impossible. The cost and risk of smuggling machinery hampered their ability to transport to America the equipment they had used in Europe. The raw materials in North America were sufficiently different to make exact duplication of seventeenth- and eighteenth-century technology very difficult. Since both chemistry and botany were in their infancy, materials were identified for the most part by where they came from. English ironmakers, for example, had little available charcoal and relied on Abraham Darby's discovery that coking coal could make it suitable to replace the needed charcoal. In the colonies, by contrast, there was plenty of wood for making charcoal. Since charcoal was far more fragile than coke, however, it would be difficult if not impossible for an immigrant to use English iron-making technology in New England. Every artisan depended on others who made the machinery he was familiar with, and since these supporting artisans hardly ever came along, migrants who wanted to continue as artisans in the colonies had to abandon their European specializations and become jacks-of-all-trades. Finally, unlike in Europe, land in the New World was readily available which tempted many to exchange their trades for farming.[19]

The most efficient carriers of innovative technology were the artisans who used such technology in Europe. Labor shortages, however, have been America's economic Achilles heel since the first settlers disembarked on its shores. Those eager to establish manufacturing in the colonies and looking for immigrant artisans to bring the most recent industrial European innovations to the New World had to come up with creative ways to stimulate artisans' interest in emigrating. Some relied on the duplicitous activities of unsavory characters. William Cunningham confessed just prior to his execution in London that in the 1770s he had worked at enticing English mechanics "to ship themselves for America, on promises of great advantage, and then, artfully getting an indenture upon them; in consequence of which, on their arrival in America they are sold or

obliged to serve a term of years for the passage."[20] Most artisans, however, were not easily fooled and had to be persuaded to give up their middle-class life and status in Europe and endure the physical and emotional difficulties involved in migrating to the New World. Thus, colonial agents had to offer powerful inducements to offset the comforts and security of staying in Europe. American entrepreneurs and communities openly dangled handsome rewards in front of immigrants, placing advertisements in English newspapers to attract artisans willing to move to the colonies. The *New York Journal* reported in 1767 on the successful recruiting of thirteen "of the best" ironworkers from Sheffield, who came after they were offered a guaranteed salary for two years, a cash award for migrating, and day-to-day support for those whose families did not make the Atlantic crossing. English restrictions on the development of colonial glass manufacturing did not prevent colonial businessmen from placing want ads in English newspapers offering inducements to prospective skilled migrants. Thousands of artisans from the British Isles and northern Europe, sensing they could receive higher wages than in their native lands, migrated to the colonies in response to these advertisements. English workers, in particular, proved an adventurous lot, willing to trade their homes for better opportunities in the New World.[21]

The change from a symbiotic technological relationship between the metropolis and the peripheries in the seventeenth century to an antagonistic one in the eighteenth pitted the Board of Trade against colonial governments. Colonial legislatures refused to kowtow to dictates from London and openly challenged imperial industrial policy. Cognizant of America's industrial infancy, they promoted manufacturing not by protecting inventors, but by violating the rights of inventors in other countries, primarily England, and encouraging the introduction of European machinery and processes. Thomas Bernard, pastor of the First Church of Salem, told the