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STUDY ON THE FRONTIER OF EARLY ROMAN EMPIRE FROM THE PERSPECTIVE OF HANDICRAFT INDUSTRY

Abstract: The Roman Empire was strengthened by its effective control and governance of its border areas. To a large extent, the operation and governance of the border areas are related to the safety, prosperity, and decline of the country, and also to the survival of the country. Based on the above considerations, this paper synthesizes the knowledge and methods of archaeology, geography, and other disciplines. Taking the handicraft production industry as an example, the paper analyzes the status and functions of the imperial frontier and tries to identify the successes and failures of imperial frontier management. Based on the research findings, we conclude that the Roman frontier is neither the boundary between civilization and barbarism nor a place of confrontation, friction, conflict, and war, but rather a place of national integration.

Keywords: *Roman Empire; western frontier; handicraft production industry; frontier study; colonization.*

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INTRODUCTION

Rome's success was inseparable from the diligent rule of its rulers in border areas. In fact, Rome effectively used the vast stage in the frontier region; it constantly absorbed useful technology and culture from other countries, replenished its ranks, enhanced its vitality, and made itself strong and lasting. Taking the Roman handicraft production industry as an example, based on literature records and archaeological materials, this paper analyzes the mining industry, ceramics industry, glass manufacturing industry, wine-making industry, and textile industry by studying the border history of the Roman Empire, the management of the border areas by the Roman rulers; and the economy, culture, and society of the Roman border areas. This research can help us analyze the status and role of border areas in the Roman Empire from a historical perspective, and further explore the interaction between the success or failure of the border management of the Roman Empire and the empire's politics, economy, and culture. This work not only broadens and deepens the research field of Roman history, but also further enriches the research content on classicism and increases its theoretical significance and academic value.

MINING ON THE FRONTIER

Unlike most of the old crafts, which used common raw materials like sand, clay, agricultural products, or animal skins, the handicraft production

that used raw metal materials required proximity to areas with a high concentration of mineral deposits. This production also had special requirements for supplying wood, coal, and other fuels.

The Roman Empire had the advantage of being self-sufficient in terms of its minerals and its ability to export them. Gold was exported to India and China, silver and brass went to the Germanic regions, and copper products were sold everywhere. This was not merely a divine gift, in the eyes of Romans, but also the result of Rome's commitment to developing these resources. The Empire actively explored relatively rare deposits, including gold, silver, tin, and lead, even resorting to using force to obtain them.¹ Once the Romans had established rule in a certain area, they would then immediately extract metal deposits through their military might.

During the first and second centuries CE, Rome's development of its mining reached its apex. Two reasons for this achievement were the needs of the frontier regions and the pressures of the empire, which together accelerated the pace of mining. Another reason was the significant profits to be made from mining. The Romans, armed with new mining techniques, stood to make high profits with little manpower. This trend, however, ended in the third century CE, mainly because of a decline in the volume of mining with a concomitant increase in costs.² However, in the first and second centuries CE, the frontier maintained a boom in mining.

Initially, the success of mining came from the intense demand for metals by frontier troops. They needed the materials to make weapons. The military also recognized their high monetary exchange value.³ The Roman army also required helmets, armor,⁴ weapons, kettles, camp pots, needles, razors, sickles, hammers, axes, meat hooks, and a surfeit of nails. What is more, to ensure Rome's authority, the military also needed large quantities of gold and silver. As such, the army took the lead in terms of Roman's mining industry, and the development of various parts of Britain provided a great example. Even before Emperor Claudius (reigned 10 BCE–54 CE, 41 CE–54 CE) invaded Britain, Rome discovered that Britain was rich in minerals,⁵ especially gold and silver, but also rare materials, including tin and lead. Although Rome's request for metal deposits from Britain was partially met, what was granted was far from what it actually needed. In fact, Britain was not rich in gold, and most of it was imported from Ireland. They supplied Rome with much silver, in part because silver mines were more developed at the time. Tin was also plentiful, but the Romans did not develop this mineral until much later.⁷

The Romans were mainly interested in Britain's lead mines. The Mendip Hills were exploited by the Celts before the Romans arrived, but the Roman army seized them and exploited them near present-day Wales and Yorkshire.⁸ The lead was then shipped to continental Europe as early as 68 CE.⁹

As seen in aerial photographs of a town near Charterhouse, one could speculate about the framework of the mining town. The town itself is about 30 acres wide, with rows of houses in its centre. The plan outside the center is less neat, probably owing to the outward expansion after the buildings had been built according to the Roman army's original plan. In fact, Rome's military controlled the production and transportation of slaves, prisoners, and miners, and some farming families provided food for them. The town had a castle where the soldiers were stationed and where the lead ore from the Montip Mountains was weighed and shipped.¹⁰ The rows of farmhouses were spread out to provide food for the soldiers.¹¹

In Britain, the army's primary task seems to have been mining for mineral deposits. With the exception of gold and silver mines, which the Roman emperor controlled directly, most minerals (although nominally under the emperor's control) were privately operated.¹² In some frontier areas, large investors oversaw the mining, while in other areas it was controlled by small owners or private mining organizations. In still other cases, deposits were developed directly by the state and mined by prisoners and slaves under the military's supervision.^{13,14}

Because the border areas were rich in deposits and easily garnered profits, the development went smoothly. For example, Noricum, one of the kingdom's richest metal deposits, produced gold, copper, lead, and zinc, and was known for its high-quality iron ore.^{15,16} Other metal products, including rings, teacups, plates, and axes, were shipped throughout the Empire and to other Germanic regions that had not been conquered. Although many prisoners and slaves had worked in mines during the initial exploitation, these mines practically disappeared by the middle of the second century CE.

In addition to these large minerals, there were many small, scattered minerals that were owned by private owners. These provided cheap raw materials for local metal smelting and also kept countless laborers employed. Thus, the frontier smelting industry began to develop, thus driving the development of related industries.¹⁷

With Rome's wars of conquest ending, and consequently, fewer prisoners of war, the number of slaves fell sharply, and prices rose. Craft owners were forced to reduce production and increase the price of their goods;

¹ FORBES 1996, 153.

² FORBES 1996, 58.

³ Weapons were increasingly in short supply, and some had to be phased out. Each retired soldier retained his armor, a stark example of all the metal the Army consumed, which also meant that the Western frontier needed 4,000 new sets of armor each year to replace the equipment that retired soldiers took with them.

⁴ ROBINSON 1975, 183.

⁵ TACITUS 2010, 21.

⁶ PLINY 1991, 17.

⁷ DAVIES 1965, 163.

⁸ BRANIGAN 1976, 183–184.

⁹ BRANIGAN 1976, 184.

¹⁰ BRANIGAN 1976, 184–185.

¹¹ FORBES 1996, 163–164.

¹² BRANIGAN 1976, 186–187.

¹³ TACITUS 2004, 286.

¹⁴ FORBES 1996, 159.

¹⁵ ALFÖLDY 1974, 113.

¹⁶ PLINY 1991, 41.

¹⁷ GORDANM 2019, 597–610.

as a result, many handicrafts were downsized to family workshops. As such, producers began to employ free people instead of slaves, but the labor costs did not increase. Frontier craft products then became more competitive than those from the empire's interior, while frontier workers helped develop local manufacturing. Additionally, mainland producers had already been moving to the frontier to take advantage of cheap raw materials, favorable markets, and free labor.

MAKING POTTERY ON THE FRONTIER

In the early years of the Roman Empire, a type of red pottery called Samos ware was popular. Interestingly, potters engraved their names and trademarks on the pottery, enabling us to date and locate the pottery's production with relative accuracy. Originally, Samos pottery was produced only in Italy, but in the first century, the main centers of production shifted to Graufenesque in northwestern Nîmes and to the Cauennes Mountains in southern Franconia. In the second century, the pace of transfer accelerated, with the main production centres moving 100 miles north along the Alliers River toward Lezoux. Lezoux, near present-day Lemont-Flanders, was once a major production center for potters. Soon after, pottery production centers also emerged in eastern Franconia, Alsace, and many parts of present-day Switzerland. By the end of the second century, another major production center had emerged in the middle of the Rhine, near Speyer.¹⁸¹⁹

The discovery of Samos pottery in Yorkshire, England, provided a clearer picture of the evolution of these centers. The pottery produced between 30 and 110 CE was produced mainly at Grauferesquo. Later, from about 125 to 200 CE, most of the pottery came from Lezoux. In that same time period, some products also came from eastern Gallia and the Rhine Valley, but mainly from the Rhine Valley. From 200 CE onwards, pottery from the Rhine production center dominated the regional market.²⁰ Other sources from Germania and Scandinavia indicate that Samos pottery from Lezoux, as well as various pottery from the Rhine Valley, dominated the Germanic export market in the second century CE.²¹ The traditional Italian handicraft industry thus shifted from the heart of the empire to the western frontier regions – a process that took 200 years.

Lamp-making, another branch of the pottery industry, also tended to move toward Rome's frontiers. Rome's traditional earthenware lamps were shaped like gravy boats and filled with oil or tallow up to the top. A wick protruded from the mouth of the tube. These lamps were common throughout the Empire despite their heavy fumes and low light output. In the early first century, the center of the lamp industry was concentrated in Italy, so lamps featuring Italian shapes and decorative styles were sold widely to other areas.

At first, lamp-making seemed relatively unimportant, as earthenware lamps were fragile and often considered expendable. They also had to be produced in large quantities to meet the high demand. The barracks found in Vindonissa, near modern-day Basel, Switzerland, showcase the sheer scale of this demand, as well as the concurrent decline in Italian production. Ventunisa was founded during Emperor Tiberius' reign and abandoned around 100 CE. Archaeologists have found more than 1,600 earthenware lamps; with many more yet to be discovered in ancient tombs and residential sites. These early lamps were apparently transported from Lugdunum in Rhone, Gallia. Similar Italian replicas have also been found there. However, these differ from those made in the Ventunissa style and are instead based on the traditional Frankish and Germanic styles. Additionally, these were produced in Gallia and in some places along Germania's border. By the end of the first century, these lamps had become the dominant type in Ventunisa.²²²³

However, the Italian workshop owners could not provide the frontier with a regular and inexpensive lamp supply. As the frontier's population grew rapidly, the people became dependent on their own production to meet this basic need. For example, the army along the Rhine lived in cold dens in the winter; lamps were thus a necessity. It was, therefore, not surprising to find a lamp workshop in Visenau near Mains,²⁴²⁵ which had been managed by the military. Lamp builders in the western frontier and border provinces had a small but important share in meeting demand locally and in Germanic and Scandinavian regions. After the second century, few lamps were made by Italian workshop owners, and the small number that continued to be produced was mainly to satisfy the market in the empire's interior.

GLASS MANUFACTURING ON THE FRONTIER

Roman glass manufacturing also tended to develop along the frontier. In the first century CE, Frankish glass products were produced to meet local demand, and they continued to increase well into the second and third centuries. In the late second and early third centuries, Frankish glass manufacturing surpassed that of Italian production, in both quality and quantity.²⁶ During this period, Frankish glass manufacturing gradually expanded northward to what is now Belgium and the Rhine Valley. Furthermore, the rise of Podier, Boulogne, Autun, and Amiens²⁷ indicated that there were two pathways of the glass industry's industry: along the coast and northward along the Rhine.

By the end of the second century, an important glass manufacturing industry had emerged on the Lower Rhine, centered in Cologne, and its blue-green and clear-white Rhenish products were incredibly popular. Concurrently, frontier glassmakers produced Germanic-style engraved glasses, which were popular, both within the empire and as exports. A type of Cologne glass produced by Lynkensbeaker

¹⁸ WALBAN 1946, 34.

¹⁹ ROSTOVITZ 2008, 252-254.

²⁰ BARTLEY 1971, 128.

²¹ WHEELER 1935, 87.

²² HARRIS 1980, 140-141.

²³ FORBES 1996, 159-161.

²⁴ HARRIS 1980, 140.

²⁵ FORBES 1996, 158.

²⁶ FORBES 1996, 192.

²⁷ FORBES 1996, 193.

was produced throughout Europe, including around Mainz Strassburg, Britain, Namarea, Trier, Rhenis, and the Danube basin.²⁸ Glass products from this region grew to become one of the main commodities exported from the Empire to the Germanic peoples.²⁹ Like coal mining and smelting, this artisanal product, which was needed both to meet domestic needs and export demands, had difficulty supplying the frontier market. The three small glass objects found in present-day Britain are likely only representative of a vast array of glass objects brought over from the frontier and provinces.³⁰

The production of glass, Samoan pottery, and earthenware lamps followed the same development. Each first appeared in Italy at the beginning of the first century; these industries then developed to the south of Gallia. In the second century, production moved to the north and east. In 100 CE, they flourished throughout the frontier provinces, and in the second century, production swelled to meet local demand as well as supply the parts needed for Germanic exports. In the late second century, the glass manufacturing industry reached its peak in the frontier areas. During this period, the main centers of Italian glass production disappeared; simultaneously, some small producers, who had only been meeting local needs, gradually moved to the frontiers.

Archaeological findings in Denmark confirm this process. Until 150 CE, products with Roman characteristics, such as Italian glass and Capuan bronzes, had been dominant. Afterward, however, the Italian goods were replaced by products from the Rhine and Danube Valleys.³¹ Italian producers never regained their earlier market. In fact, their position was completely replaced by a new frontier craft industry.

THE BREWING INDUSTRY ON THE FRONTIER

In the frontier regions, despite the high demand for agriculture, driven by both the military and the population, artisanal production based on agriculture overtook Italy. One clear example of this is wine, which was once the main commodity in Rome. The frontier armies' demand for wine, both rationed and retail, could not be met by Italian production. For one, transporting wine over long distances was more difficult than for any other cross-border product. Essentially, the vessel used to transport wine, the *amphora* (a fragile earthenware jar), accounted for one-third of the total volume transported. Additionally, many wines, including those produced in Italy and Rome, could not withstand the long distances; they became acidic and produced bitter deposits. Moreover, some of the alcohol content would likewise evaporate. Although Roman soldiers enjoyed sour wine, they could not tolerate spoiled wine.

Grapes were the main ingredient for winemaking, and they were grown in large quantities in the Mosella, Rhine, and Danube Valleys, and even in parts of Britain. While interior

wines, such as the famous Falernian, were popular as luxury items throughout the frontier. Wines made in Gallia, the Rhine, and the Danube quickly overtook the export market. Although a few Amphora wine containers have been found at Germanic archaeological sites, evidence indicates that people in the north preferred wooden barrels; however, few barrels exist today. The discovery of many earthenware and glass vessels, which were used for dispensing and drinking wine in Germania, suggests that the Empire exported large quantities of wine to Germania. That it is difficult to find Anfalla indicates that barrels were used to transport wine, as well as the influx of wine from Rome's western frontier into Germania.³²

TEXTILE INDUSTRY ON THE FRONTIER

The textile industry, being on the western frontier, reveals another aspect of handicrafts on the western frontier. The Roman Empire had two major textile centers, each at one end of the empire: Gallia in the north and Syria in the south.³³ Rome's interior textile industry lagged far behind those of the two frontier regions, mainly because of the high quality of the raw materials produced in Gallia and Syria.³⁴ During the Middle Ages, the pastures of northern Franconia, Belgium, and present-day eastern Britain produced some of the world's best wool. Sheep ranching in this region even predates the establishment of the Roman Empire.

Strabo (64 BCE–23 CE) noted that the Gallia Belgica of the Koran had a reputation in Rome for producing the finest wool. In fact, the Belgica³⁵ contributed greatly to improving the sheep species during the Iron Age in present-day Britain and to introducing new species into Roman dominions. Roman rulers enhanced the quality of their sheep by introducing other species from the continent.³⁶ Frankish and British woolen textiles flooded the Italian market and were well received in Rome.

Unfortunately, we know little about frontier weaving, except for what is recorded in documents from the late Roman Empire. Accounts of the Edict of Diocletian and Notitia Digitatum provide substantial information about the textile industry in Belgium and Germania during the third and fourth centuries.³⁷ The Ambiani, Atrebatcs, Nervii, and Treveri regions were well known for their wool. In the fourth century, the army's weaving workshops in Rheims, Tournai, and Trier used some of the finest Frankish wool.³⁸ Some textile relics found in recent years have traces of reuse and recycling, which is worthy of further discussion.

Some of the north's important textile workshops produced luxury textiles that cost 20 times more than ordinary textiles, which compensated for the cost of transportation. Important frontier workshops made expensive goods for the wealthy. In particular, expensive, woolen textiles filled nobles' homes, including those of

²⁸ FORBES 1996, 194.

²⁹ BROGAN 1936, 217.

³⁰ FORBES 1996, 192.

³¹ POLLEY 1974, 77.

³² BROGAN 1936, 218.

³³ WILD 1970, 185.

³⁴ JAMES 1960, 185.

³⁵ JONES 1924, 196.

³⁶ WILD 1970, 10.

³⁷ THEODOR 1862, 19.

³⁸ WILD 1970, 9.

the royal family. In contrast, local demand relied heavily on domestic production.³⁹ Weaving machines and similar tools are common discoveries in frontier archaeology. In ancient times, agricultural production was highly seasonal; agricultural laborers, both men and women, were idle during winter. This idle labor force could therefore engage in handicraft production as a family unit; they could produce large quantities of various goods. This small-scale cottage production ensured the self-sufficient frontier production of textiles and other goods. The textile economy played a role in local, regional, and superregional trade and exchange.⁴⁰

AN OVERVIEW OF ROME'S HANDICRAFT INDUSTRY

Roman society was based on slave labor. Slaves, comprising the majority of Rome's population, had no purchasing power. In fact, only a few urban slaveholders allowed their slaves to earn money. Most slaves worked in agriculture or mining. Furthermore, slaveholders could obtain new slaves from prisoners of war, so they had no real concerns about slaves losing their fitness for work or being unable to raise enough offspring to supplement the labor force. Mostly, Roman slaveholders forced their slaves to work hard and eventually replaced them with prisoners of war.

Slavery's prevalence meant that a large portion of the Roman population had incredibly weak spending power, which was not conducive to developing handicrafts. What is more, Roman society lacked skilled workers. Indeed, purchasing power was unevenly concentrated among only a few slaveholders and wealthy individuals who owned large estates and generally preferred to run their own industries to achieve self-sufficiency. This simply did not support handicraft development. Notably, the Empire's prosperity in the first and second centuries did not change this situation.

Independent craftsmen attempted to develop markets for their products but were constrained by high transportation costs and the scant purchasing power of the domestic market. The development of markets was slow, except for those dealing in luxury and imported goods, which were similar throughout the Empire.

Typical Roman handicraft production was low. Craftsmen were involved in the production, along with about a dozen slaves and hired workers. Additionally, they garnered small profits and had little interest in improving production equipment to increase productivity. Sometimes, when a product's raw material became available, a few craftsmen would join together to form a temporary production center, but this happened only occasionally, and no real production center was formed.

Because of the handicraft industry's small size and low investment, small Roman artisans could move freely to more attractive markets. Although some artisanal workshops remained in one place for years, most were mobile.

The main opportunity for producers was a favorable market. Roman producers would also look for ideal

production sites, replete with a large population and a few slaves, a balanced distribution of purchasing power, a large number of free people, social stability, low competitiveness, easy access to land and water, and a sufficient supply of cheap raw materials and labor. The latter would facilitate the production, sale, and export of producers' goods. All these conditions were made gradually more available in the Empire's western frontier in the first century. In addition, as exports to Germanic countries had developed considerably, craftsmen and producers from the interior relocated to the western frontier.

Subsequently, more interior craftsmen and producers were drawn to the western frontier, weakening the production trade in interior centers.

CONCLUSION

All these industries tell us one simple, yet important, fact. Namely, the decline of the Italian crafts industry was accompanied by the rise and development of crafts in the frontier regions. In the second century, these frontier handicraft centers flourished, becoming major players in Rome's interior market. Simultaneously, small-scale workshops flourished on the frontiers, mainly catering to the demand of the interior market. By the end of the third century, the great potential for production in the empire's interior had shifted entirely to the frontiers.

One reason for this was the sheer abundance of resources in the frontier regions. The lead mines of the Montipans, the pastures of Gallia Belgica and eastern Britain, the iron mines of Noricum, the forests of Germania, and the fertile lands of Moelle and the Rhine were all extremely exploitable and productive. In fact, most of the frontier's original crafts were subjected to looting by the imperial governments of the occupied lands. Interestingly, the benefits of such activities to the frontier were actually low, possibly because locals entered these industries as wage workers. More likely, however, it was because an increasing number of prisoners and tax-delinquent people became workers.

Frontier handicraft development also resulted from the establishment of markets and the extensive availability of free labor. It was the large number of military organizations established on the frontier that provided a permanent market for a wide range of military needs. During this period, the army built economic infrastructures and facilities. Although these were used solely for the military system, the frontier provinces and regions rapidly developed the local economy, and labor productivity increased.

While the empire's interior was already declining in population, the frontier regions' population was gradually increasing. As a result, the frontier regions not only provided the army with a sufficient supply of soldiers but also with a larger labor force and even some surplus labor. The salaries of the more than 200,000 soldiers in the frontier regions made the region's market incredibly prosperous; this, in turn, attracted many small-scale producers. Producers took advantage of a predictable market and also benefited from the area's well-developed transportation system. Moreover,

³⁹ JAMES 1960, 86-187.

⁴⁰ MIKO 2013, 53-78.

they had access to a large supply of cheap local raw materials and surplus labor.

As the second century began, two factors promoted craft development in the frontier and attracted interior merchants to establish businesses there. The first was the dwindling number of slaves in the newly conquered lands. Replenishing the slave population simply by reproduction could no longer guarantee the sustainability of Roman slavery. As such, the slave population decreased sharply, while the cost of owning slaves increased accordingly. There was not enough free labor in the empire's interior to meet agricultural and military needs, let alone make up for the reduction in slaves. Nor was there sufficient labor available for small-scale producers to compete with the wealthy firms that could afford to buy slaves and hire workers. Thus, those that could not compete moved to places where labor was plentiful.

Notably, frontier producers, who depended on free labor in the region, were not affected by this labor crisis. By this time, a large number of mainland producers had moved to the frontier, where labor was widely available.^{41,42} These small-scale Italian producers were rarely prevented by the governments from going out of business. This was partly because the Roman government had never cared about middle-class interests, but mainly because the imperial government saw the expansion of crafts on the frontier as another effective means of self-sufficiency for the frontier army. The imperial government had to pay the army, and the army constantly demanded higher salaries. The government was already spending significant sums on the products of frontier producers, who used their income to buy local raw materials and pay their workers. In turn, laborers used their wages to buy local products. In this way, military salaries were paid to circulate within the frontier regions, and the government then collected taxes on these transactions. This is how frontier economies became self-sustaining. The government could then rely entirely on frontier taxes to pay for military wages, thus allowing the currency to enter into a continuous virtuous cycle in the frontier.

The second factor that contributed to the development of frontier crafts in the second century was large-scale exports to Germania. Previously, many goods, mainly cattle and leather, had to be imported from Germania. This was because the imperial government could not simply impose goods onto the free Germanic peoples; they had to buy them with the silver coins preferred by the Germanic peoples. With the creation of a Germanic market and a common trade currency, the Germanic tribes soon banded together to form a vast trading area, and they were eager to buy Roman wares with these silver coins. The declining Italian production centres could not meet this new and growing demand. Thus, frontier producers seized the opportunity and expanded into foreign markets.

The acquisition of labor from Germanic sources relieved heavily the pressure put onto the frontier's labor force (largely due to military recruitment) and allowed some

of the locals to enter the increasingly labor-demanding craft industry. Meanwhile, more and more frontier producers turned to the export business. This enabled Rome to recover from the Germans the silver it had been paying for importing agricultural products. Such diverting of many products from the frontier into the export market contributed to the flourishing of handicrafts throughout the region while also allowing agricultural laborers to work in local crafts during their free time. Thus, these part-time handicraft workers could pay for goods from their own wages. The rising standard of living in the frontier created a growing internal market, thereby attracting businessmen to the frontier regions and keeping this small craft industry flourishing.

From the imperial government's point of view, such developments were beneficial. More handicrafts meant more tax revenue and also higher pay for the army. This pay increase, together with the military subsidies made by the rulers, was often seen as having negative consequences, as the military would have the power to rebel. The imperial policy of steadily increasing the economic wealth and self-sufficiency of the frontier provinces was in fact designed to keep the currency of the frontier regions circulating strongly throughout the region. If the rulers had really wanted the frontier to be self-sufficient, the first step would have been to avoid, as much as possible, the endless exile of frontier income. Additionally, the imperial government found that at least some Germanic tribes were economically dependent on trade with the frontier. The pressure on the Roman economy was thus reduced. This weakness generated by Germanic economic dependence on Rome was exploited by the imperial rulers in keeping peace on the frontiers. However, Germanic strength depended on a balanced import-export exchange. If the frontier could not satisfy the demands of the Germanic market, Germanic dependence on Roman goods would diminish, and the imperial government would be unable to rely on stable Germanic export trade. In an interesting reversal, the Romans would have been dependent on the Germans and would have had no alternative. Thus, the flow of these goods, although strictly supervised by the government, was sometimes influenced by the Empire's foreign policy. However, developing the frontier economies was not subject to government intervention.

By the middle of the second century, the focus of the craft industry in the western part of the Empire had shifted to frontier regions, and the market for Italian products had clearly weakened. Frontier crafts tended to be concentrated in a few areas, mainly in those convenient to supply military logistics. The frontier indeed had a stable market of military supplies, a cheap market for raw materials, and an excellent transportation system, especially the well-developed waterway between the North Sea and the Rhine and Danube. The army's equipment was produced mainly by free paid labor and was also influenced by exports to Germania. All these factors brought economic stability to the region, as well as a range of cooperative opportunities and behaviors that were not possible within the Empire. Such conditions led to the western frontier's dominance of the crafts in the Roman industry.

⁴¹ WALBAN 1946, 9.

⁴² BOAK 1955, 17.

In the long run, this was detrimental to the further development of Roman technology and frontier crafts. The lack of competition among the frontier craftsmen, especially when they realized their common interests, was the result of a stable export market. Once the threat of production from Italy had been eliminated, the pressure to improve the quality of their products, and reduce costs, was removed. This dearth of competitive pressure encouraged the commodity producers to think only about expanding their production, but it did not stimulate them to put effort into using advanced equipment or improving production techniques. The result may have been different had the imperial governments reduced some of their investments in the frontier, or forced the frontier inhabitants to meet the military's needs. Furthermore, the pressure of inflation and the reduction of labor would have encouraged frontier producers to develop labor-saving technologies, rationalize production methods, or invest their capital in mass production. The government did not do this, however, because it failed to see a series of hidden dangers behind this stable and prosperous frontier industry.

Indeed, a careful observer would have noticed that behind this generally stable and prosperous frontier economy were undesirable elements. Only in exceptional cases, such as the textile industry in northern Gallia and glass products in Cologne, did frontier producers ship to the Empire's interior markets. Frontier producers were reluctant to sell their wares to the mainlanders but were glad to cater to the needs of soldiers, frontier residents, and some Germanic tribes. As a result, frontier goods were not all that innovative in terms of handicrafts or design. In contrast, frontier producers were no longer willing to emulate Italian handicrafts and designs once the Italian producers were no longer a threat. Thus, whatever artistic style they followed, it was likely to be traditional or in the design style of the local population. Lamps, glassware, pottery, and other goods began to take on a Celtic or Germanic style. At the same time, their design and product styles became increasingly crude. As such, these designs originating from the western frontier clearly indicate that the crafts of the Roman western frontier were gradually losing their Roman style.

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