

Research Paper

Territorial Cooperation for Exploitation of Qanat through Grounded Theory Method (Case Study: Qanat of Hasan Abad – Yazd Province)

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ABSTRACT

This paper takes up the qanat of Hassan Abad and its special peculiarities which made it eligible to be nominated as UNESCO World Heritage in 2015. *Hasan Abad* originates from Ebrahim Abad valley near the town of Mehriz and travels 40 kilometers to Yazd. The water of this qanat is shared out between the town of Mehriz, the village of Dehno and Yazd (district of *Hasan Abad*). One of the most important properties of this qanat is its territorial cooperation which is resulted from a lax territorial behavior caused by the qanat's dynamics. Dormant territorial behavior can pave the way for a high sense of cooperation and social capital, which are all associated with the peculiarities of the qanat. In the region, the social foundation which has been formed and evolved around the water resources management could have increased the sense of cooperation. Through the research method of grounded theory, this paper tries to answer the question of how a water current like the qanat of *Hasan Abad* can pave the way for such social convergence and cooperation between three beneficiary territories.

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Extended Abstract

1. Introduction

In the central plateau of Iran, the climatic and geographical conditions gave rise to the technology of qanat, which underlay the production systems in this region. A qanat consists of some shaft wells interconnected by a subterranean tunnel that drains out the groundwater seepage and conveys it onto the

earth's surface using the height difference between the two ends of the tunnel.

This paper takes up the qanat of *Hasan Abad* and its special peculiarities, which made it eligible to be nominated as UNESCO World Heritage in 2015. *Hasan Abad* originates from Ebrahim Abad valley near the town of Mehriz and travels 40 kilometers to Yazd. The water of this qanat is shared out between the town of Mehriz, the village of Dehno and Yazd (district of *Hasan Abad*). Its irrigation cycle varies in these places from 6 days in Mehriz to 8

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days in Dehno and 15 days in Yazd, *Hasan Abad*. Irrigation cycle means a period of time over which the farmers take a turn getting their water shares. This water is divided into 6240 shares in Dehno and 15700 shares in *Hasan Abad*. The mother well has been sunk in Madvar (Mehriz). The qanat is fed by an alluvial aquifer that has been formed in the limestone formations of Taft.

This qanat is divided into five portions at the Sadati division spot. One fifth is allocated to the Sadati neighborhood and the rest flows towards Yazd. After the water reaches the village of Dehno, it is divided again into two equal portions, one (two-fifth of the whole) belongs to the shareholders in Dehno, and the rest is conveyed to *Hasan Abad*. In Dehno, The shareholders were fewer at first due to the inhabitants of the village but gradually the number of qanat owners grew to 700 - 800 individuals at present in the wake of the death of elderly and the division of their lands by heredity.

2. Methodology:

This research was done through a qualitative method known as Grounded Theory, which is made up of two interacting procedures; gleaning information and analysis. The sorting and coding of information were used as effective tools, which facilitated our analysis. These two procedures eventually resulted in the formation of a conceptual model. Every interview served as a clue that guided us toward more interviews. Two target groups were envisioned for the sampling as follows: A) local community of qanat shareholders and beneficiary farmers B) qanat practitioners.

3. Results

One of the most important properties of this qanat is its territorial cooperation that is resulted from a lax territorial behavior caused by the qanat's dynamics. Dormant territorial behavior can pave the way for a high sense of cooperation and social capital, which are all associated with the peculiarities of the qanat. One of the most important results of social capital is cooperation, which in turn facilitates the tenor of sustainable development.

4. Discussion

Territorial cooperation, which is mostly anchored in the management of *Hasan Abad* qanat, could have amassed a valuable social capacity for sustainable development in the region. Territorial cooperation is fed by a waning territorial identity, which has been studied along the course of *Hasan Abad* qanat. Territorial identity and behavior

can impede the development of cooperative activities, which necessarily involve different territories. However, this qanat has a good potential for cooperation even between the beneficiary territories, which can be regarded as important groundwork for sustainable development in the region. Our field studies show that the structural peculiarities of *Hasan Abad* qanat have contributed to the accumulation of social capital, which can, in turn, pave the way for more cooperation between the different territories. In fact, a special social organization has emanated from the technical conditions of qanat and then evolved into its present status. This social organization gave rise to a stronger sense of cooperation, which later protruded from the water issue and penetrated the other realms of social life.

5. Conclusion

The qanat of *Hasan Abad* needs regular maintenance to keep running, which is provided by the three beneficiary territories whose benefits are tied up with the integrity of this qanat. This situation encourages more cooperation across the territorial borders, which eventually leads to a waning territorial identity. In other words, the circumstances mentioned above blur the territorial boundaries to some extent, which in turn facilitate more cooperation and interaction between the territories, and this cycle continues.

In the region of Yazd, the qanat of *Hasan Abad* is ranked as a qanat with the most water discharge, and its water is of high quality. This qanat is like a thread running through three places, knitting their interests together. These places are all located along the qanat course, utilizing the same water source. This qanat is an extended water supply system whose maintenance requires a lot of human resources like labor, time, and money

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Conflict of Interest

The authors declared no conflicts of interest