Boundaries between dissimilar environments, known in earth sciences as ecotones, concentrate valuable resources along their length, a notable “edge effect” of the features. While ecotones exist all over the world, my research examines an ecotone that underlies the major cities of the east coast of the United States. The North American fall line provides an example of how centuries-long human interaction with edge environments may facilitate capital accumulation. The fall line is the eroded edge of an ancient, rugged continent, against which millions of years of rising and falling seas have deposited a swathe of level sediment. Along the fall line, water tumbles approximately two hundred feet out of the Appalachian foothills, down onto the Atlantic coastal plain. Today, the fall-line corridor is among the wealthiest, most densely populated regions of the United States. Motorists driving Interstate-95 anywhere between New York and North Carolina, among the country’s busiest stretches of highway, travel directly along the fall line. If you have been to a city on the east coast of the United States, there is a chance you have been on the fall line. In the eighteenth century, the fall line provided the environmental context for early American industrialization. Both facts are rooted in the long historical process of edge-effect capitalism, the use of boundaries between distinct environments as strategic sites of capital accumulation.

Edge-effect capitalism along the fall line began as early as the seventeenth century, when European capitalists sought favorable locations for investment and extraction of value from colonial possessions in North America, and took an interest in what later geological knowledge identified as the fall line. From the eighteenth century, the fall line attracted sustained capital investment due to the density of economically valuable resources concentrated along its length. The fall line anchored a North American link in the system of circulation and investment that characterized the emergent Atlantic World. The fall line consequently became a structure embedded in the material foundations
of the early American economy, and a key factor in the subsequent spatial development of the world economy. Edge-effect capitalism gradually transformed the fall line from a peripheral appendage of the mercantile world system into the core of an independent, industrializing, expansionist economy.

In the second decade of the eighteenth century, British industry had a resource problem. The domestic supply of raw materials could not keep up with industrial demand. In particular, the island’s ironmasters struggled to produce enough iron to feed its industries. The international market made up the difference, and Britain relied increasingly on imported iron from the Baltic region. A spat with Sweden however, had interrupted this supply, and British investors began to look at North America as a potentially lucrative solution to the acute iron shortage. America possessed iron ore, timber, and water power in unimaginable quantity, if they could be located and extracted. All that appeared necessary to make iron flow from the colonies was an investment from the metropole.

The Principio Company moved first in iron plantation, and exemplified the transatlantic phenomenon. Incorporated in 1715 in London, the company enjoyed substantial reserves of capital, expertise, and connections to people in positions of power. Imperial regulators duly approved the venture. The company dispatched ironmaster Joseph Farmer across the Atlantic to identify viable locations for an iron plantation. Farmer arrived at New Castle on the Delaware River tidewater, and followed local information inland and uphill toward the fall line and the nearest outcropping of ore-bearing geology. From there he followed the fall line about ten miles around the northeastern skirt of Chesapeake Bay, prospecting ore, waterpowers, and timber stands. Farmer soon identified an optimal location at the head of the Chesapeake, where a small river tumbled out of the foothills, over the fall line, and down into an arm of the bay. Three years later, the custom house in London registered receipt of the first shipment of Principio iron. By 1723, the company owned twelve
thousand acres of rich mines, forests, and streams along the fall line in Maryland, and communities of enslaved and indentured workers. Fall line edge effects gave the ironworks at Principio such economic advantages that it continued to operate for over two centuries, going cold for good only in 1925.

Given the technology used in the eighteenth and nineteenth centuries, edge effects of the fall line made the resource base necessary for producing and exporting iron at-scale uniquely accessible and economical. To make iron in America and turn it into money in London required access to ore, charcoal, flux, water power, water shipping, labor, and merchant services. The fall line is an edge between distinct environments in which only certain parts of the ironmaking resource base are available. Take water for example. Water-power sufficient to operate furnaces occurred only as close to the sea as the fall line, while ocean-going ships to carry iron to market could penetrate the continent only as far as the fall line. Deep water met falling water only along the edge between two distinct regions. Technical reliance upon these hydrological resources therefore favored investment in the edge environment. Edge effects created parallel scenarios with respect to the other ironmaking resources. Ore-bearing geology existed above the fall line, but labor to work it came from below. Hardwood forests for charcoal grew above the fall line, while pines useful for other purposes prevailed below. Fall line iron plantations enjoyed access to upland flux from limestone, and lowland flux from oyster shells. In all of these cases, fall line edge effects contributed directly to the productivity and longevity of fall line iron plantations.

Reaping the benefits of edge effects, and buoyed by sustained demand and rising prices in Britain, iron plantations multiplied along the fall line. Former Principio ironmaster Stephen Onion left the company, built his own iron plantation a few miles down the fall line, and made a fortune.
Success like his attracted the empire’s ambitious and acquisitive. Fall line iron plantations became a favored investment opportunity for colonial elites who saw them as a means of converting vast landholdings in America into lucre in London. Virginia grandee William Byrd II investigated fall line iron plantations as an outlet for his considerable capital, while George Washington owned a share in the Principio Company and patronized other fall line ironmarkers. By the third quarter of the eighteenth century, fall line iron plantations produced a large majority of the iron exported from the colonies to Britain, and soon only the Baltic region exceeded it as the largest supplier of iron to the world economy. This once-distant periphery of the mercantile world system now boasted one of the largest concentrations of industrial capital, of cutting-edge ironworks, in the late eighteenth-century world. The accumulation of capital along the fall line represented a significant disruption of the established spatial division of labor within the imperial economy. Britain’s dependence upon fall line iron plantations politicized their regulation. The resulting conflict of interests reached crisis proportions during the American revolution, which put the fall line on the literal and figurative front lines of war.

Fall line iron plantations figured in the battle plans of imperial and rebel forces alike. Fall line industry provided arms to the rebels when imported arms were impossible to obtain. Eliminating fall line iron production became a matter of strategic significance to the imperial cause, and preserving it a matter of vital importance to the rebels. The revolutionary state of Maryland deemed the property of the Principio Company vital to the war effort, and seized that part owned by subjects of Great Britain, an eighty percent share valued at £40,000. The Principio Company works supplied the rebels with cannon, and became a target for imperial marines. War against the rebels enjoyed the same advantages that colonization always had, and mastery of the sea allowed imperial
forces access inland as far as their vessels could carry them. This boundary was the fall line, a fact that had contributed to the strategic significance of the feature for centuries. Exercising the empire’s dominance of deep water, Benedict Arnold led an invasion of the Chesapeake, landed his forces along the fall line, and raided a number of iron plantations. The raiders struck Principio, interrupting production. If such raids had continued, the rebellion may have been put to an end. However, the arrival six months later of a French fleet neutralized the amphibious Britons, secured the fall line and its iron plantations for the rebels, and assured the unlikely success of the American revolution.

The same edge effects that aided colonial fall line iron plantations facilitated the emergence in the new United States of an independent, industrializing, expansionist economy. The opening of the continental interior to resource extraction and settlement, and the development of backcountry markets increased the value of fall line commerce and industry as a link between regions of North America and the larger national and global economies. Access to water power, continental resources, and deep-sea shipping facilitated a rapid diversification of fall line industry. By the 1790s, fall line ironworks and mills produced not only raw materials, but a wide range of value-added and finished products to supply an international and growing domestic market. Cast iron and steel, multiple grades of flour, gunpowder, lumber, hardware, textiles and millinery, spices, snuff, and ships all entered the market from fall line manufacturing. Over the long term, through the vicissitudes of these individual industries, the accumulation of capital along the fall line continued, until it lay embedded within the material foundations of the American economy.

Periods of economic globalization create spatial divisions of labor. Scholars have described these arrangements variously as a global north and south, or a core and periphery system. The chosen metaphor is less important than the observation that within these systems value extracted
from subordinate regions flows toward favored locations in the world economy. That political boundaries shape the spatial division of labor and accompanying movement of capital is well understood. Perhaps less well understood is how variations in the physical environment shaped the historical development of the capitalist world system. I propose the interpretive device of edge-effect capitalism to help us better understand the historical problem of how specific local environments intertwine with globe-spanning business practices, and why this may facilitate capital accumulation over the long term.

Edge-effect capitalism is the use of boundaries between dissimilar environments as strategic sites of capital accumulation. The case of iron plantations on the North American fall line demonstrates how resource density in an edge environment may attract sustained investment, and support the productivity and longevity of business enterprise. Edge-effect capitalism is not simply environmentally determined, but is contingent upon the interaction of human agency with the effects of the edge environment. People working within a particular technological context found value in using fall line edge effects to meet the particular demands of an economy undergoing globalization. By reducing the role played by political boundaries, economic globalization increases the role played by environmental boundaries in shaping the spatial division of labor and accumulation of capital. Edge-effect capitalism helps us better understand how this historical process takes place, and why locally-specific environments shape the organization of the world economy over the long term.