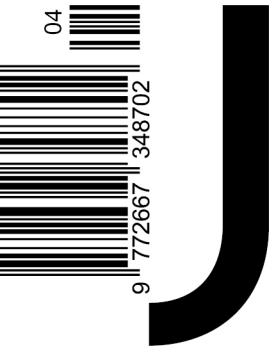


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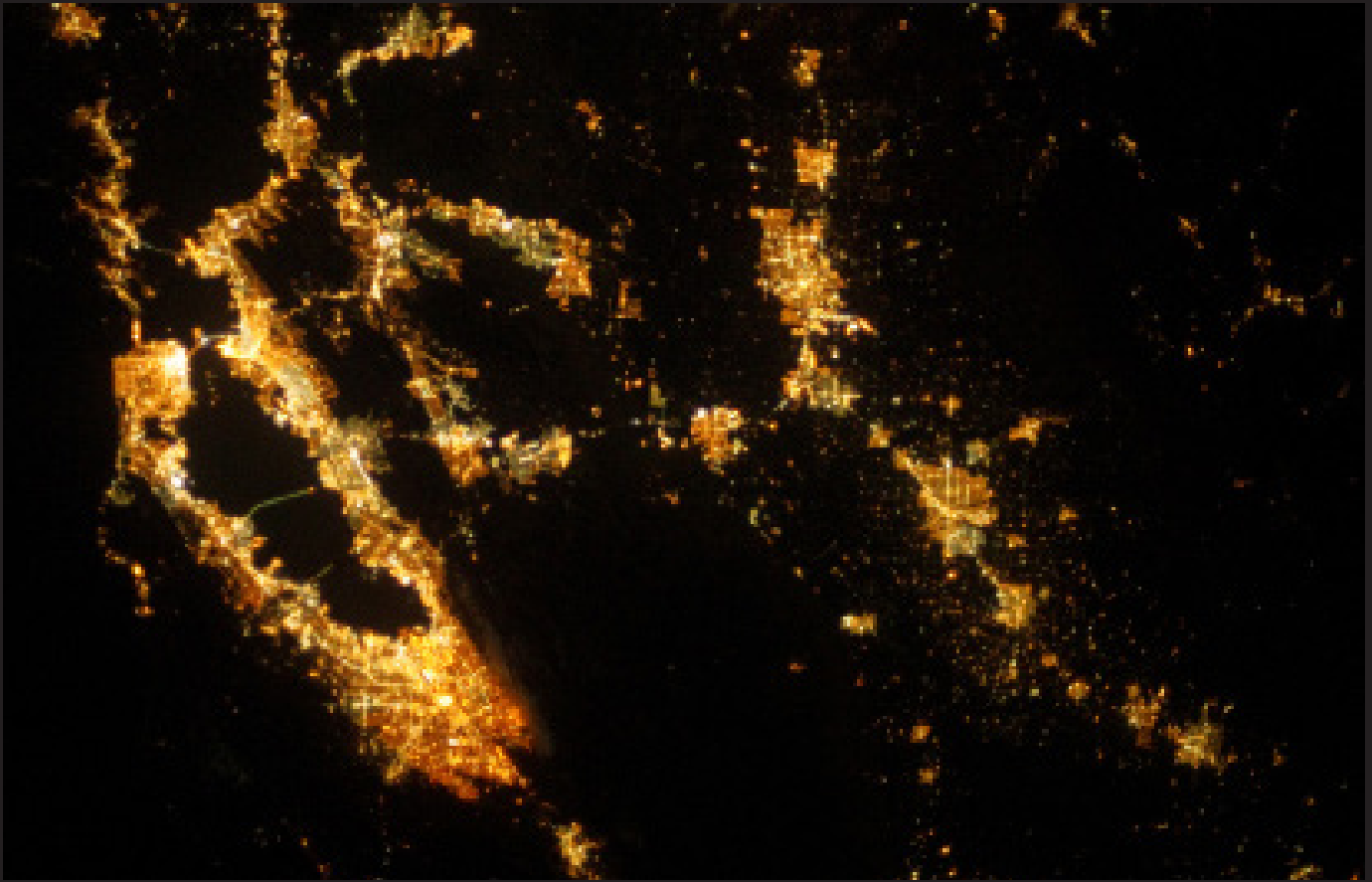
Issue #04 Prospects



DU

Journal of Delta Urbanism
Delft University of Technology

Delta



San Francisco Region at Night , Astronaut photograph ISS037-E-2604 was acquired on September 25, 2013, NASA

Kristina Hill

Delta (noun) /'deltə/¹

- the fourth letter of the Greek alphabet
 - a change in a figure or amount
 - an area of low, flat land, sometimes shaped approximately like a triangle, where a river divides into several smaller rivers before flowing into the sea.
-

The term Delta refers to an ephemeral or transient landform that we can also call a fluvial fan, connecting a river system, sediment transport and a tidal system and usually an ocean environment. Deltas come into being because certain conditions occur. They are shaped by the larger environment that allows them to occur in the first place and then can make them go away. The necessary conditions for Deltas to form are a river system that is discharging into a tidal environment and has high sediment loads and a relatively stable sea level. Deltas are highly dynamic environments with channels that shift, flooding events as well as regular flows, changes in sea level, surges and both cyclical and progressive rise and fall of sea level. Interestingly, the history of the term has come to rely on a letter of the Greek alphabet (Δ) that is also used to represent change in science. It seems that this connection between the Delta as a transient landform and the use of the same Greek letter to describe difference reflects how dynamic these environments are.

Culturally, what is interesting about Deltas is that due to the fact that these are rich environments with plenty of resources such as freshwater, groundwater and ocean resources, they became centers of cultural development. In Mesopotamia or the Indus valley the people watched what happened to the Deltas over time and it became incorporated into their cultures to understand how a Delta changes from forming to eroding or being submerged. Reflecting on Herodotus' definition of a Delta as well as the history and origin of the term, there is an ancient Greek riddle which recounts that Alcmaeon would never find peace for killing his mother until he finds land that didn't exist and was never seen by the sun when his mother was alive². The land refers to the Delta of the river Achelous in Greece. There is a very early ritual about how people observed the formation of Deltas and there is a lot of cultural change associated with the loss, the flooding, or the silting in of Deltas which happened in Mesopotamia. The deposition of gravel and silt completely changed what it was to live in cities like Lagash (Tell al-Hiba) or Ur. Archeology allows us to understand how people lived with Deltas that were so dynamic. Examples from the first cities in Mesopotamia provide insight on how civilizations developed the first cities in Deltas and tried to operate a city in those dynamic conditions.

The way that Deltas evolve often leads to their own end because the rivers will often on a higher rain event find a steeper course to an outlet like the sea. The Delta gets longer and flatter and then eventually some flood event occurs, and the water finds a steeper channel turning the Delta into an island that erodes. The process that builds the Delta also leads in many cases to cutting it off from its sediment supply, being the same process of rain events that cause the river to jump out of its channel. Deltas are always appearing and disappearing, but they require a stable sea level to appear because the river needs to deposit the sediment in the same place for a long period. Eventually, a stable sea level is necessary for thousands of years. There is a slow rhythm of change associated with the formation of a Delta; I don't think we are going to see many new Deltas form soon, at least not big ones.

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- 4 Hammer
- 5 Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, Vol. 1, First edition (Berkeley, Calif: University of California Press, 1996).

Today, what is interesting about Deltas is the way they are changing our culture. Deltas are changing our sense of human capacity; what it is that we are capable of. Most likely this occurred also 5000-6000 years ago in cities like Ur⁴. Today, at a time that we thought we are comfortable with being able to live in a Delta environment this is challenging us again. We learn that we are more connected to the *longue durée*⁵ of time and that we are not living in an era where we are able to master the forces of nature. Instead, we are living like our ancestors did: in a dynamic world which is more powerful than we are. But that's also what is interesting about Deltas as a flashpoint culturally, as well as an ephemeral landform that is based on its environment and the conditions of this environment.

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