

# **Food Storage Technology and Social Interactions**

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On my honor as a University Student, I have neither given nor received  
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## **Introduction**

Refrigerators have improved people's diets and lives, but most don't think about how the refrigerator is one of many methods to store food that all have had an impact on how society has developed. Throughout history, humans have had some sort of relationship with food storage devices. From the early days when humans became secondary, during the Neolithic Revolution, to the present time. Being able to store food at first seems not to have a large effect on human life, but when looking at food storage technologies through the lens of technological determinism it can be seen that they have integrated within society to facilitate interaction on the global and individual level. This might explain why food storage is seen as one of the most fundamental aspects of the Neolithic Revolution (Testart, 1982). The Neolithic Revolution is the time that humans started to go from a lifestyle of hunting and gathering to establishing permanent settlements, about 12,000 years ago (National Geographic Society, 2023). This paper aims to look at how exactly food storage technology connects with social interactions. First this paper will look into the history of food preservation and its importance. Then using technological determinism an analysis will be made to see the connection that food storage has with social interactions, both on the global and individual level. It will see if food storage technology effects the society that uses it or if it is the people within that society that determine the evolution of the technology.

## **Background**

In 1802 a Maryland farmer named Thomas Moore came up with an oval tub that he named the refrigeratory (Greg, 2020). The refrigeratory consisted of a rectangular tin box with ice to keep the container cold and rabbit fur as insulation to keep the ice from melting. Since then, refrigerators and food storage technology have developed with better insulation materials

and a greater variety of containers for a variety of needs. While refrigeration as a concept did not come until the 1800s the idea of keeping food and drinks fresh for long-distance transportation or preservation has been around for thousands of years (Greg, 2020). People have preserved and stored their food for centuries (Krasner-Khait, 2011). This is because throughout human history and around the world food is essential to the survival and development of human society (Chen et.al., 2022). Due to many factors such as climate, tropical heat, food scarcity and natural disasters like diseases, drought, flooding, humans have had to find ways to preserve food. By being able to preserve food they were able to preserve life.

The concept of food preservation has been infused in every culture at nearly every moment in time (Nummer, 2002). The methods that humans found to preserve food varied due to climate, food supplies, needs and culture. Some of the first food preservation methods came from harnessing nature. In cold climates humans froze food using ice; in tropical climates they dried food using the sun (Nummer, 2002). Once food is harvested, it begins to spoil, which requires humans to consume their kill or harvest immediately. With food preservation methods, humans could preserve food for later use.

Over the years, the way food has been preserved has changed drastically. At the beginning of human history, hunter gatherers did not store any of their food, it was simply consumed (Teeuw, 2017). Earlier ways to preserve food was to have food stored in streams where the movement of water helps cool the food, caves and holes in the ground also helped keep food cool (Teeuw, 2017). The type of food storage technology varied by location. In Egypt and other parts of North Africa, a Zeer or pot-in-pot refrigerator was used to preserve food. A Zeer is composed of one small clay or terracotta pot inside a larger pot and separated by a barrier of wet sand (ElectraFix, n.d.). In Persia in the 400 BCE they constructed a Yakhchal to keep

their food fresh. A Yakchal was a domed building made from mud brick to keep ice frozen, insulated by walls up to six feet thick (Wonderopolis, n.d.). Similar to this is the Root cellar that is an underground structure for storage of foods like vegetables, fruits, nuts and other food (ElectraFix, n.d.). Fast forward to the middle ages, there were different types of preservation methods for different foods. Some ways to preserve food included salting or smoking meat, drying many foods like grains, vegetables were often salted or pickled and fruits were dried or turned into preserves (Wonderopolis, n.d.). Food was stored in cool places like cellars or caves, they were also put into wooden or clay containers (Teeuw, 2017). In the 1800s, ice was used more often as a way to preserve food (Wonderopolis, n.d.). This came in the form of ice houses that were built in an insulated building where the building was cooled by an underground pit filled with ice (Teeuw, 2017). A lot of times, there were community cooling houses that served more than one household. By the end of the 19th century though many people stored food inside their own homes in an ice box that was a wooden insulated crate with ice (Teeuw, 2017). It was during this time in the 1800s that the idea of a refrigerator started taking form (Teeuw, 2017). And finally, the first electric refrigerator was made in 1913 (Wonderopolis, n.d.). Now 99.8 percent of American households have fridges and 23 percent have two refrigerators or more (ElectraFix, n.d.).

Along with the ability to preserve food came the problem of being able to keep food preserved for long distance transportation (Greg, 2020). At first wooden barrels were used for food storage that were later used during voyages so that sailors had enough food to eat, so that things like scurvy did not end their journey sooner. On top of sustaining sailors during explorations, they were used to store food by merchants. So, food preservation was part of humans' transition to a sedentary lifestyle and then the transportation of these foods accompanied

societies when they became more integrated. So, food preservation enabled exchange and long-distance trade (Higman, 2011). In addition to just trading food, the methods to preserve those food were also able to be spread to a greater number of people as travelers moved between different parts of the world. Along with travelers, food and food preservation methods got exchanged through invaders and settlers of new areas. Settlers would bring their cuisine from their homeland which would include food preservation methods. Later on, with cold storage warehouses and refrigerator cars, the availability of food that was once affected by the seasons and distance decreased (Freidberg, 2014).

Food preservation technologies have helped humans be able to store and consume food in a safe manner but they have impacted human societies in other ways. The ability to store food resulted in enabling humans to settle down and establish roots where they could live in one place and form a community. Not only did food preservation methods help form communities but they also became a part of culture, there are numerous occasions where preserved food has religious or celebratory meaning. So, along with the global effect that food preservation and processing have, they also have small scale impact within communities because they help create special food for cultural or religious occasions, which reinforces cultural identities (Fellows, 2004). With the different food preservation methods there was a rise of national cuisines and taste preferences around the world (Shephard, 2001). Within studies conducted in food preservation practices and motivation, there have been some notable findings including the impact food preservation had on relationships and deep connections. Through the act of food preservation (mainly canning), participants found that it helped them build relationships and strengthen bonds with the people they preserved food with (Click et al., 2010). Before easy preservation methods such as the refrigerator were around, preserving large amounts of food required the help and

cooperation of everyone in the community. Neighbors went to each other's houses to help with the preservation of food and sometimes made communal preserves. Cooperative food preservation helped to strengthen the sense of community (Shephard, 2001). This all can be accumulated to the question of how food storage technologies have helped facilitate social interactions between societies and individuals over time. This relationship can be seen through the lens of technological determinism.

### **STS Framework**

Technological determinism has two concepts, the first is that the development of technology follows a predictable, logical path that has no cultural or political influence (Devika, 2016). The second is that the technology has the ability to affect how people think and how they interact with others, in other words affecting social development. Within technological determinism, there is a range from hard to soft determinism. Hard determinism believes that technology develops independent from social factors and that technology is the one influencing society, a one-way relationship. This is in contrast with soft determinism where technology influences society but it's not necessarily that technology is autonomous (Hallstrom, 2022). Soft determinism is the idea that technology developments are embedded in social, political, economic, and other processes. Past technology developments shape the present, but individuals and groups can still exert control over these technological developments (Cockfield, 2010). Through a study investigating the impact of technology, through activity tracking devices, on a user's attitude towards pursuing an active lifestyle, the findings suggest that the relationship between technology and human behavior is not linear and that the dynamics between the two are complex and ambiguous. Even though technology can affect human behavior, it is not the only factor controlling it. One major impact on how people behave is culture, many people do certain

things to uphold to cultural traditions. This can be seen in how there are still hunter-gatherers today, like the Hadza people of Tanzania, even though technology exists that would enable them to settle down (National Geographic Society, 2023). Due to upholding their way of life that is part of their culture and identity they continue to be hunter-gatherers in spite of the technology available. This is why this paper looks at the topic through soft determinism instead of hard determinism because it allows for a more complex relationship between food storage technology and society. When looking at technology people are usually somewhere on the spectrum between instrumental and substantive theories. On the side of instrumentalists, people believe in individual autonomy, and they view technology as having a neutral impact on human affairs. The other side, substantive, believes that technological systems have a substantive impact on individuals and communities (Cockfield, 2010). Soft determinism is somewhere between the two points that help explain how technology affects society but that technology is not exempt from input by outside forces. In the article by Sally Wyatt (2008), she talks about technological determinism and that alongside technological progress is social progress. This can be seen as food preservation technology developed humans were able to develop as well. Humans developed by settling down and creating communities. With the inventions of food preservation technologies for long distances, exploration was able to flourish which led to an interaction between different cultures. Determinism can appear at all levels, micro and macro, of society (Hallstrom, 2022). Through this idea storage technologies' effect on social interaction will be investigated at the global level and individual level (everyday lives of U.S. inhabitants).

## **Analysis**

### *Storing Economies*

In order to see how food storage technology impacts interactions, we will first look at how food storage among hunter gatherer societies affect their way of life. Within food-gathering societies there can be found two types of economies (Testart, 1982). The first is seen with nomadic hunter-gatherers where they have immediate use of food resources. The second is found in sedentary foragers where there is large scale seasonal food storage. With food storing economies there is a season of plenty where mostly gathering of food happens. The food gathered is not only used immediately but stored for usage during the season of scarcity. During the season of scarcity since there is stored food to eat, less time is spent hunting and gathering for food. This allows these societies to have a time of leisure, of enjoyment and festivities (Testart, 1982). In a paper by Alain Testart, that talks about the significance of food storage among hunter-gatherers, he mentions that with food storage in these societies three things can be seen: a sedentary lifestyle, a higher population density, and socioeconomic inequalities.

In order to store enough food large reserves of food are needed. This is not compatible with a life of mobility. Due to this societies become sedentary in order to allow for large scale storage. Here it can be seen that the importance of food storage is tied to sedentarism and it also helped lead to the invention of agriculture. It was hard for mobile hunter-gatherers to gather food and take care of children. Due to this they usually spaced out the births of children in order to be able to ease the burden of work that had to be done. With sedentarism there came a population increase because there was more time to take care of children since the society had stored food for later use. Food storage allowed the population to stabilize at a higher level of density (Testart, 1982).

It has been believed that agriculture is what led to economic surplus that brought about different classes within society. The thing is that hunter-gatherers did not work hard to make a



living, so it would not take them much to create a surplus. The only problem is that because they keep moving, they need to carry everything they own which does not allow them to accumulate much wealth. In food-storing hunter gatherer societies, sedentarization allowed the development of heavy and non-transportable equipment for food processing and food storage. Sedentarization also allowed for the accumulation of wealth. One form of wealth was the transformation of food into lasting goods, and then being able to exchange those goods for something in return. These goods can be accumulated for redistribution in the remote future or long-distance trade. In the world of nomadic hunter gatherer societies there is a rule of sharing, where the goods circulate among all the members of the society. With storage there was an alteration in the ideology and social relations within these societies. Storage is connected to individual ownership, this is seen that rather than sharing surplus food people can store it so it can later be used by that particular person or exchanged for something else. In addition, storage allows for delayed consumption which leads to a separation of producer and product. This gives the ability for there to be hierarchical social structure within the societies, where not everyone is equal. Even though one might think that it was agriculture that led to social inequalities these are present among sedentary food-storing hunter gatherer societies. But these social inequalities aren't as present in nomadic hunting-and-gathering societies that usually share surplus food among themselves. Since they also move and separate constantly, this does not allow for a rigid structure of class structure to develop. From this it can be seen that the relevant factor for the development of inequalities is the presence or absence of a storing economy and that the presence of agriculture is not as important.

A sedentary lifestyle, a higher population density, and socioeconomic inequalities contributed to the making of complex societies that allowed for the development of governments,

specialized jobs, and a flourishing of the arts and sciences. As seen for these factors to develop the food storage technology must have been made first. The advancement of food technology in this context can be said to be logical and predictable. This is because in order for food to not only be kept fresh for a longer time but to accumulate a surplus of food there needs to be technology that does this function. Food storage came about as a solution to a problem, a need to keep food fresh and have more of it, it did not come because humans wanted a sedentary society. A sedentary society is only a consequence of food storage technology and this consequence effected how humans lived and interacted with each other. Looking through a soft determinism lens it can be seen that as society was evolving people had an ability to affect how food storage technology was used. As it was stated food storage helped lead to socioeconomic inequalities, but it can also be argued through a soft determinism perspective that even though the technology helped create an unequal divide between people, people still had input into how that inequality was shaped, people could choose to share their surplus with others or they could use that surplus to gain power and wealth within the society they live in.

#### *Social connections in the present day*

Food storage technology helped create a sedentary lifestyle, increase population and created social inequalities., but how do food preservation methods affect our lives today? In a study done to investigate the effects of train-the-trainer programs on Canada's west coast, shows how food preservation can have a social component (Oloko, et. al., 2022). The paper looked into a community 'train-the-trainer' food preservation education program in the Clayoquot Sound Biosphere Region (CSBR) on the west coast of Vancouver Island. They interviewed 8 participants about the food preservation program. These train-the -trainer programs are community food preservation education programs that usually happen in rural and remote areas.

The goals of these programs are to strengthen local food systems and help increase access to healthy food and combat food insecurity. Food preservation along with things like cooking and shopping are examples of social practices within the local food system. Social practices are interconnected routinized types of behavior. Within social practices, people are influenced by one another. People who participate in social practices also share norms, values, challenges and meanings attached to such practices. According to the study, social practices need three elements: competencies, materials, and meanings (Oloko, et. al., 2022). The competency element is the knowledge and skills required to engage in and maintain social practices within a system. Materials are the various resources individuals need to carry out social practices within a system. Meaning is where individuals who practice multiple activities within a social context are influenced by other people and customs attached to such practices. When doing certain practices people form interpretations and give meanings to those practices. Individuals can then share the meanings attached to social practices across time and space within a system.

Focusing on the meaning portion of social practices, the paper highlights what meanings the participants had toward food preservation. Looking at the meaning or the significance that participants attached to the practice of food preservation within local food systems the main meanings revolve around food security, social connection among community members, promoting human connection to local food systems and strengthening emergency preparedness (Oloko, et. al., 2022). People said they participate in things like community canning kitchens not only for securing food needs but because of the opportunity to socialize with other members of the community. Food preservation helped people not only connect to people they knew but it also fostered social connections among community members. While preserving at home allowed people to reconnect with family and other traditions. Food preservation practice occurs within a

larger social environment, important aspects of a community's relationship with food, including specific local foodstuffs, family recipes, and knowledge transmission norms, can be incorporated in food preservation activities to add meaning to the practice, which strengthens it.

## **Discussion**

Whether it be agricultural societies or hunter gatherer societies, food storage helped the people within these communities settle down and grow. Food storage also allowed for there to be social inequalities, but this led to complex societies that along with many different levels of society were more diverse due to people specializing in different jobs and an abundance of trade of goods. This effect of food storage could be seen around the world during the early years of human civilization. Closer to home in time and on the individual scale it has been seen that food preservation processes like canning can help bring communities together and foster interactions between people in the same community or even within their families.

Through technological determinism, we have seen that with the adoption of food storage technology humans have been able to settle down and create complex societies. On the individual level, the food preservation process can help foster relationships within a community. Through an investigation on how food storage technology affects social interactions it has been seen that food storage technology has had its biggest influences earlier in human history. Food storage technology was involved in the Neolithic Revolution that helped make sedentary human societies, it helped bring food security to people which allowed them to have more time to engage in other activities that helped advance societies. Food storage technology also had an individual level impact where it created social inequalities which changed how people interacted with each other and that they had different roles within society. Over time the global impact of

food storage technology has diminished but at the individual level food storage technology still has the ability to affect how people interact within their families and communities.

An opposing view from technological determinism is the idea of Social Construction of Technology (SCOT). SCOT says that instead of technology influencing society it is society and the social groups within it that direct technology (Pinch & Bijker, 2008). It can be argued that because people wanted to settle down, they made the technology to be able to store food and not that by having the technology to store food people settled down. Though it has been shown that food preservation has led to social change, in how different food preservation method helped create national cuisines and taste preferences. However, the relationship between food storage technology and social interactions is not a one-way relationship. So, a better way to describe the relationship is through soft determinism which is that technology can influence society but is not autonomous. This allows us to look at the relationship as a two-way interaction, and allows us to say that food storage technology has had a big impact on how human life has evolved and how people interact with each other but that society and things like culture, economic means, and climate can affect the development of food storage technology.

If only looking at technological determinism through a lens of hard determinism certain aspects of food storage and social interaction can be overlooked, mainly in terms of how society effects food storage technology. With soft determinism we try to avoid this problem as much as we can but soft determinism still believes that technology is the guiding force for human evolution, so there still might be certain ideas that are overlooked because they don't fit in the definition of soft determinism. In terms of food storage though, as seen through this paper, especially early into human history it's the storage technology that has affected how human society has evolved and interacted with each other. From the impact of food storage technology

it can be seen that as time goes the global impact of the technology on society decreases but there is still an impact on an individual level so, further advancements in food storage might help with the food quality but they might not have as big of an impact on social interactions especially on the global scale.

## **Conclusion**

Here we have looked at how storage technologies have affected social life in the way humans interact with each other both on the global scale and the individual scale. Through the viewpoint of soft determinism it has been shown that over the course of time as storage technologies have developed they are associated with a growth in human communication and advancement. Even if people don't really think about how they will store their food, food storage technologies have been a large player in human interactions. Knowing how food storage devices have decreased the distance between people and facilitated interactions can be useful in the present time. An example is that there has been research that shows a relationship between social interaction and mental health (Lin et al., 2022). Since food preservation has helped increase social interaction on both the global and individual level it might be able to be used in everyday life to help with an individual's mental health.

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