

# **Crash Course Review: The Von Thünen Model**

Agriculture is a fundamental economic activity that found in virtually every corner of our planet. You and I depend on agriculture to survive. It is also important to you because the effects of agriculture on the human population are an essential part of the study of AP Human Geography. In the early eighteenth century, Johann Heinrich von Thünen designed one of the very first geographical models. The von Thünen model was key to solving a big problem in his day—how to balance the cost of land with the best crop to produce. This study guide will help you understand this model and how it applies to the AP Human Geography Exam.

## **Agricultural (Rural) Land Use Theory**

Rural land use is not a matter of chance. Rather, it is almost always the result of logical human decisions. Long before von Thünen came up with his model on agricultural land use, farmers all over the world made rational land-use decisions. Von Thünen analyzed these decisions based on the land's physical characteristics and its position relative to market centers. His significant contribution was that he was able to identify and explain the spatial elements that help decide how to use the land.

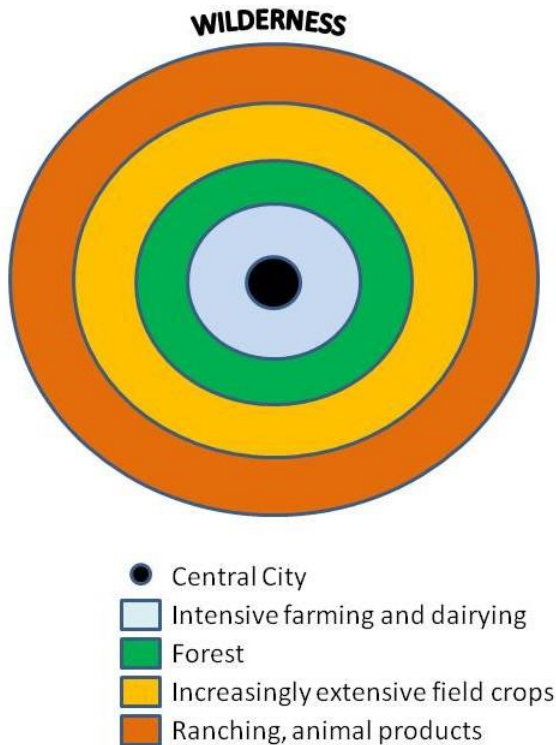
In the time since von Thünen, changes in communications and transportation technologies and progress in food preservation methods, such as refrigeration, have changed the significance of some of his theory's variables. However, the basic concepts of the von Thünen model are still valid. This AP Human Geography study guide will help you understand how his theory is used to explain agricultural land use and the changing spatial patterns in rural areas.

## **Who was Von Thünen and why is He Important to AP Human Geography?**

Access to markets has been, and still is, a huge problem for farmers all over the world. The agrarian revolution that accompanied the industrial revolution caught the eye of a German economist-farmer named Johann Heinrich von Thünen. He owned a large farming estate near the German city of Rostock, and for more than 40 years, he kept precise records of his estate's transactions.

His attention to detail turned into a passion for a subject that still is of interest to economic geographers of today—the effects of distance and transportation costs on the location of productive activity. Von Thünen's model helps explain the relationship between the cost of land and the cost to transport the crop to market. Using all the data he collected, von Thünen began to write about the

spatial structure of agriculture. He published his studies under the title *The Isolated State*, and his conclusions are still being discussed and debated among geographers today.



## The Von Thünen Model

Von Thünen called his model *The Isolated State* because for the purpose of analysis, he wanted to establish a self-contained country. This country would be devoid of outside influences that would disturb the inner workings of the economy.

In essence, he created a pseudo-regional laboratory, where he could identify the factors that would affect the locational distribution of farms surrounding a central urban area. Von Thünen made some limiting assumptions to accomplish this experiment.

First, he stated that the soil and the climate would be uniform throughout the region. Second, there would be no river-valleys or mountains to interrupt a flat land area. Third, there would be a single, centrally located city in the Isolated State, surrounded by an empty, unoccupied wilderness. Fourth, von Thünen contended that the farmers would transport their own goods to market (no FedEx here), and that they would do so by oxcart, overland, straight to the city.

Von Thünen integrated these assumptions with what he had learned while running his estate. He then asked himself: What would be the best spatial arrangement of agricultural activities within this Isolated State?

The von Thünen model incorporated four areas surrounding the city center. He concluded that farm products would be grown in a series of concentric zones outward from the central market city. The cost of transporting different farm products to the central market determined the agricultural use of the land around the city. The most productive activities were located closest to the market on more expensive land, and less productive activities were further away on cheaper land.

## **The Four Zones of the Von Thünen Model**

The first and innermost belt, which was outside the central marketplace, would be a zone of intensive agriculture and dairying. Farmers who supplied fresh milk and dairy products to the city needed to be close to the marketplace or risk spoilage. Other crops that spoiled easily and yielded the highest returns, such as fruits and vegetables, would also be grown nearest to the central city because this accessible farmland was in high demand and, therefore, very expensive. Today, regions of specialty farming, such as in South Florida and California's Central Valley, do not always conform to von Thünen's concentric rings.

The second zone, he said, would be an area of forest, used for firewood and fuel. These forest resources could be grown further out from the center city and used for fuel and building materials. You might think that the forest zone being located so close to the city center a bit odd, but remember, during the time that von Thünen lived, the forest was still important as a source of building materials and fuel. That changed with the onset of the industrial revolution. Modern applications of his model no longer have the forestry ring.

There are still, however, a great number of cities that are considered preindustrial. Take Addis Ababa, for example. The capital city of Ethiopia still contains a broad and continuous belt of eucalyptus forest surrounding the city, positioned just about where von Thünen predicted it to be.

The third zone is a belt of increasingly extensive field crops, such as grains for bread and tubers. Grain could be grown, harvested and stored easily and cheaply until needed. Since grains last longer than dairy products and are much cheaper to transport than forest resources, they could be situated further from the city market.

Ranching and animal products occupy the fourth and outermost zone. Livestock is raised in the outer ring where cheap pasture land is plentiful. In von Thünen's day, livestock taken to market were driven to the city market "on the hoof," and did not have the luxury of refrigerated trucks to carry processed meat.

Beyond the ranching area would be the wilderness. Eventually, since transportation costs increase with distance, there would be a line across which it would be uneconomical to produce crops. This is the area that the wilderness would begin. This isolated the region from the rest of the world.

## **Is the Von Thünen Model Still Applicable Today?**

Some geographers argue that models like von Thünen's do not apply to our world today. But it is a great tribute to von Thünen that his work still retains the attention of many geographers. The economic-geographic landscape has changed considerably since his time, but geographers still compare present-day patterns of economic activity to the von Thünenian model. Over time, geographers use and modify the traditional models to find new ways to look at rural land-use patterns.

What are the factors that explain why agricultural land-use patterns today differ from those developed by von Thünen's model in 1826? The major spatial change, since von Thünen's time, is the change in transportation technology, which allowed the Isolated State to move from a micro-scale to a macro-scale. Some other factors are modern refrigeration and food preservation methods, government policy on rural land use, global markets, and the multi-use of agricultural products. The fact that forests no longer occupy a zone close to the marketplace is true because we do not use wood as our main source of fuel. Today, we depend on other sources like coal and nuclear energy.

## **The Von Thünen Model on the AP Human Geography Exam**

In the AP Human Geography Course Description, the idea of the von Thünen model falls under the category of "Agriculture, Food Production, and Rural Land Use". On the AP Human Geography Exam, you could be asked to use the von Thünen model to explain rural land use and the importance of transportation costs associated with the distance from the city market. You most likely be asked to use the model to explain the contemporary distribution of the agricultural regions, such as dairy and grain farming.

## **Wrapping up the Von Thünen Model**

In conclusion, the von Thünen model, explains the reasons why we use agricultural land the way we do. His theory concluded that farm products would be grown in a series of concentric zones outward from the central marketplace and the cost of transporting different farm products to the city center determined the rural use of the land surrounding the city. The most productive activities will be located closest to the market on more expensive land, and less productive activities will be located further away on cheaper land. The role of distance in the development of the spatial pattern of the economy remains the subject of many modern studies and geographers today. All owe von Thünen credit for formulating the crucial questions answered in his model.