

### Case Study – City Planning and Organization of Indus Valley Civilization

**Overview.** Imposing order and structure is a natural human tendency not just for things and activities but also for natural resources like land and water. The interesting part is that it is prevalent not just in modern day cities but it dates back to 5000 years ago during the habitation of Indus Valley. Indus Valley Civilization was an ancient civilization (3300-1300BC) located in northwest Indian subcontinent (including present day, Pakistan, northwest India) on the fertile flood plain of Indus River and its vicinity. This ancient civilization has amazed historians with its unprecedented organizing principles, which were used to plan, develop and evolve the towns and cities. **The civilization demonstrates advanced application of process oriented modeling techniques with respect to organizing and optimizing its resources.**



Figure 1 Geographical Location of Indus Valley Civilization

**What is organized?** **The land in Indus Valley Civilization was the primary physical resource,** which was intentionally laid out into well-organized cities so that people can live together and interact with each other as well as with natural resources like river, forests, stones and man-made resources like houses, streets, wells and granaries. There were two most important urban centers of the Indus Valley Civilization: Mohenjo-Daro and Harappa. These cities were built on the Coast of the Indus River. These cities also grew up at the most important trade routes of that time and were surrounded by rich agricultural lands. Thus, farming, making handicrafts and trading were the occupations of people and these interactions or activities required an organization structure. **Each city had well-planned architecture, public granaries and efficient sewage and drainage system.**

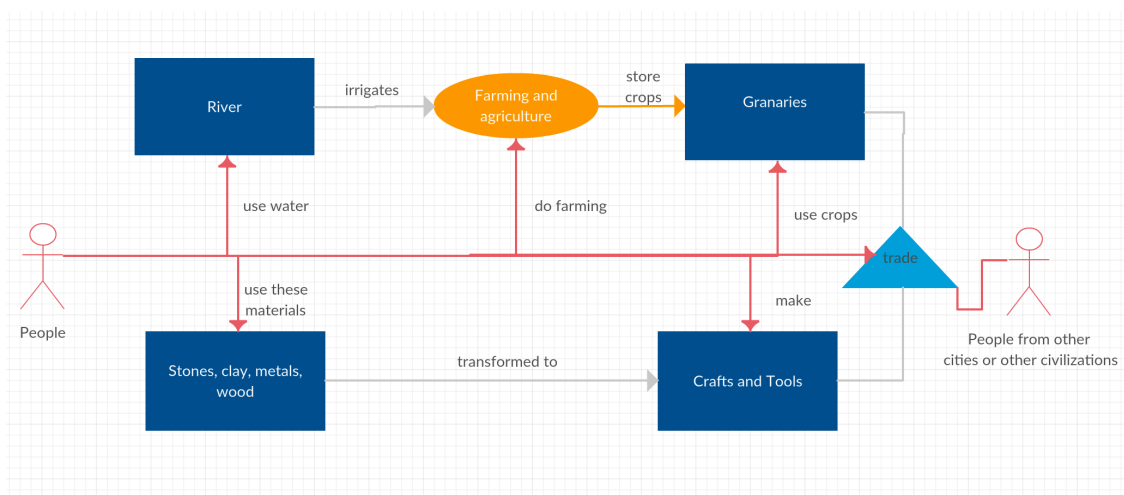


Figure 2 Interaction Diagram of People with resources

**Why was it organized?** The cities of Indus Valley Civilization were organized for several reasons. Firstly, the cities were developed close to the Indus River because the Indus people needed river water to drink, wash and to irrigate their fields. They also made boats to travel up and down the rivers for commutation. Secondly, since the river was so close, the cities were built on giant platforms and elevated grounds for protection from seasonal flood and polluted water. Moreover, storage, waste management and sanitation were an important part of the daily concerns of the Indus people and hence, there were wells, granaries and an efficient drainage systems. Indus people also had religious beliefs and an appreciation for astronomy, which is reflected in the orientation of the city and the streets along the cardinal directions – east to west, north to south relating to the rising and setting of the sun. To ensure mutual peace, respect and equality between all, the houses were designed to look similar and each of them had access to the same sanitary and drainage system.

**How much was it organized?** The engineering skill of the people of Indus Valley Civilization was remarkable for their age. They not only followed modern principles in their building techniques, but also achieved advanced standards of construction. The quality of municipal town planning suggests knowledge of urban planning and efficient municipal governments, which placed a high priority on hygiene. Although the population (number of users) of the Indus Valley at its peak was about 5 million, the organization they achieved was comparable to any modern day city. **The streets were laid out in a perfect grid pattern**, similar to that of present day New York. Though the idea of a street grid seems perfectly ordinary to city-dwellers today, it was unusual at that time. **The division of space into separate blocks organized on a grid** is seen not only in the layout of city streets and neighborhood but also in house plans, the panels of painted designs on pottery, ritual diagrams on seals and individual signs of the Indus script. This reflects that a culture develops specific pattern or style that are repeated in different objects or styles. The houses were also designed in a way to protect from noise, odors, and thieves. As seen in Harappa and Mohenjo-Daro, this urban plan included the world's first urban sanitation systems. The ancient Indus systems of sewage and drainage that were developed and used in cities throughout the Indus Empire were far more advanced than any found in contemporary urban sites in the Middle East and even more efficient than those in some areas of modern Pakistan and India today. Their impressive dockyards, granaries, warehouses, brick platforms, and protective walls show the advanced architecture of the Harappans.



Figure 3 Plan of houses and streets, Mohenjo-Daro



Figure 4 Plan of the New York City



**Figure 5 Reconstructed Image of Mohenjo-Daro. Figure 6 Satellite Image of Manhattan, New York**  
Image credits: University of Minnesota.

**When was it organized?** The remains of Indus Valley Civilization were excavated and studied by archaeologists in the 18th century. Based on their study; the origin of the Indus Valley civilization dates back to 3300 BCE. Organized farming practices and urbanization started to take shape by 3000 BCE. This period of time is also called the Early-Harappan phase. The years between 3000 BCE and 2600 BCE saw the development of Mohenjo-Daro and Harappa into well-organized cities and marked the beginning of the Mature Harappan phase. This phase lasted for over 500 years and saw the Indus Valley civilization flourish into organized and meticulously coordinated agrarian society.

**How (or by Whom) was it organized?** Indus Valley was the first civilization in the world to develop **precise measurement and weighing system and equipment**. The people of the Indus civilization achieved great accuracy in measuring length, mass, and time. This helped them in organizing and **standardizing** their construction in cities. Each city was divided into two planned areas or mounds, oriented in different directions. The eastern mound was lower in elevation and consisted of similar looking series of houses built against the streets. The networks of streets were laid out in neat patterns of straight lines and right angles forming a grid pattern and running along north-south and east-west cardinal direction. The buildings along the roads were all constructed of oven-fired clay bricks that were uniform in size as they had a keen eye for standardization. Within the city, individual homes or groups of homes obtained water from nearby wells to meet day-to-day needs. Each house had a bathroom with efficient plumbing system and the bathroom pipes were connected to the underground clay pipes on the streets that carried dirty water and sewage outside of living spaces.

The western mound had several large building and structures that were used for public gatherings, religious activities or important administrative activities **suggesting a high degree of social organization**. A citadel was built on top of bricks almost 12 meters high for defense purposes or for diverting floods. There were also huge granaries designed with bays to receive carts delivering crops from the countryside, and there were meticulously placed ducts for air to circulate beneath the stored grain to dry it. There were few barrack-like dwellings close to granaries where workers lived so that they do not have to travel long distance and they can be more productive and efficient. At Mohenjo-Daro, close to the granary, there is a great public bathhouse called Great Bath, with steps down to a brick-lined pool in a courtyard. This giant tank would have been used for either rainwater harvesting or for special religious functions. There was also an extensive canal network, which diverted the floodwater of Indus River for irrigation.



The uniformity and similarity in the construction and architecture of all the cities in Indus Valley suggest that **there was a strong centralized government that coordinated the organization efforts and laid out standards.** Archaeological records justify that the Indus civilization showed no evidence of armies, kings, slaves, social conflict, prisons, and other oft-negative traits that we traditionally associate with early civilization. Thus, Indus Valley civilization was a meticulously planned, well-organized egalitarian society.

Click [here](#) to see the panoramic view of Harappa City. (Created on dermander.com)

Drainage Systems



Brick Houses



Granary



Great Bath



Figure 7 Different Parts of Harappa City. Image Credits: [www.harappa.com](http://www.harappa.com)

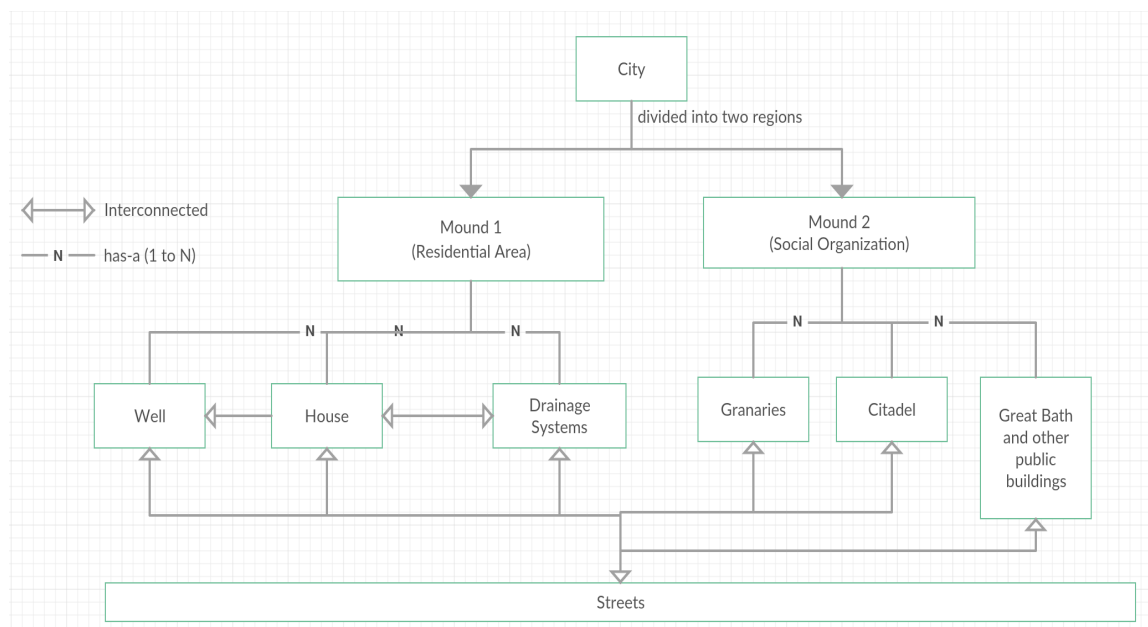


Figure 8 Ontology Diagram of a City in Indus Valley Civilization

**Other Considerations.** Despite several attempts, the script of Indus Valley Civilization has not been deciphered yet. Had we understood the script, we could have learnt much more about this civilization, their controlled vocabulary, their thoughts and insights that went into the planning and architecture of the cities and possibly the reason for their decline. It is not clear why and how such an ordered civilization came to an end and got buried. Few archaeologists suggest that the reason of their demise could be a natural disaster like changing coastline, unpredictable monsoons, floods, or earthquakes while others believe that it was foreign invasion and cultural changes that could have led to the fall of the Indus Valley Civilization. It will be interesting to know and analyze about the real cause of decline of such organized cities so that we can use that information for better city planning and management.

**Sources:**

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