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The hundred-franc question : what can we learn from self-organization in governing common pool resources ?

The Swiss *bisses*, as they are known, are impressive structures that carry water from water-rich parts of mountain landscapes to drier parts and villages. Found across the driest region of Switzerland, the Canton of Valais, the *bisses* are either wooden constructions built extraordinarily along treacherous cliffs (as on the [100 CHF note](#)), or channels dug directly into the ground. They cleverly leverage gravity to pull water through the system, thanks to the gradual decline from the water source. Taken as a whole, there are nearly 2000 km of these ancient, hand-made aqueducts crisscrossing the territory.

From as early as the 11th century, and right up to present, water from the *bisses* has been used to irrigate fields, providing water for crops and livestock. They also served other downstream uses and users, including water provision, flood regulation, biodiversity support. More recently, as illustrated by this recent [New-York Times article](#), *bisses* have also become a tourist attraction (Reynard 1995, Crook & Jones 1999, Bréthaut 2013, Schweizer 2014).



For researchers at the University of Geneva's [Institute for Environmental Sciences \(ISE\)](#), the *bisses* are also fascinating for the governance implications that underlie them, and the lessons we can derive from them today. In order to share the water that passes along the *bisses*, and to invest in building them in the first place, users had to be highly organized. Indeed, sharing natural resources and investing in shared infrastructure requires users to establish *institutions* that determine how the infrastructure will be maintained and monitored, who has the right to use water provided by the infrastructure, and how much and when water can be used.

What is notable in the case of the *bisses*, is that it was not the government that organized users, nor a private market, but the users themselves. *Consortages* were groups of irrigators that organized themselves according to portions of water bodies for irrigation purposes. A *consortage* would hold rights to divert a certain amount of water, and would build the infrastructure, such as the *bisses*, required to do so. Any changes to the water delivered to the *consortage* would have to be agreed upon by all individual members. Within the *consortages*, however, these individual members – *consorts* – could trade or transfer their water rights

under certain conditions. The rights of these groups and their individual members to use water from the bisses were closely tied to duties or obligations, for example to participate in regular maintenance work, to help finance the infrastructure, and to participate in meetings.

Bisses are an emblematic example of successful "commons management", with users self-organizing to accomplish governance tasks on their own. Nobel Prize Winner Prof. Elinor Ostrom acknowledged the system in her seminal 1990 book *Governing the Commons*, in which she argued powerfully against the prevailing thinking at the time that user-based management was doomed to fail and lead to depletion of natural resources (Ostrom, 1990).

Relevance of the bisses and research on commons governance today

Commons research has never really gone away, but there has been somewhat of a resurgence in the past decades in light of the wicked governance challenges that we as a global community face in terms of managing natural resources, and dealing with climate change. The question of how to organize as resource users, how to share increasingly scarce resources, and how to overcome collective action challenges are as pertinent as ever. We'd like to suggest three ways that commons management is either useful or limited for informing current governance issues :

1. Thinking about self-organization today requires more abstraction when dealing with large-scale and complex social-ecological systems. Whereas the scale of analysis of the foundational commons research was small, or local, scholars today that are interested in larger commons like river basins, or the atmosphere, must interpret the lessons of the commons management literature in much more complex settings. For example, the users sharing a lake water are unlikely to be homogenous individuals, but diverse organizations such as municipal utilities, farming associations, industrial boards, environmental conservation groups and others.
2. There is an important role for the state in modern examples of common pool resource management, including the case of the Swiss bisses. Integration or nesting of user-based management within larger, state structures is in fact a key part of the success story, and such embeddedness can represent a win-win situation as much for self-organized institutions as for public administrations. Formal recognition of self-organized institutions brings value to existing use rights, ensures legitimacy to the whole system and can contribute to reinforce the flexibility of public policies that are often characterized by strong inertia and difficulties to adapt to changes (Bréthaut & Nahrath, 2011). Indeed, if the bisses are still functional, it is thanks to the recognition by the state (today consortages are recognized as corporations of cantonal law).
3. Finally, when we consider social equity in the distribution of resources, the commons management regime might, somewhat ironically, promote the *exclusion* of users. An important attribute of successful user-based management systems is a clearly delineated community of users (Ostrom, 1990). This implies that some users are inside the group, and some are outside of it – creating the so-called "club effect". Indeed, scholars have questioned the extent to which the commons management approach advances a philosophy of inclusion, or instead relies specifically on the necessity of *excluding* users (Schweizer, 2018).

The Swiss bisses are an iconic example of a governance system that is able to adapt, to evolve and to reinvent itself across time. Nowadays, the functioning of these water networks is not a question of survival anymore. However, such common-pool management systems remain an insightful entry point to reflect on today's challenges and notably on how institutions can show flexibility and adaptability to changing and uncertain conditions.

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