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The rule of law and the rule of water

Nicholas Hopkins

1 Life in Egypt is dependent on water from the Nile, and historically has adjusted to the seasonal rhythm of the river's flow. Egyptians have created cooperative institutions to make the best use of this water, and every so often they have passed laws spelling out the rights and duties of those involved in water. The question this paper addresses is the success of human efforts in Egypt to establish rules and laws to allocate the flow of water among different users and different uses. It examines various attempts over the last century or so to establish rules guiding the human use of the river's water.

2 Laws regulate not only the sharing among individuals and nations, but also the pricing of water, the efforts to maintain its purity and the handling of waste water. They also establish the government's role in dealing with the people and the environment. But laws do not cover all aspects of behaviour with regard to water, and there is also a substantial body of customary understandings.

3 Water has its own characteristics. In particular, it must flow, and so there is a time factor. In nature it can only flow downhill, although pumping can reverse that. Water is a renewable resource, and its renewability derives largely from fresh rain. It cannot be stored long for later use without risking evaporation. The principle must be to use it or lose it.

Constraints

4 Egypt, like all human societies, is governed or influenced by certain constraints. Some of these are inherent in the environment, and from that point of view the importance of the water of the Nile stands out (Butzer 1976; Ayeb 2002). Without the Nile's water Egypt would be a desert, because rain is an insignificant factor. The water of the Nile results mostly from rainfall in Ethiopia, and flows down the Blue Nile to Khartoum, and thence to Aswan and Egypt (Waterbury 1979, 2002; Said 1993). But this natural flow has for centuries been manipulated in Egypt, and thus the current slogan – that Egypt is the gift of its citizens as much as it is the gift of the Nile – makes sense. The country's "citizens"

organize themselves in a variety of ways to manage the water of the Nile. As Egyptian society has become more complex, some of those forms of management have been consolidated into rules or laws. Is Egypt then "ruled" by the water that gives it life, that is, by the givens of its environment, or by the "laws" or rules that its people have developed to articulate its society?

5 Jacques Berque argued that the characteristics of water determined the system. On the basis of his experience in Minufiyya (Delta) he distinguished between the discipline of the perennial canal system and the uncertainty of the annual flood system (Berque 1957:23):

> L'irrigation pérenne, depuis la mise en service effective du Barrage, avait multiplié les cycles agricoles, substitué au fatalisme de l'inondation annuelle le déterminisme opiniâtre du canal, de la rigole et du billonnage.[1]

6 The water control mechanisms implicit in canals and floods reverberate through the social system, and can lead to the passage of "laws" which then develop a dynamic of their own. On the other hand, where there are clear rules, farmers and officials alike refer to them as a basis and a rationalization for their actions.

7 Given the population growth in Egypt and the rising standard of living, water is more and more crucial to development. It is well known that Egypt is entitled to 55.5 billion cubic metres (bcm) of water from the Nile by virtue of a bilateral agreement with the Sudan. The current Egyptian Minister of Irrigation, Dr. Mahmoud Abou-Zeid, stated that Egypt's water use in 1990 was

8 59.2 bcm (1993: 74). Comparing that figure, already out of date, with current official population estimates for Egypt of 68 million, it is apparent that the per capita availability of renewable water in Egypt is less than 1000 litres per year.[2]This puts Egypt in the category of "water-scarce" countries. If Egypt is to maintain its developmental position, let alone advance, a more efficient use of available water is necessary. Since about 85 per cent of the water is used in agriculture, conservation must start there.

Bureaucracy, law and water

9 Egypt is thus an irrigation society.[3]Of the water that comes into the country about 84 per cent is used for agriculture (Abou-Zeid 1993: 74). The present irrigation system reflects the last stages of a complex history. In particular, it represents the reconstruction of the Egyptian irrigation system by Egyptian and European engineers in the nineteenth and twentieth centuries. The history of Egyptian irrigation is one of human efforts to control the flood for the benefit of agriculture. Over the centuries a system of dykes and canals grew up, which trapped the annual flood waters in basins and ensured that water covered the maximum area. This system was partly managed locally and partly through the efforts of the central government. It waxed and waned with the authority of the central government (Alleaume 1992, Maury 1987, Borsch 2000). Beginning in the time of Mohamed Ali in the early nineteenth century, a long process of centralization took place. This process continues to the present day, where it is symbolized by the Aswan High Dam, which in 1964 first blocked the flood and fundamentally changed the lives of the farmers.

10 An engineering success requires an administrative and legal counterpart. At the end of the nineteenth century, European observers reflected on the rulelessness of the system, and felt that this "chaos" favored the rich:

> The rich and the powerful are so interested in the present chaos being conserved, that they strongly oppose any change (Willcocks 1889: 288).

11 In the same vein, Barois, the French counterpart of Willcocks, noted (1887: 123-124; English translation 1889):

> Thus we find in Egypt neither a special set of rules covering water use, nor any particular court for irrigation affairs, nor suitable penalties for irrigation faults. This is surprising and one should take note ... The farmer enjoys the greatest freedom to open irrigation ditches or to create off-takes in canal banks and to use and abuse the water that flows by his land. There is no model to govern water extraction. There is no relationship between the area under cultivation and the size of irrigation head-works. Under these conditions, the big landowners have obviously a lot of opportunities to seize the water for their benefit and to the detriment of the small farmers.

12 However, comparative study suggests that this chaotic absence of rules was more in the eye of the beholder than on the ground (Maass and Anderson 1978), and thus these comments must be approached with scepticism.

13 In the 1880s, the English took over the management of the Egyptian irrigation system and found it deficient in various ways (Hopkins 1991). One of the engineers brought from India noted: "There can be no manner of doubt that, up to 1882, Egyptian irrigation was going down-hill" (Ross 1889: vi). The head engineer commented (Scott-Moncrieff, quoted in Sandes 1937: 371): "Happy is the reformer who finds things so bad that he cannot make a movement without making an improvement." Word play aside, from an engineering point of view the English worked to improve the network of canals, dykes and barrages. From a social point of view they strengthened the Irrigation Service and established procedures to govern irrigation (in the decrees of 1890 and 1894). By 1902, the French geographer Brunhes could note, with some envy, that the English had fully established their authority over the irrigation system through the creation of the Irrigation Service, with its rules, its omnipresent personnel and its concern for the economic dimension (1902: 388, 408):

> L'eau du Nil a créé l'Égypte et la recrée tous les ans; le Service de l'Irrigation, discret, silencieux, mais très agissant et partout présent, en surveillant la distribution de l'eau du Nil, est aussi en train de recréer l'Égypte, ou mieux de créer une Égypte nouvelle.[4]

14 The creation of an Irrigation Service – a bureaucracy – was thus as important as the physical engineering of water flow.

15 This concern with the bureaucracy and management of the irrigation system persists. It would seem that as the system became established and routinized, the penetration of the bureaucracy into the countryside was reduced. In recent years, unlike the Ministry of Agriculture, whose personnel were present in every cooperative and therefore essentially in every village, the personnel of the Ministry of Irrigation (known officially as the Ministry of Public Works and Water Resources, or MPWWR) were only present at middle and higher levels. The government's efforts have been focused on manipulating and controlling the overall structure of the system, while farmers of all types have been left alone to organize themselves with regard to the Ministry of Irrigation's supply of water. This has produced a double system of management. By and large it would be fair to say that neither side knows much about the other. The official system of irrigation is governed by laws and decrees emanating from the national government, while the

various local systems have been governed by patterns of local custom and rights of use. They mesh without integrating.

16 In the 1970s and 1980s various foreign donors, but notably USAID, began to debate ways of improving the performance of the Egyptian irrigation system. The goals were to produce more food (a higher yield) combined with saving water (anticipating a water shortage) and higher net income for farmers (Abdelaziz 1995). The overall goal was "the effective control of Nile waters for their optimal allocation to and within agriculture as a means of helping increase agricultural production and productivity" (USAID 1989). The means of achieving this was to modify the technical attributes of local irrigation systems and to combine this with farmer involvement through water user associations. The system would be based on "continuous flow", i.e. the farmer has access to water at any time, rather than approximately every other week as at present. From a social point of view, the approach was to encourage participation by local individuals and communities in the management of irrigation. This point is returned to below after an examination of other legal aspects.

Irrigation laws

17 The relevant legislation includes a set of laws enacted in the 1980s and 1990s, laying down the legal framework for the activities of the MPWWR, the issue of putting a price on water, and the maintenance of water purity by legislating against dumping.

18 It was also during this period – in 1992 – that the "owners and tenants law", repealing certain aspects of the 1952 land reform, was passed (Hopkins 1995; Saad 1999, 2002). Although both laws are part of the "modernization" of Egypt, there is no intrinsic connection between them, since the irrigation law focuses on the role of the state and the land law on relations between individuals. The 1994 amendment to the irrigation law reflected international development pressure to bring about institutional changes in the organization of irrigation. However, none of the versions of the irrigation law attempted to regulate customary patterns of cooperation among neighboring farmers.

19 Law No. 12 of 1984, replacing earlier laws such as that of 1971, sets out the basic framework for irrigation and drainage. It defines the areas in which the officials of the MPWWR can operate, and outlines the responsibilities of the users or owners. According to this law, the MPWWR controls the land needed for irrigation, including any construction or modification of it. The ministry is also responsible for determining the flow of water and the pattern of rotation among canals. It may interrupt the flow of water at any point or time. No one may dig a well, install a pump or waterwheel (*saqiyya*), without permission. No one may plant rice without permission (this is the only crop the law regulates). The ministry should ensure fair distribution of water. In case of flood danger, the ministry may mobilize anyone or anything, and do whatever is required to prevent a breach of canal banks. Any complaints about official decisions can be appealed to a higher level in the ministry. Irrigation engineers may be deputized by the Ministry of Justice to arrest or otherwise constrain people for crimes related to these laws. Miscreants can be fined in accordance with amounts specified in the law.

20 Owners may take water in proportion to their landholdings along a canal. Although landowners are entitled to a share of water, they do not own the water itself, and thus there is no basis for a water market. Users are responsible for maintenance of "private"

canals, often known as *misqâ*s in the literature, and drainage canals. The ministry is responsible for the tile drainage system. Village officials are also given some responsibility for supervision and maintenance.

Creation of irrigation communities

21 As various foreign donors began to work with the Egyptian government to improve the Egyptian irrigation system, Law No. 213 of 1994 was passed to amend the 1984 law. The government then issued Decree No. 14900 of 1995. This decree, in Articles 43–54, concerns the implementation of some provisions relating to irrigation and drainage law, and includes the text that authorizes the creation of water user associations along improved or developed canals in old lands. A slightly different text applies to new lands.

22 According to this text: "All farmers using the developed irrigation canal shall form an association or operate and maintain water pumps and irrigation canals and private irrigation equipment, and shall determine the costs of irrigation and collect them from the farmers." The MPWWR, through the general director of development, shall determine when a developed system exists, and where. The provisions in this law therefore apply only to such areas.

23 In establishing a water user association, the engineer meets with the farmers to inform them about the decree and to explain the details. At the first meeting, called by the engineer, the farmers elect their officials. The head is called a "shaykh"; there can also be a treasurer and a secretary, as well as a system operator.

24 The assembly of the association chooses a title, and applies to have it registered. The association's officials work with the ministry to develop the canal. When it is ready it is handed over to the association, which is then responsible for operation and maintenance, and for the financial accounting. The association has a bank account, and it sets the fees, collects the money, deposits it and decides on expenditures. The association chooses an operator, fixes a timetable, monitors crop choice, ensures water delivery, spreads technical information, encourages environmental awareness and settles any disputes.

25 This process was elaborated further by the Irrigation Advisory Service set up within the MPWWR to encourage and oversee this process (Abdelaziz 1995: 430-1; see also Hvidt 1998). Eleven prototype sites were established across Egypt – five in the Delta and six south of Cairo in Upper Egypt (Abdelaziz 1995: 428). The process was described by Abdelaziz (1995: 431), a ministry official:

> The phases are entry, initial organization, preparation for planning and design of *misqâ*s, participation in the improved *mesqa* implementation process and turnover, regular operations and maintenance and federation on the branch canals ... "These processes have" been revised each year as lessons learned are fed back ... The focus is on finding ways in which water users are involved in each of the seven phases of the process.

26 Abdelaziz also noted (1995: 431), referring to traditional irrigation communities, that "Many of these informal principles have been built into the existing formal water user associations." He does not identify these informal principles that have been incorporated, and the texts on the associations are not very specific. If it is only a matter of using the term "shaykh" for the head of an association, that clearly does not go very far. The very formality of the new associations, with names and a legal status, bank accounts, elected officers, swears with the informality of the less bureaucratized emergent organizations.

The cost of water

27 Establishing a cost for water has also been the subject of legislation and regulation. During the colonial period, it was assumed that the price of providing irrigation water was covered by the land tax. This is indirectly confirmed by linking the right to water to land ownership, as in the 1984 law. Thus it was the task of government to ensure agricultural prosperity by providing water and other measures, and this prosperity would result in higher tax revenues. In the current situation, the land tax is applied only to those owning more than five feddans (Said 1993: 275), and even then somewhat erratically. (Land records have not yet stabilized since the change in the agrarian regime in 1992/97.) This relatively high threshold means that much land is untaxed. Mohieddin (1995) concluded that the tax agents who collected the land tax were overwhelmed, and could not be counted on to collect a water tax as well.

28 The thinking of various officials, especially among foreign donors, has shifted to a direct water fee, or to be more precise, a user fee for use of the amenities of the irrigation system. This is sometimes justified in terms of "cost recovery" for the government, which pays to build and maintain the system. Thus, in the new water user associations which handle improved canals, the users[5]are supposed to pay a fee that would produce the revenue needed to run the pump and provide other maintenance. However, these associations are probably too new for us to judge them in this respect.

29 On the other hand, there is a continuing debate about whether farmers should be required to "pay" for their water. Two arguments against this are heard. Some argue that under Islamic law, water should be free for the taking. If water is linked to the land, then perhaps it is a right inherent in ownership. The counter-argument is the one alluded to above, that people are paying for the service of providing the water rather than for the water itself. Others argue that economic conditions for small (and poor) farmers are such that they should be subsidized by not having to pay for their water.

30 This is especially significant at a time when the agrarian counter-reform has driven up the cost of renting land. One is inclined to suspect that this concern for small farmers amounts to crocodile tears. It was certainly not evident when the Egyptian parliament passed the agrarian counter-reform law in 1992. This law was surely intended to make it easier for land to pass from the hands of small farmers to those of large farmers, and thus to push small and marginal farmers off the land. One may ask why a concern for the well being of small farmers was not also evident then. The answer could be that if the "owners and tenants" law of 1992 was indeed intended to benefit the wealthier, so is the refusal to countenance payment for water. In this, the interests of large and small farmers are not opposed but identical. Large farmers who argue that small farmers cannot afford to pay for water, are thus really protecting themselves from having to pay.

31 There is another argument about the need to pay for water. It asserts that farmers naturally tend to over-irrigate and therefore to waste water, and that the only way to control this is to impose on them a sufficient cost for water, so that they learn conservation the hard way – through their wallet. This argument has several flaws. On the one hand, most of the evidence is that farmers do not over-irrigate: for many plants, too much water is as harmful as too little. When they do irrigate in ways that might be excessive, this is usually to cope with the uncertainties of water delivery by the ministry

in the canals. Thus it is not a demand problem, but a supply one.[6]On the other hand, farmers almost always face a cost for water, because almost everywhere it has to be lifted from the canal to the level of the fields. Farmers have to maintain the animal that turns the *saqiyya*, or the motor that runs the pumps, or they have to pay another farmer for access to his water-lifting equipment. Thus if a cost for water alone was needed to ensure conservation, then such a system already exists.

Water purity

32 Water flows through Egypt typically in open canals, with a parallel set of drains for used water. Dumping waste in a convenient canal that can carry it away is a constant temptation. Some feel that flowing water purifies itself (which it might, but not within the distances involved). Excessive dumping diminishes the water quality and harms the downstream users. Since polluted water is used for irrigation and contaminates plants, the damage can be more extensive. Research carried out in Minufiyya in the mid-1990s shows that all the water sources available to villagers are polluted – the canals, the shallow wells and the artesian wells, although for different reasons (Hopkins *et al.* 2001: 42-43).

33 The Egyptian parliament has passed laws forbidding such dumping and imposing fines. Most people are aware of these laws, for instance, Law No. 48 of 1982. In our sample in the late 1990s, 71 per cent admitted to knowledge of this law. They understood that such dumping is the major cause for poor water quality. Nevertheless, they continue dumping (and tolerating other forms of pollution, such as agricultural run-off), in part because alternatives are not available. Dumping can entail a fine of LE1000, but the law is not enforced. We have no record of people chiding their upstream neighbors for fouling the canals (Hopkins *et al.* 2001: 100-104). Mehanna *et al.* (1984: 57) report that the fouling of the canals adds a cost for farmers, as they must hire machinery to clean out the hazardous metal and broken glass in the canal bed – all illegally dumped.

Irrigation communities

34 Despite the references in ministry literature to the study by Mehanna *et al.* (1984), there is no indication that government officials took much account of local irrigation communities and the various forms of customary law and practice that regulate them. They are perhaps guilty of what one can call the "fallacy of the empty box" – the notion that there is nothing there (i.e. in rural society) except what the authorities put there. Since the box is empty, there is no prior organization to take into account. One can build from scratch. Ignorance of local organization is confused with the absence of such organization. But the box was not really empty.

35 Although there is one law for managing irrigation systems in Egypt, there is considerable variation in the local organization of irrigation (Mehanna *et al*. 1984). The critical fact in this local social organization of irrigation is that the water must be lifted from the government canal or from the *mesqa* to the network of field ditches that actually transports the water to the fields and crops. The lifting distance is typically from 50 cm to one metre. The cooperation required to manage the lifting point and the field ditches

becomes the focus of the local social organization.[7]The group of people who work together can be labeled the "irrigation community".

36 In much of the Delta, for instance, there are groups of farmers who share the use of a *saqiyya* or a pump on a more or less equal basis (known in the literature as a "*saqiyya* ring", see Mehanna *et al.* 1984: 42-46; Radwan 1997, 1998). In large parts of Upper Egypt, especially between Asyut and Suhag, the irrigation system is built around large pumps that are typically (but not invariably) owned by the larger farmers, who charge other farmers for the service of lifting the water (Hopkins 1987: 98–105). In the Fayoum, where the steeper slope allows gravity flow, groups of farmers manage the division of the flowing water by turns among themselves (Mehanna *et al*., 1984: 92–133). In certain areas of Middle Egypt (Minya), gravity flow irrigation is possible (*ibid*.: 66–91). In the new lands of Tahrir, west of the Delta, the government pumps the water up a considerable height before farmers take over the management of the final lift (Hopkins 1999).

37 The basis for most rural social organization in Egypt is the village. The village, however, plays a relatively small role in irrigation *per se*. Most of the irrigation communities are much smaller than a village, and there is no coordination between them. In so far as there is organization at higher levels, it follows the canal structure, not the village boundaries, and the two are not connected. However, the conventional dispute resolution mechanisms found in the village, which reflect village social organization, can be brought to bear on irrigation disputes. These typically involve negotiation and mediation, led by senior men, rather than the application of rules, although they are built on shared understandings (Nielsen 1998).

38 One should also keep in mind that most of the informal and "traditional" water user associations incorporate individual distinctions and status differentiation, based on wealth, power, age, and so on, that are highly relevant for rural Egypt. The assumption in the literature on the new associations is that there are just undifferentiated "farmers"; nothing could be less helpful (see Radwan 1998).

39 Hunt and Hunt (1976) have identified the main tasks for an irrigation system as maintenance, allocation of water and conflict settlement, in addition to construction. The design of the new system in Egypt seems to take account of these tasks better than some others, where the focus is almost entirely on maintenance. However, it remains to be seen whether the bureaucracy will really relinquish its control over water, and whether the new (and still largely untried) system can indeed draw on the "social capital" implicit in the existing irrigation communities. [8]

Problems and solutions

40 Water is scarce at the national level, and planners are apprehensive. But it is not scarce at the local level, and indeed appears plentiful. The main anxiety of farmers has to do not with the amount of water they think is available, but with factors in the ministry that impede water from entering their *misqâ*s and canals. For instance, the ministry may divert water from one canal to another, thus causing a shortfall in the first canal, or there may be unannounced maintenance or construction problems. The ministry may either oversupply or undersupply a particular canal without much warning. Sometimes deferred maintenance or similar problems may reduce the flow of water.

41 Farmers are also resourceful in dealing with these problems. A common solution is to establish an illegal connection between two canals by transferring water from one to another by pumping or by flow (see case in Mehanna *et al.* 1984: 85-86). Tampering with the irrigation works to increase flow is also known. Unlike taking extra water, this can lead to a charge of destroying public property, a more serious matter (Mehanna *et al.* 1984: 132). In some cases, farmers along a canal join together to send a complaint to the local ministry officials, or even to the provincial governor (Mehanna *et al.* 1984: 125) or to the ministry in Cairo (Radwan 1997: 87-88). This sometimes has the desired effect.

42 Also, most of the irrigation problems reported by farmers do not deal with competition for water, but with labour, maintenance and other problems. For instance, in the Delta, when much water lifting was done by animal-powered *saqiyya*s, which are relatively slow, farmers became impatient for their turns and arguments could erupt. A more widespread use of the faster pumps has reduced this. There can be problems between farmers with adjacent fields when one farmer over-irrigates and the water spills over into the field of another. Farmers in a single irrigation community can quarrel over responsibility for maintenance, but the shared understanding of what those responsibilities are, and the knowledge of what the solutions are, limits such disputes. Generally, water quarrels are much more circumscribed and less emotional than those over land. They are generally not over water itself. The ability of some to prevent others from the use of water is limited by the nature of flowing water. Mehanna *et al.* note (1984: 20) that some of the annoyance that irrigators may feel with each other is deflected to the outside enemy, the ministry.

43 The most serious quarrels reported are in the Fayoum, where actual water theft is possible. The gravity system there involves time shares and long ditches, and occasionally a farmer who is upstream of the actual user diverts someone else's water to his own use while the legitimate user is busy in his field. Usually the aggrieved party seeks out the designated head of the irrigation system, who identifies the problem and fines the culprit. Once, in an extreme case where one might suspect other factors, such a dispute is said to have led to murder (Mehanna *et al.* 1984: 133).

Concluding comments

44 The flow of water in the Nile, and especially its annual flood, is a natural event. This event was controlled first of all by engineering to regularize the annual flow of water, and secondly by government laws and local practices, created by the Egyptians to systematize the expectations that people may have of each other with reference to water.

45 In Egypt, various laws pertaining to water are passed by parliament. Many lay down guidelines for general administration. Others attempt to prohibit such behaviour as dumping, or changes in the engineering structures of irrigation, but are only as good as their enforcement. Laws setting up a framework for behaviour, such as for the water user associations, effectively represent a top-down approach, because the initiative rests with the ministry. It is too early to say whether they will be effective in creating new institutions.

46 In the meantime, many long-established social institutions function effectively. In the Delta, there are hundreds of thousands of shared lifting points. In some cases the lifting point is organized in a "*saqiyya* ring"; in other cases a mobile pump is brought in by each

user, but the users must still share a network of field ditches. Whether it uses animal power or a machine, all of the lifting points operate on essentially the same social principles, which are felt with the force of law. This is true even though there is no mechanism to ensure it. The members of the ring understand the rights and obligations involved, and they generally work smoothly. The same could be said for the privately owned pumps in the Asyut-Sohag area, for the gravity flow systems in Minya and Fayoum, and certainly for other systems that remain to be analysed. These reflect customary practice rather than law. They are more a response to the ecological and environmental constraints imposed by water, than a reflection of managerial philosophy.

47 The nature of water creates constraints on how it can be managed. Unlike land, it moves through space and time. It can also deteriorate through pollution, or be "wasted". It must be managed both at the level of the river basin, and at the level of the individual farm or canal. The social framework for managing water is Egypt is provided first of all by the laws that govern the state, and secondly by the practices of millions of farmers. How farmers manage is affected first of all by the rule of water, and second by the rule of law.

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NOTES

1. "Perennial irrigation ... has ... substituted the stubborn determinism of the canals for the fatalism of the annual flood."
2. One source gives the figure of the availability of 936 cubic metres per capita renewable freshwater per year in 1995. The per capita amount can only decline if population increases while the water supply remains stable.
3. Some, such as Karl Wittfogel, have called it a "hydraulic society": "The hydraulic state is a genuinely managerial state. This has far-reaching societal implications. As manager of hydraulic and other mammoth constructions, the hydraulic state prevents the nongovernmental forces of society from crystallizing into independent bodies strong enough to counterbalance and control the political machine." (1957: 49). However, Wittfogel did not adequately take into account the patterns of local control of irrigation, which are strong in both premodern and modern Egypt.
4. "The water of the Nile created Egypt and creates it anew every year; the Irrigation Service, discrete, silent, but very active and present everywhere, by supervising the distribution of the Nile water, is also recreating Egypt, or rather, it is creating a new Egypt."
5. There was no discussion of how to handle the situation where the user is not the owner.
6. Radwan (1998) also argues that the Ministry of Irrigation oversupplies the canals with water by at least 50 per cent.
7. The "below grade system" which dominates in Egypt today was instituted at the beginning of the 1950s precisely to create a cost for water and thus encourage more cautious use (Mehanna, Huntington, and Antonius 1984: 18, 69).
8. Social capital here can be understood as the knowledge of ways to organize to achieve goals.

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Mots-clés : droit de l'eau, eau, irrigation

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