

Danish Researcher Solves the Mystery of Western Civilization

After 20 years of investigation a researcher from Aalborg University explains how Western civilization arose and why it later could spread to most of the world. It all began with something as simple as a wheel plow!

One of the great questions of international history is why Western European civilization was able to spread and essentially surpass all other forms of civilization. At the same time, we have lacked an explanation of why the establishment of cities in Denmark and the rest of transalpine Europe experienced a real boom in the 12th century. Now a Danish researcher in urban and societal development is ready to present results that provide an unprecedented and compelling answer.

The first step in the process was to let go of self-sufficiency. When the power grid breaks down on a cold winter day, or a strike shuts down the grocery stores, most people know what that means. Survival depends on consumption of external reserves of energy built up in the process of production; survival is thus based on people's mutual dependence. The abandonment of self-sufficiency spread throughout transalpine Europe with the transition to plow farming in the 11th and 12th centuries. The new tool consumed enormous amounts of iron for annual plowing, because the cutting parts of the plow wore down quickly, and iron is energy, bound in a processed raw material. The amount of iron needed yearly in Denmark at the beginning of the 13th century is estimated to have been more than 500 tons – the same amount as that used at the end of the 18th century.

The resources to extract that amount of iron were completely absent in Denmark, but in Southern Sweden and in Norway, it has been established that extraction increased significantly during the 12th century. Here, in turn, food production was difficult due to natural, climatic conditions. Two geographically distinct producers were dependent on each other for their survival, and middlemen were needed to facilitate the contact between them.

- Plow farming meant that farmers had to abandon the self-sufficiency they had always sustained, and this was also the case for the new iron producers. It was a situation that people living in cities had always been in, but for several millennia, city people made up just a tiny fraction of the Earth's population. The absence of self-sufficiency is the core of every civilization. The novel aspect in the period in question was the spread of this absence in the rural areas of transalpine Europe, explains Jørgen Elsøe Jensen from the Department of Development & Planning at Aalborg University.

Elsøe Jensen defends his doctoral dissertation on the subject on November 25th and has just published his book *Gensidig afhængighed – en arv fra fortiden (Mutual dependence - a legacy from the past)* which ties the numerous factors together into a coherent theory. The book should arouse international attention as it solves some of the mysteries of the origin of Western civilization and its global success. Since the early 1990s Elsøe Jensen has studied medieval towns in Denmark, including a major study for the Danish Ministry of the Environment, and even then he was on to the notion that the introduction of wheel plow played a crucial role in the establishment of cities and the development of the particular technical culture characterizing Western civilization.

- Consumption of external reserves of energy in the production opened up completely new streams of the Earth's material – land could be cultivated, capital was accumulated in production, work was made useful.



Just as today's consumption of fossil energy, the new technique made room for a larger population – perhaps nearly three times as large in the intensively cultivated agricultural plains of transalpine Europe. But plow farming also demanded a new type of human capital, that is the capability to count, communicate, and solve the challenge of creating an exchange system that worked, explains Jørgen Elsøe Jensen. Western civilization is a culture of survival which created a strongly self-disciplining environment.

The wheel plow had been known since before the birth of Christ, so why would it be well over a thousand years before its use became widespread? The answer is that the need did not arise until the populations grew so much that they were forced to take on the huge cultural challenge. Another question is why plow farming did not develop in other places: this was largely due to the very different ecological conditions beyond human control. In transalpine Europe the preconditions for plow use existed as well as the urgency to increase the food production. A small society like Denmark could not close itself off when the need for iron from the outside arose. The descendants of the Vikings had to learn to live in a larger culture, where exchange, communication and communities were essential for survival. These conditions are the evolutionary advantage of Western civilization, and they were already in place when the populations of Europe began to grow persistently again in the 1700s. Our present day is based on a nearly 1000-year-old experience that in biological terms is extremely successful but at the same time deeply problematic due to our strong dependence on external energy sources.

Jørgen Elsøe Jensen's research and conclusions stem from his detailed studies of the age of the medieval towns of Denmark and their physical structures, also dealt with extensively in his doctoral dissertation. The establishment of many new commercial towns in the 12th century is due to the emergence of the highly productive plow farming, but this is not a uniquely Danish phenomenon. The exchange of food and iron was the basic economic pump behind the massive establishment of cities everywhere in transalpine Europe.

In Denmark the new establishment of cities took place within a very short time from approximately 1150 to 1225 AD, when agriculture took leave of self-sufficiency. The proportion of people physically living in cities grew from approximately 1 to 10 percent, many of the existing villages moved to suitable locations for the new farming, and just as many new towns sprung up.

All the way up to today, this has been defining for how the map of Denmark looks because neither agriculture nor the structure of society changed much before the 1880s and 1900s, says Jørgen Elsøe Jensen.

- The cultural landscape created in the late 1100s still exists, but now we are well on our way to breaking away from it, and it's actually a pretty human characteristic that we undertake to change our basic circumstances and our surroundings without really understanding them in advance.

Jørgen Elsøe Jensen's very comprehensive dissertation will be defended on November 25th under the direction of Finn Kjærdsdam, Rector of Aalborg University, whose field of research is also urban planning and societal development. The dissertation consists of two parts: the mapping of cities and their survival to today, and the explanation of the phenomenon and the far-reaching significance of Western civilization for the Earth's population.

Further information:

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- General press contact: Tor Bagger, AAU, tel. +45 99 40 96 44, tb@adm.aau.dk
- The dissertation *Gensidig afhængighed - en arv fra fortiden (Mutual dependence - a legacy from the past)* has been published as a book in Danish by Syddansk Universitetsforlag (University Press of Southern Denmark)
- Jørgen Elsøe Jensen defends the dissertation on November 25th at 13.00 in Auditorium A, Fibigerstræde 15, Aalborg, Denmark