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## How fab labs help meet digital challenges in Africa

Isabelle Liotard, Stéphanie Leyronas, Gwenaël Prié

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# How fab labs help meet digital challenges in Africa

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Jerry-can computer. Author provided

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Fab labs serve at the same time as production, creation and prototyping workshops, hands-on training spaces and facilitators of social ties. They contribute to reducing the traditional head-on opposition between “knowing” and “doing”.

The wave of fab labs came about in the United States in 1998, under the impetus of Neil Gerhenfeld, professor at MIT. They are workshops designed to be open, shared and collaborative. Their objective is to provide a physical space comprising digital tools (laser cutters, 3D printers, etc.) for everyone to use, which allows an individual to create and invent. They therefore make it possible to design, prototype, build and test a wide variety of objects.

These spaces take on a particular meaning in Africa, where they are becoming relays for the development of educational Commons.

## The specificity of African fab labs: educational commons

While Sub-Saharan countries have made huge strides in the development of their education systems, the fact that they initially lagged behind and have strong population growth mean that the region still has 50 million primary or secondary school-aged children not enrolled in school. In addition to these difficulties of access, there are the major challenges concerning the equity and quality of teaching given to students.

Sub-Saharan African fab labs offer a huge diversity, but they set educational objectives more clearly and more systematically than their counterparts in developed countries.

For example, many offer workshops, not only for children and teenagers, but also for students, to make up for the lack of equipment in universities, or for women, to facilitate their social and professional integration. Beyond the training aspect for the youngest in the rudiments of electronics or digital manufacturing, the educational project thereby aims to address local societal issues.

Sésamé Koffi Agodjinou, founder of WoeLab in Togo, is an anthropologist who was trained as an architect. He sees fab labs as a way of working with citizens to rethink cities, which are usually designed only by urban planners. In line with the principles of vernacular architecture, and its vision of a city that is more of a village, the fab lab offers a space and moments to create social cohesion, and symbolically a new place of initiation for young people.

Guiako Obin, creator of Babylab in Côte d'Ivoire, chose an underprivileged neighbourhood of Abidjan, which suffers from poverty and insecurity, to install a fab lab and make it a driver for social transformation via education. In this way he also fights against idleness and delinquency among youth.

Finally, the Blolab in Bénin, created by Médard Agbayazon, has the objective of promoting digital literacy among young people and local professionals (artisans, farmers), as well as helping them build inexpensive, accessible and rapidly developed solutions. Here, the ingenuity of the fab lab community, inspired and supported by global informational resources, provides solutions tailored to local needs. For example, the lab has allowed the development of an application to report cases of gendered violence.

## Frugal and tinkered innovation central to the system

With more than 40 spaces created in the recent years, the vitality of this movement in Africa is confirmed. They all provide new spaces for innovation thanks, in difficult conditions, to the resourcefulness, creativity and strong will of its promoters.

In the workshop, the production itself also needs to cope with the challenges of the lack of available financial and material resources. Fab lab communities, which therefore have a frugal approach to innovation, make every effort to meet local needs with simple and customised solutions. They also use and contribute to online resources, whether for manuals, building instructions, communities of practice or even crowdfunding websites.

This is exemplified by the Jerry Do-It-Together initiative, which organises workshops to build Linux computers using recycled electronic components housed in a 20-liter Jerrycan. Users, designers and hackers get together around Jerry computers to learn how digital technology is made and gear it to their needs.

The growing movement of African fab labs is also driven by a will to share knowledge and open up innovation: in Africa as elsewhere, they thereby call into question the usual production, education and intellectual property methods and, more generally, make us question the role of the citizen in economic and societal projects.

## In what way do these spaces constitute the Commons?

Fab labs are entrepreneurial, associative, public or academic. They illustrate how the theory of the Commons can inspire production activities. Since the Nobel Prize for Economics was awarded to Elinor Ostrom in 2009 for her research, there has been an unprecedented enthusiasm for the Commons. It refers to the collective management of a resource by a community, which defines ad-hoc rules and sets up a governance structure allowing the distribution of rights and obligations and the resolution of conflicts.

The objective set by the community is central to what is done in common. In the case of a Commons structured around a natural resource, it often – but not always – involves preserving the quantity or quality of the resource. This definition inherited from traditional Commons (agriculture, herding, fishing) extends to a whole new generation of Commons, what we call the “informational” Commons, whose objective is rather to share, disseminate and enrich the good, along the principle of “additionality”.

Fab labs are drivers of these dynamics. Those physical spaces aim to develop digital knowledge, disseminate it, share it (within communities), and conserve it (on web libraries and platforms). It pools machines as well as experiences. It contributes to the accumulation of knowledge and the redistribution of this knowledge via training programs. Knowledge is consequently both a component of the fab lab, but also an objective.

They are spaces which are both part of a territory, but also of the many online communities (free and open-source software, OpenStreetMap, social networks). This duality of physical and digital communities leads to a two-pronged movement: a reterritorialisation, via a local use, of digital Commons developed on a global scale and, otherwise, a deterritorialisation of knowledge generated in fab labs for uses on a global scale.

*This text is based on the working paper "From Informational Commons to Educational Commons: Fab labs in French-speaking Africa", co-authored by Stéphanie Leyronas, Isabelle Liotard and Gwenael Prié.*

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