we try to identify how the idea of business model might encourage certain types of decisions and actions – such as the adoption of principles of sound management in order to facilitate the association’s adaptation to particular conditions or challenges in its environment - while restricting others. This hybrid organizational logic (Battilana & Dorado 2010) constitutes a lever for socioeconomic innovation whose key is the idea of the business model.

In our analysis of the hybrid organizational operations of this collective, we will pay particular attention to the tensions between economic and social logics at work in this participatory model of sociotechnical innovation.

***References cited***

Baden-Fuller, C. & Morgan, M. (2010). Business models as models. *Long Range Planning,* *43* (2-3), 156–171.

Battilana, J. &. Dorado, S. (2010). Building sustainable hybrid organizations: the case of commercial microfinance organizations. *Academy of Management Journal,* *53*, 1419–1440.

Benkler, Y. (2002). Coase's Penguin, or, Linux and" The Nature of the Firm". *Yale Law Journal*, *112*, 369-446.

Heaton, L., Proulx, S. & Millerand, F. (2013). TelaBotanica’s hybrid business model as social innovation. Paper presented at the 29th European Group for Organizational Studies Colloquium, Montreal, Quebec. July 4-6, 2013.

Heaton, L., Millerand, F., Crespel, É., & Proulx, S. (2011). La réactualisation de la contribution amateure à la botanique : le collectif en ligne Tela Botanica. *Terrains & Travaux, 1*(18), 155-173.

Hess, C., & Ostrom, E. (2007). *Understanding Knowledge as a Commons: From Theory to Practice,* Cambridge, MA : MIT Press.

Hine, C. (2008). *Systematics as cyberscience: computers, change, and continuity in science*. Cambridge, MA : MIT Press.

Knorr-Cetina, K. (1982). Scientific Communities or Transepistemic Arenas of Research? A Critique of Quasi-Economic Models of Science. *Social Studies of Science*, *12*(1), 101-130.

Millerand, F., Heaton, L., & Proulx, S. (2012). Émergence d'une communauté épistémique: création et partage du savoir botanique en réseau. In S. Proulx & A. Klein (Eds.), *Connexions: communication numérique et lien social.* Namur: Presses universitaires de Namur, p. 253-268.

Ostrom, E. (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*. New York: Cambridge University Press.

Proulx, S. (2014). Enjeux et paradoxes d’une économie de la contribution. In S. Proulx, J.L. Garcia, L. Heaton, (Eds.) *La contribution en ligne. Pratiques participatives à l’ère du capitalisme informationnel*. Québec : Presses de l’Université du Québec, p. 15-31.

Teece, David (2010) Business models, business strategy and innovation. *Long Range Planning,* *43,* 172–194.