



Tributary World-Ecologies, Part II¹ The Mediterranean World and the Crisis

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Abstract

This essay—the second in a two part series—reconceptualizes the High Medieval Mediterranean World as a tributary world-ecology. Area Studies view the High Medieval Mediterranean as a culturally fragmented world, while the Commercialization Theorists only unite these fragments externally through trade relations. In contrast, Marxist Theorists almost exclusively focus on Medieval Europe through production relations. I argue that the High Medieval Mediterranean can be theorized as a tributary world-ecology. I advance two interrelated arguments. First, I underline the socio-ecological similarities and differences between the North Sea (addressed in Part I) and the Mediterranean Worlds. The Mediterranean world-ecology was premised upon the breakdown of world-imperial redistribution mechanisms and localization of peasant exploitation. This was exemplified by the development of iqta', pronoia and similar land-tenure regimes across the Mediterranean World. The localization peasant exploitation, however, did not result in autarchy, but rather in the formation of a world-market. In fact, novel agrarian relations, coupled with the climatological upturn and technological innovations, led to the growth of surpluses in the hands of the aristocracies. This in turn stimulated artisanal production and revival of trade. Consequently, the Mediterranean World, like the North Sea World, witnessed further geographical integration and economic growth. Second, I emphasize the similarities and differences between the crises of the North Sea and the Mediterranean Worlds. Their socio-ecological relations reached their limits when the climate began to cool and destabilize, and organizational innovations could no longer produce sufficient surpluses. Consequently, both world-ecologies collapsed, finding its clearest expression in the Black Death. In turn, the Mediterranean, just like the end of the Roman period, disintegrated. The Western Mediterranean and the North Seas were integrated on the basis of capitalist productive and commercial networks, resulting in the birth of European capitalist world-ecology. In contrast, the Eastern Mediterranean would be reintegrated on the basis of the tributary networks of the Ottoman World-Empire.

Keywords: World-Ecology, Mediterranean, Middle Ages, Capitalism, Historical Sociology

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Transition to capitalism is one of the key debates in historical sociology. However, the Medieval Mediterranean World has usually been theorized external to this process. The focus has been on Europe, which is assumed to be an ontologically and epistemologically pre-existing and unified entity. In turn, the High Medieval Mediterranean World is viewed, especially by Area Studies—European Medieval Studies, Byzantine Studies, Islamic Studies, as a fragmented entity. While these fragments—European Mediterranean, Byzantine Empire, Islamic Lands—externally relate to one another, they are internally treated as ontologically and epistemologically homogeneous entities. In other words, the criterion for demarcation of these distinct worlds is culture, which is equated with religion. Likewise, despite Engels' ([1877] 1977) insights on the similarity between the European and Islamic production relations during the High Middle Ages, Classical Marxist Theorists (Dobb 1963, 1978; Brenner 1977, 1985a, 1985b, Wood 2002a, 2005; Byres 2006, 2008) presume the unity of Europe on the basis of feudal mode of production and maintain the ontological and epistemological separation between the European, Byzantine, and Islamic Worlds (Rodinson [1978] and Haldon [1993] can be counted among notable exceptions). Hence, their criterion for demarcation of these distinct worlds is production. The Mediterranean is simply conceived as a realm of commerce, external to these production relations. In contrast, the Commercialization Theorists (Pirenne 1956; McCormick 2001) posit that Europe, to some extent including the Mediterranean World, had been a unified entity through continent-wide commercial relations. However, their criterion for demarcation is limited to exchange of goods, peoples, and ideas; and they, in turn, show little or no interest in production relations (Abulafia 2011). In fact, none of these perspectives conceive the High Medieval Mediterranean World as a structurally coherent entity. Consequently, they have not theorized the High Medieval Mediterranean World in terms of unified socio-ecological processes. In this essay, the second in a two part series, I offer a world-ecological perspective on the High Medieval Mediterranean. Following my reconceptualization in Part I, I redefine world-systems as world-ecologies. Accordingly, I argue that two distinct world-ecologies emerged in the North Sea and the Mediterranean during the High Middle Ages. Agrarian tributary relations, two-tiered commercial networks, and a multiple state-system characterized these world-ecologies. They expanded due to the unique bundling of the climatological upturn, novel production relations, and technological and organizational innovations. In turn, when these socio-ecological relations reached their limits, both world-ecologies collapsed, finding its clearest expression in the Black Death.

I suggest that the world-ecology perspective can help us overcome the methodological and theoretical dilemmas of the previous perspectives. These dilemmas pertain to the unit of analysis, historical periodization, and demarcation criteria. First, by taking world-ecologies as the basic spatio-temporal unit of socio-ecological analysis, we can conceive the North Sea and the Mediterranean Worlds as distinct but coherent entities. In turn, transition to capitalism is envisioned as a result of transition between world-ecologies, or more specifically as a result of, on one hand, breaking up of the Eastern and Western Mediterranean, and on the other hand, unification of the Western Mediterranean and the North Sea Worlds. This offers a methodologically consistent approach to transition. Second, Commercialization Theorists equate

capitalism with market expansion and conceive this period as early capitalism, while Classical Marxist Theorists focus on production and conceive this period as late feudalism. By emphasizing the mutual-conditioning of climate, production, commerce and power relations, the world-ecological perspective allows us to understand this period in its own terms². Third, by integrating the question of “nature as matrix,” (Moore 2015: 36) the world-ecology perspective suggests us not to conceive the demarcation criteria—production, commerce, religion—simply as economic, social, or cultural questions. In turn, nature is not merely an additional factor. World-ecologies do not act upon nature, they do not interact with nature, but they rather develop through nature. Hence, tributary relations of production, two-tiered market relations and state-making cannot be theorized independent of the soil and climate.

More specifically, the High Medieval Mediterranean world-ecology was premised, not upon the Abbasid world-imperial project, but upon the localization of domination over the peasantries and fragmentation of political power, as exemplified by the proliferation of *iqta*’ and *pronoia* systems. Expansion of new technologies (such as irrigation) and the ushering of the Medieval Warm Period led to the increasing accumulation of the absolute surplus product in the hands of aristocrats and monarchs. This, in turn, triggered the growth commerce and manufacture. Consequently, Egypt and the Italian city-states emerged as the organizing centers of the Mediterranean World due to the concentration of manufacture and commerce, respectively, while other zones specialized in agriculture. When these conditions changed, the result was not an ecological crisis in the narrow sense of soil and climate, but also the crisis of the bundles of aristocratic, commercial, and territorial power. In other words, aristocrats, merchants, and states could not reproduce themselves. Consequently, the Mediterranean World faced an epochal crisis. It disintegrated into Eastern and Western Halves, similar to late Roman Antiquity. The Eastern Half would eventually be united on a tributary basis by the Ottoman World-Empire, while the Western Half would be united with the North Sea World on the basis of capitalist productive, commercial, and power networks. This new mode of producing nature, wealth, and power signaled the birth of the capitalist world-ecology. Moreover, it also signaled the birth of Europe as a unified entity. (Moore 2000, 2003a, 2003b, 2003c, 2007, 2015; Patel and Moore 2018)

The Mediterranean World-Ecology

Common Trends and Dynamics

The High Medieval Mediterranean World-Economy was constituted on the basis of localization of domination over the peasantries and re-shuffling of the political borders. First, the Abbasid world-empire disintegrated, along with its centralized fiscal and commercial networks. The basis of land-tenure and, hence, fiscal networks were transformed. The *iqta*’ system became prevalent across former Abbasid lands. Furthermore, although the small principalities that followed the Abbasids were later succeeded by greater political entities, the scale and scope of Abbasid commercial and

² Addressed in “Tributary World-Ecologies Part I: The Origins and the North Sea World.”

fiscal networks were never replicated. The weakening of the Abbasids and the Bulgarian Kingdom allowed the Byzantine Empire to regain its strength between the mid-tenth and mid-eleventh centuries. Recovering from the crises of the previous centuries, the Byzantines dominated their neighbors during the reign of Basil II. However, this only lasted until the arrival of the Seldjucids in the eleventh century, who would conquer Persia, Mesopotamia, the Levant, as well as Asia Minor. The Fatimid caliphate could reproduce the Abbasid political-economic structures. Although the Fatimid project also disintegrated, Egypt continued to be a powerhouse in agriculture, manufacture, and inter-systemic commerce between Asia and Europe under the Ayyubids and Mamluks. (Goetein 1967; Wickham 2010) The Christian Europeans, in return, used the Seldjucid conquest of Anatolia as a pretext for launching the Crusades. The Crusades not only resulted in the conquest of cities of the Levantine Littoral and Cyprus but also in the Christian domination of the Mediterranean. Normans also led other successful expeditions against Sicily and Southern Italy. Furthermore, the state of civil war in Al-Andalus allowed the Northern Spanish Kingdoms to reconquer Portugal and most of Iberia.

The greatest novelty in land-tenure in the post-Abbasid lands was the *iqta'* system, or what followers of Hammer, including Engels, called "Near Eastern Feudalism" (Engels [1877] 1987; Köprülü 2004; Timur 2012). However, *iqta'* was quite different from European feudalism. In contrast to the European feudal lords, the *muqti* (*iqta'*-holders) had neither property rights over the land nor judiciary rights over the peasants. (Cahen 1953) In other words, *iqta'* was not *seigneurie banal* (banal lordship). *Iqta's* were land-grants to state-officials in exchange for "services" rather than "fiefs." In return, the *muqti* were responsible for collecting taxes, maintaining soldiers, and preserving order in the countryside. Although this system originally started as a civilian enterprise under the Abbasids (Demirci 2003), it acquired a military form under the Buyids and later under the Seldjucids in Iran and Iraq. It was Nizam Al-Mulk, the famous Seldjucid grand-vizier, who systemized *iqta'* based on the prevailing tax-farming practices (Lewis 1995; Nizamülmülk 2015). Eventually, the application of *iqta'* expanded to all post-Abbasid lands, and even Asia Minor. After the Mongolian invasions, *iqta'* continued to form the basis of the taxation and military system under the Ilkhanids (Cahen 1968). Egypt, in return, started following the trend with Fatimids, if not by Zangids and Ayyubids (Chamberlain 1999; Frants-Murphy 1999). Although *iqta'* minimized expenditure from the central treasury, it also decreased revenues. Hence, it led to the localization and demonetization of the centralized taxation systems. To cover the losses, new tolls and taxes had to be imposed in addition to the existing land and poll taxes (Lewis 1995). *Iqta'* also resulted in a drastic change in the military system. The slave-armies were replaced by the Turkic and later Mongolian tribal horsemen from the Central Asia.

The change in the Islamic lands was not limited to land-tenure and military, but also included commerce. With the relocation and demonetization of fiscal networks, commercial networks also contracted. Furthermore, no succeeding state could establish territorial control over an area as vast as the Abbasids, and the polities that the steppe nomads established did not tend to be stable. As succinctly theorized by Ibn-Khaldun, the next four centuries were associated with cycles of political integration and disintegration, first under the Seldjucids, and later under the Ilkhanids in

the east. In the west, the Fatimids united the North Africa and Syria, but no lands beyond to the East. They eventually lost their original power-base in the west. Ayyubids and Mamluks, in contrast, held onto Egypt, Syria, and the Red Sea littoral. Hence, the Abbasid unification of two world-economies (Byzantine Eastern Mediterranean and Sassanian) would only last a century (Ashtor 1976; Cahen 1980; Shatzmiller 1994). It appears that the millennia-old fiscal and commercial networks would resist Abbasid unification attempts, resurface after their disintegration, and condition later economic and political developments. The Eastern Empires (Seldjucids and Ilkhanids) would continue to occupy the former Sassanian lands (with the significant addition of Anatolia). They would control the land routes over Central Asia to China. The Western Empires (Fatimids, Ayyubids, Mamluks) would hold onto their base Egypt and control maritime routes over the Red Sea to India. Egypt and Syria would gradually be pulled into the Mediterranean orbit. While Syria would become a battleground between Fatimids and Seldjucids, Anatolia would turn into one between Ilkhanids and Mamluks. All the territories of the Byzantine Eastern Mediterranean would eventually be re-united by the Ottoman World-Empire in the “long sixteenth century.”

Egypt

Beginning with the governorship of Ahmad ibn Tulun (868–884), Egypt became increasingly autonomous. He and his officials invested in large-scale, state-run linen factories in Tunis. However, these enterprises mostly produced luxury goods. In contrast, the Delta towns produced necessities for the open market. The Egyptian production was initially mostly for the internal market. However, from the tenth century onwards, cloth was exported to Iraq and the Mediterranean. The Fatimid conquest of Egypt brought Tunisia and Sicily under a single rule. However, Egypt would remain the motor of production and commerce (Wickham 2010). In the eleventh century, a crucial shift in Egypt’s position vis-à-vis commercial networks occurred partly due to Fatimid’s own conscious policy and partly due to reasons that lay beyond their control. First, Latin Europe’s economy revived, stimulating the seaborne trade between Italy and Egypt. Egypt established ties not only with Italy but also with northern countries through transalpine routes. Cloth and other goods were shipped from Alexandria and other ports to Palestine, Tunisia, and Sicily, and as far as Al-Andalus. These already-existing linkages were reinforced by the Italian connection (Humphreys 1999). Egypt exported both finished linen and flax to be processed in Tunisia and Sicily. It also specialized in sugar. Furthermore, a variety of goods were also imported (Wickham 2010). Second, the Abbasid collapse led to the redirection of Indian Ocean trade from the Persian Gulf to the Red Sea. The country’s “new (or at least revived) position in the African and Eurasian trade system would endure and grow and would be a defining element in Egypt’s place in the world until the end of Mamluk times” (Humphreys 1999: 449). Most of Egyptian commerce still took place within Egypt itself in the year 1000 as it was in 700. Nevertheless, the reorientation of Egypt to the Mediterranean, in addition to the Red Sea, was critical (Wickham 2010).

By the Ayyubid Period, however, Egyptian textiles were suffering competition from European products, especially Italy and Flanders. Even English wool made its way to Egyptian markets due to its low price and high quality. Tunis workshops were destroyed on the orders of al-Kamil in anticipation of a Crusader attack, and they were not rebuilt. Other major textile production centers also declined at the end of the Ayyubid Period. Improvements in loom technology, larger scale of production, and superior organization allowed European textiles to outcompete Egyptian products. The Egyptian workshops, in return, were small and heavily taxed. Consequently, Egypt specialized in raw material production and luxuries trade. The growth of Italian textile industry stimulated local production of niter, alum, and cotton. Furthermore, sugar production expanded. Moreover, Indian Ocean trade dynamized the silver mines in Tuscany, Germany, and Eastern Europe (Chamberlain 1999). In the Mamluk Period, however, the Egyptian manufactures seem to have recovered. The country continued selling agricultural and manufactural goods (sugar, linen textiles, glass, ceramics) to European merchants (mostly Italians and Catalans) and bought, especially, fine wools. However, since the European exports could not cover Egyptian and Indian imports, European merchants still had to make up for the difference in silver. The same was true for the relationship between Egypt and India. Having little to sell to India, Egyptians had to send there the gold they acquired from Western Africa (Humphreys 1999).

Anatolia

In the ninth and especially tenth centuries, the Byzantine State was stronger and wealthier. After a two century-long crisis following the Persian and Arab invasions, there was a return to normality. After 1000, population began to rise, and uncultivated lands were reclaimed. Furthermore, there were also signs of specialization in agriculture: for example, mulberry trees for silk were grown in various provinces, though their cultivation must have begun before 1000, for the Byzantine Empire was not only producing its own silk, but it was also exporting it to Egypt by the early eleventh century. Therefore, the eleventh and even twelfth centuries were not a period of economic stagnation but rather of expansion (Wickham 2010). The centralization of state-power and increasing state-wealth went parallel with the strengthening of the aristocracy. Both the state and aristocracies helped the development of commercial relations for another two centuries. Agrarian and artisanal production diversified. Distribution networks became more complex and wider both within and between provinces. Not only elite demand increased but also the elites got directly involved in artisanal production and exchange (Wickham 2010). The medium-distance commerce naturally developed in the Aegean due to its landlocked and protected location. Thessaloniki emerged as an important entrepôt. Constantinople would remain as the most populous city in Europe until the Fourth Crusade.

After the Battle of Manzikert (1071) and Seldjucid conquest of the Anatolian Heartland, there was a transition from the “*themata* system” to the “*pronoia* system” in the Byzantine Lands, which would define imperial land tenure until the end of its days. Like the *iqta*’ system, *pronoia* involved temporary, usually lifetime, transfer of fiscal rights to an individual. Moreover, both systems differed from European feudalism, since only revenues were transferred, not property rights

(Ostrogorsky 1997; Treadgold 1997). *Pronoiars* (the *pronoia* grantees) were less likely to engage in farming since they did not own the land. They were distributed across the empire, did not receive any other direct payments, and had a direct stake in defending these lands. Although the system saved the treasury from making immediate outlays and provided a convenient way of recruiting new troops, it also deprived the state of valuable income. Tax revenue of large areas could also be granted members of the Imperial family, royal favorites, and high-ranking bureaucrats. In the long run, the *pronoia* system seems to have contributed to the fiscal, military, and political problems of the Byzantine State both in Balkans and Anatolia (Treadgold 1997). Magnates would increase their holdings, while small peasants, who owned their lands and directly paid their taxes to the emperor, would become a minority. In practice, taxes paid to the *pronoiers* would become indistinguishable from rents paid to landlords. Though the peasants were legally free to leave their lands, before the Black Death, the land was scarce, and the bargaining power of the peasants was limited. After the Black Death, most of vacant land passed to hands of the Serbs and the Turks. Consequently, both the Byzantine peasants and magnates suffered (Treadgold 1997).

The founder of Sultanate of Rum, Suleyman ibn Qutulmush, advanced westwards, captured the cities of Nicaea and Nicomedia in 1075, and declared his independence from the Great Seldjucids two years later. His son, Kilij Arslan was defeated by the forces of the First Crusade and forced to relocate his capital to Konya (Iconium). From then on, the Byzantine Empire would control northern coasts and the western half of the Anatolian Peninsula, while the Sultanate would be confined to the Central Plateau. The southern coast, in contrast, would oscillate between the Byzantines, the Armenian Kingdom of Cilicia, and the Sultanate. At the height of its power in the late twelfth and early thirteenth century, the Sultanate would absorb other Turkish States in Eastern Anatolia (Danishmends, Mengujekids, Saltukids, Artukids), and hence control land routes from Iran and Central Asia across Anatolia through a system of caravanserai. Furthermore, the conquest of major ports on the Black Sea and Mediterranean Coast (Sinop and Attalia/Antalya, respectively) allowed the Sultanate to develop commercial relations with the Crusader Kingdom in Cyprus and Venetians (Hill [1948] 2010). In 1222, Venetians were granted two percent tariffs instead of the usual ten percent, and traded in grains, precious metals and gems, and figs without any tariffs (Cahen 1968). Venetians also established connections between Attalia and Alexandria. The Sultanate also made treaties with Pisans, Provençals, and Genoans regarding the port of Attalia. In the Black Sea, however, the Venetians were the only Latin power. They procured furs, honey, and slaves for the Sultanate through the port of Sinope (Cahen 1968).

The Sultanate of Rum suffered a major defeat in the hands of the Mongols at the battle of Köseadağ (1243) and could preserve its political integrity after excessive political maneuvering. There were two conflicting tendencies regarding *iqta'* during the Ilkhanids rule. On one hand, the *iqta'*s were being turned into private property. On the other hand, *iqta'*s were still being granted to high-ranking soldiers as the treasury was short on cash. Nevertheless, *iqta'* system was probably weakening and the Mongols did not want a strong Seljuk military power (Cahen 1968). After the establishment of Ilkhanid rule in Anatolia, the state revenues would decline from 15 million dinars to 3.3 million dinars (Cahen 1968). This can be partly explained by the decline in agricultural and

manufacturing productivity due to political instability, and partly by the movement fresh waves of Central Asian nomads, who shifted the economy away from cultivation to pastoralism in some areas (Melville 2009). These nomads, the Turcomans, existed from the earliest days of the Turkish conquest of Anatolia. However, their numbers and importance grew with the Mongols. In the late thirteenth century, three actors would shape politics of Anatolia: the nomadic Turcomans, the Muslim town-dwellers, and the Mongols. Mongols tried to destroy these nomads, who constantly rebelled against their authority. However, their attempts proved to be unsuccessful (except for the Central Anatolian Plateau) and futile in Western Anatolia. Gradually, these nomads became autonomous and dominated the towns. They even began conquering Byzantine territories (Cahen 1968). With the disintegration of Seldjucid, and later Mongolian authority, they would establish the Anatolian Beyliks (Turkish Amirates).

Due to political fragmentation, the beylik era was probably closest to European feudalism. The Beyliks differed from the Sultanate of Rum in several aspects. First, “they were smaller and more compact. They had fewer resources but at the same time fewer obligations” (Linder 2009: 116). Second, all reflected some degree of Mongol influence, either in linguistic usage, or institutional practice, or military procedure, or population composition. Third, unlike the Seldjucid period, transpeninsular commercial networks carrying goods from Iran and Central Asia, had become less important. Some of these beyliks were founded on the former Seldjucid heartland on the Anatolian platea; whereas others, especially the ones on the coasts, were established on lands that had not known Muslim rule before. New commercial networks were developed between the plateau and the Aegean coast. Furthermore, pastoral production of animals and textiles in the newly settled lowlands had advanced (Linder 2009). There were differences between the interior beyliks and coastal beyliks as well. First, the interior beyliks—such as Karaman, Germiyan and Hamid—tended to have a more Seldjucid and Mongolian influence. Furthermore, they had a larger pastoral component in their economy and population. The coastal beyliks, in contrast, had much Byzantine imprint (Linder 2009). Second, they were more oriented to the sea than the hinterland. Third, they were more interested in trading and raiding than conquering land. Fourth, though some could provide troops in Balkan theater, they could not establish permanent presence. Fifth, they issued coins, though of far less quantity and far lower quality compared to Seldjucids and Ilkhanids. Finally, there was substantial transit trade linking merchants from the interior with the European merchants. This trade consisted of both primary goods (including slaves) and partially finished goods (Linder 2009). For instance, Candaroğulları on the western Black Sea Coast exported raw materials (copper, iron) from the Pontic Mountains (Linder 2009). In summary, during the beylik era, the Turkish Anatolia became more integrated into the Mediterranean World.

Italy

In Italy, there were large numbers of free landowning peasants (Wickham 2016). The manorial system began to weaken after 900, earlier than Northern Europe. Labor-rents were replaced with money-rents, and demesnes were divided between tenants. However, this was consistent with the market-orientation of estate management: tenants, not the landlords, purchased and sold the

products. This was conditioned by the higher urbanization rate of Italy, and higher demand for grain and wine in the cities (Wickham 2010). Venice, by the tenth century, had evolved into an autonomous power, making commercial treaties not only with the kings of Italy but also with Basil II, the city's nominal suzerain. At the same time, other cities in the richest southern part of Italy, such as Salerno, Gaeta, Naples, and most importantly Amalfi, also increased their commerce in the Mediterranean, especially with the Arab world. Many Italian cities were very populous by Western standards, and they had active and expanding markets. Some, such as Pavia and Cremona, were nodal points in wider commercial networks. However, many other inland cities were only connected to their immediate inland territories. The complex production and commercial networks of the Po valley and Northern Tuscany had not yet been established, and the northern Italian cities were not yet connected to Venice in the year 1000. These would occur in the following two centuries (Wickham 2010). By 1300, the Milan would become as large as Paris, with possibly 200,000 inhabitants; while Genoa, Venice, and Florence probably housed 100,000 people (Wickham 2016).

The crucial turn of events for the Italian cities was the Crusades. Huge transport ships were built in the Venetian, Pisan and Genoese shipyards paid in full by the crusaders. Once the Crusader Kingdoms and Duchies were established in the Levant, the Italians engaged in luxury trade in pepper, spices, silk, and drugs (Cox 1987; Braudel 1992). Furthermore, the Normans established themselves in southern Italy and Sicily in the eleventh century. Under this threat, the Byzantines had to make several concessions to the Venetians (Cox 1987). Establishment of direct link with far eastern trade led to the convergence of the interests between the Byzantines and Venetians. To balance Venetian ambitions, the emperors granted similar privileges to the Pisans and Genoese. However, this policy, combined with the infamous 1171 revolt against some 10,000 strong Venetian community in Constantinople led Venice to declare war on the empire (Cox 1987). Although this aggression was aborted, Venice, with its Latin allies, sacked and took control of the Byzantine Empire in the Fourth Crusade (1204). "Until then, Venice, had been a parasite on the Eastern Roman Empire, eating it from within. Now it all became her property" (Braudel 1992). Finally, Venice also benefitted from the Mongol invasions due to opening the route to China from the north of the Black Sea, hence, bypassing the Islamic Lands. Both the Venetians and the Genoese established colonies in Crimea and traded directly with the Golden Horde. In summary, Genoa and Venice acquired colonial empires in the Eastern Mediterranean and Black Sea because of the Crusades. However, during the High Middle Ages, they did not diverge from the pre-capitalist pattern: they were commercial and financial centers, but not yet industrial centers. They enriched themselves by parasitically attaching to the international trade networks.

In the rest of Italy, Roger II of Sicily unified the Norman principalities in a series of wars between 1127 and 1144. The Norman Kingdom, with its capital at Palermo, was governed by a Greek-Arab-Latin bureaucracy and linked together by royally appointed justiciars. German Emperor Henry VI and his son Frederick II inherited this bureaucratic structure. Frederick further centralized the Sicilian and Southern Italian Kingdom and levied heavy taxes. This continued when French King Louis IX's brother Charles of Anjou conquered the kingdom in 1266 (Wickham

2016). State-controlled irrigation projects developed in Arab-ruled Sicily, and later northern Italy (Wickham 2016). In central and northern Italy, there were more than fifty communes, which acquired coherent governing structures from the early twelfth century onwards. When Frederick I Barbarossa attempted to reinstitute imperial power rule in the North between 1158 and 1177, these communes revolted, formed the Lombardian League, and decisively defeated the emperor at Legnano in 1176. They faced several other attacks against their autonomy over the centuries, including one by Frederick II after 1235, but they could fend them off until the late 1500s. The communal governments moved in opposition to the expansion of the royal authority. They were not, however, very stable. This led to the growth of factionalism and internal rivalry. To overcome these problems many urban communes from 1190 onwards first adopted annual appointment of a *podestà*—a salaried consul who was outside the city—supposedly neutral in factional rivalries; after the 1250s, *capitani del popolo* who represented lesser elites yet again supposedly less prone to factionalism than the magnates; and finally after the 1300s, *signori*, who would become hereditary autocrats (Wickham 2016). Hence, in this sense, the communes—with the notable exception of Venice—were moving in the direction of territorial monarchies of rest of Europe. Furthermore, even in their Republican forms, these communes developed complex fiscal and judicial structures. Finally, the Papal State, too, extended its power not only in Italy but also across Europe. Throughout the continent, church government developed a “cellular structure” and “capillary network.” This was conditioned by the formation of a substantial Church bureaucracy paid by ecclesiastical incomes (Wickham 2016).

Spain

As in Italy, there were many free landowning peasants in Spain (Wickham 2016). In Al-Andalus, local aristocracies with differing strength existed throughout the eighth and tenth centuries. However, state became stronger in the tenth century and reintroduced taxation. The re-institution of fiscal networks conditioned the commercial integration of the peninsular economy and export specializations in silk, saffron, and qirmis, a crimson dye (Wickham 2010). State-controlled irrigation projects developed in al-Andalus. The intensification of agriculture made fallow years unnecessary (Wickham 2016). State-building in Spain had a different starting-point. The small Christian Kingdoms in the north, even the largest of them León, had little fiscal and bureaucratic infrastructure. Ferdinand I of Castile took over León and established the kingdom of León-Castile in 1037–1038. This was also the era of breaking up of Al-Andalus into successor kingdoms, the *Taifas*. Ferdinand and his son Alfonso VI managed to exhort tribute in exchange for protection from these *Taifas* and enriched themselves. In 1085, Alfonso also conquered one of the main *Taifas*, centered in Toledo, the old Visigothic capital and key to central Spain. Thereafter, he and his successor took the title of emperor. In response, the *Taifas* regrouped together under a new Moroccan dynasty, the Almoravids. The next century was characterized by inconclusive battles between both sides. Furthermore, the Christian Kingdoms also fought among themselves. Alfonso VI’s successors tried to prevent the disintegration of Castile. They failed to unite with Aragón. Portugal evolved as a separate kingdom between 1109 and 1140, and conclusively established

itself with the conquest of Lisbon in 1147. Even León separated temporarily in 1157. There were five separate kingdoms in Christian Spain. Nevertheless, Castile never dissolved into counties of France. Constant warfare, both on Christian and Muslim fronts, helped the royal authority to solidify and the aristocracy to focus on the royal court. The aristocrats received lands and rights of local government from the Castilian court, called *honores* and *tenencias*. “When these *honores* or *tenencias* began...to be undermined by castle-based private lordships, plus the powerful towns of the frontier region...its kings henceforth developed local government and justice based, as in France and England, on more temporary officials, here often called *merinos*” (Wickham 2016: 145–146). After Alfonso VIII made a breakthrough at the battle of Las Navas de Tolosa in 1212, and Ferdinand II occupied all al-Andalus, except for Granada, it was this centralized bureaucratic state that expanded to the south of the peninsula. Thereafter, huge revenue from conquests and taxation turned the royal court irreversibly into the center of political power (Wickham 2016).

Crisis, Collapse, and Transition

Limits and Contradictions of Tributary Production and Exchange

Agrarian tributary relations around the Northern Seas and the Mediterranean set limits on the development of agricultural productive forces because they restricted the choices, strategies, and opportunities of economic actors—peasants, landlords, and states—as they tried to reproduce themselves collectively and organized and maintained themselves self-consciously (Brenner 1985a, 1985b). These strategies, or rules of reproduction, generated specific long-term patterns of development and forms of crisis that resulted in involution and decline, rather than sustained economic growth (Brenner 1985a, 1985b, 2001). Medieval urban industrial development was no exception in that it was incapable of triggering economic development characterized by increasing agricultural labor productivity. At some point in their expansions, these pre-capitalist world-ecologies faced socio-ecological limits and contradictions conditioned by their own relations and dynamics. Consequently, rural and urban incomes fell. Under pressures from the falling rate of tribute, the ruling classes resorted to increasing “absolute surplus labor” through political-military means rather than increasing “relative surplus labor” through productive investment, that is, economic means. The real incomes for the mass of working population began to decrease; and the rise in agricultural prices created unfavorable terms of trade for industry vis-à-vis agriculture. In return, the Malthusian checks, especially famine and starvation, would intervene due to overpopulation and exhaustion of natural resources. Consequently, the contraction phase (B-phase) began, which was characterized by falling or stagnant populations, contraction of the arable and pasturage land, and depressed agricultural surplus labor yet higher mass incomes (Habakkuk 1958; Brenner 2001). The economic development was characterized by, on one hand, long-term tendency of population to outrun resources—the grand demographic cycles described by Postan ([1944] 1966, 1972), Postan and Hatcher (1985), and Le Roy Ladurie (1976)—and the inability of urban population to reach beyond a certain level in proportion to the total (Brenner 1985a, 2001). Neither rising food and raw material prices nor the growing demand for agricultural products from

the expanding urban centers, both characteristic of the A (Up) phase, could prevent the economy from entering the B (Down) phase or permit the urban and non-agricultural labor force to grow in proportion to total population. Hence instead of leading to sustained economic development, the medieval countryside were destined for economic stagnation and involution, characterized by decreasing agricultural productivity (Brenner 2001).

Peasants were insulated from market-competition by virtue of having direct-access to their means of production and subsistence. Hence, they were not compelled to innovate, maximize profits, invest, and accumulate. Instead, they prioritized subsistence production and marketed their physical surpluses, that is, “market-as-opportunity” (Wood 1994, 2002b). Landlords, in return, could not appropriate the peasants’ surpluses simply by virtue of being landowners (as in capitalism) in the absence of adequate land and labor markets. Hence, they were compelled to rely on force to appropriate the peasants’ surpluses. To do that, they had to accumulate sufficient power to overcome peasant resistance, that is, political accumulation (Brenner 1985a, 1985b, 2001). The surest way to increase the mass of surplus labor was population increase. This led to the increasing demand for land, which would set the conditions for the landlords to extract growing rents without the necessity of extra-economic pressure or control (Brenner 1985b). Since seigniorial and peasant strategies depended on population growth, tributary relations tended to expand territorially. During internal expansion the population increased, smallholdings and the means of production tended to fragment, and the living standards of the peasantry worsened. To counteract this tendency, the peasant households tended to grow larger which, in return, further fragmented the holdings and the means of production. Fragmentation itself acted as a fetter to productivity (Milonakis 1993–1994; Moore 2003b). Furthermore, forests were converted into pasture. But, due to the population increase, the pastures were in return turned into arable land, creating ever-increasing demand for forest clearance. Territorial expansion led to deforestation, erosion, floods, and silting, resulting in declining rural and urban productivity.

The relations between states, landlords, and peasants also proved to be crucial. In contrast to landlords in world-empires, who were balanced by the central authorities, the Northern European landlords were relatively unchecked vis-à-vis peasantries. The cellular organization of politics made them independent of states and fortified them against peasantry (Hirst and Hindess 1975; Wickham 2016). Furthermore, the political-bureaucratic apparatus of the European feudal states, in contrast to world-empires, lacked the necessary resources for carrying out hydraulic projects that could increase agricultural productivity. The most important boost to agricultural productivity came from the three-field system. However, it did not work well everywhere, increased fertilizer demand, and reduced land available for pasture. Hence, European agricultural productivity was much lower compared to the Middle East (Ashtor 1976). This may partially account for the severity of fourteenth century crisis and striking mortality of Black Death in Europe. In Eastern Mediterranean, as the proliferation of *iqta*’ and *pronoia* systems demonstrate, central authorities weakened. Nevertheless, the central authorities never weakened to the point of emergence of *seigneurie banale* and could more successfully protect the peasantries. Peasants were freer in the Western Mediterranean, too. Moreover, the distinguishing feature of world-empires was the

organization of complex irrigation systems (Witfogel 1957). Although the Mesopotamian irrigation system collapsed after the disintegration of the Abbasid rule, the Nile system was preserved. This may account for the persistence of Egyptian prosperity in the High Middle Ages. The *Taifas* in Spain also applied irrigation on small scale, which later expanded to Sicily and Italy. The only exception to this trend appears to be the Central Anatolian Plateau. Despite the lack of large rivers and irrigation systems, the region experienced significant agricultural prosperity in the apex of the Seldjucid rule after centuries of neglect under the Byzantines (Cahen 1968). In summary, tributary relations stimulated some limited pressures to increase productivity. However, agricultural productivity was, to a great extent, dependent on the natural fertility of the soil and favorable weather.

Peasant could not cope with population increase without radical change in technology and cultivation methods. By the thirteenth century, not only the organizational and technological innovations of the tenth century had reached their full capacity, but also the Medieval Warm Period had also come to an end. Ruling classes favored population growth yet discouraged agricultural investment to increase productivity. Furthermore, any productivity gain was subject to appropriation by the landlords and states. Even before the Black Death, agriculture showed signs of crisis and economic decline (Hilton 1951). Moreover, overpopulation and overexploitation had rendered people more dependent on favorable weather. Then, there were a series of bad harvests, especially in 1315–1317, characterized by hard winters and wet summers; exacerbating the famines. Grain and wine yields decreased drastically, sheep epidemics reduced the wool supply, and even salt production declined. The demographic expansion had already reached its limit even before the Black Death. The peasants had to limit births more radically than before (Wickham 2016); consequently, the ruling classes' revenues decreased, and markets contracted (Hilton 1951). Hence, the rate of feudal levy tended to fall (Bois 2009). Despite the stagnation and contraction of the peasant population and surpluses, the ruling class's demands on the peasants still increased, further deteriorating their livelihoods (Hilton 1985; Moore 2003b). First, to strengthen the military power of the greater lords, the number of vassals had multiplied through the process of subinfeudation. Coupled with the natural growth of noble families and their retainers, this process enlarged the number of parasitic ruling that preyed on the "surplus labor of the serf population" (Dobb 1963: 45). Second, the initial stages of the Hundred Years increased the need for taxation (Wallerstein 1974). The fiscal requirements further cut down peasants' consumption. The over-exploitation of the peasants, soil exhaustion, and climatic downturn led to malnutrition, leaving the population prone to epidemics. Both tributary world-ecologies experienced crisis, marked by malnutrition, disease, and wars.

Black Death: Collapse and Transformation

The Black Death was first recorded in Crimea in 1346–1347, and from there it first spread to the Mediterranean and then to the North. It reached Italy in 1348–1349, and Scandinavia in 1349–1350, and finally completed its "pincer movement" on Russia. The death rate was unprecedented. Coupled with agrarian recession and bad weather, between a third and a half of the population

perished in the first and successive (and less mortal) waves, lasting till roughly 1400. Not every region was swept by the first wave, but some of the later waves did hit them for sure. By the end of the fourteenth century, the population of Europe was half of what it was in 1346 (Wickham 2016). Black Death's economic impact varied from region to region. Those regions that depended on high populations suffered systematically. In Europe, only the Low Countries, identified by highest agricultural productivity and limited seigniorial power, were least affected by the epidemic (Moore 2003b). The Muslim-dominated Eastern and Southern Mediterranean also seems to have been affected less, and the relative strength of peasantries might have accounted for this. Despite the incredible death toll, the Black Death brought some relief to the surviving populations. The decrease of population changed the balance of class forces between the landlords and the peasants. In the expansion phase, the land/labor ratio had decreased—that is, land became scarcer. This increased the bargaining power of the landlords vis-à-vis peasants (all else being equal), and led to decreased labor costs and augmented landlords' revenues. In the recession phase, the land/labor increased such that there was more land available for the survivors. The decline of the workforce also increased their bargaining power vis-à-vis the landlords, and hence raised real wages and decreased seigniorial revenue; what Marc Bloch called “the momentary impoverishment of the seigniorial class” (Bloch 1966: 120). Furthermore, the increased class power and growing discontent of the peasantries expressed themselves in a series of rebellions across Europe, starting in the advanced regions of Italy and Flanders early in the fourteenth century and spreading to the continent in the rest of the century (Hilton and Fagan 1950).

In Western Europe, political mobilization had made it impossible for landlords to enserf their peasants. Consequently, peasants could keep more of their products for themselves. The peasants' diets improved. In England and Western Germany, this included meat. More importantly, the peasants' demand for artisanal products increased. Previously, in all pre-capitalist world-ecologies, the bulk of demand for artisanal products came from the ruling classes, especially the landlords. However, after the Black Death, peasant demand stimulated local commerce and artisanal production in the towns of Northern Italy, Low Countries, and England—the future capitalist centers. Furthermore, yet again, in these regions, there was increasing proletarianization and semi-proletarianization. Though wage-laborers remained a minority in most of Europe, they concentrated in these commercialized and industrialized regions. At the same time, agricultural specialization developed (in dairy farming, market gardening, and hops) in these regions along with the development of wage-labor. Only in Eastern Europe previously freer peasants were subjugated and consequently Poland developed as a major export-oriented grain producer region. Moreover, the depopulation caused by famines, wars and epidemics resulted in *Wüstungen*—the recession and sometimes abandonment of rural lands and villages. *Wüstungen* was an uneven process: first, more small-holdings were abandoned than large-holdings; and second; it was extensive in Germany, Central-Europe, and England, but limited in France (Wallerstein 1974). In Central and Eastern Europe, the lords could enclose large pieces of land abandoned by the peasants leading to concentration of large-holding (which would form the basic units of production for grain exports in the following centuries). However, in Western Europe, there were two different trends

depending on the land type. In non-marginal arable lands, the large holdings gave way to medium and small-size holding, while the less arable lands were enclosed by the landlords for animal husbandry (Wallerstein 1974). In summary, the aftermath of the Black Death was not all depression and crisis, but rather a period of socio-economic transformation (Wickham 2016).

Black Death did not lead to the collapse of commercial networks. Instead, the eastern and western halves of the Mediterranean seem to begin to de-couple again, as they did in Late Antiquity. The Eastern Mediterranean would eventually be unified by the true heir of the Byzantine World-Empire—that is, the Ottomans. In return, Western Mediterranean and the Northern Seas began to unite based on capitalist productive and commercial networks. Hence, the period from mid-fourteenth to the mid-fifteenth century signified transition to capitalism and formation of a unified “Europe.” The increasing peasant demand for artisanal products triggered capillary commercialization. Although towns and cities were deeply affected by the Black Death, they recovered after the initial shock. Furthermore, the rate of urbanization did not seem to have changed despite the decrease in population (Wickham 2016). The Black Death also increased money per capita, which could be used to finance industrial and commercial ventures. There was a new wave of migration to cities, while economies continued to integrate and increase in complexity. In the North, Flemish towns, which had dominated cloth production in the twelfth and thirteenth centuries, were joined by the Hanse towns of the Baltic and Northern Germany, which rose to prominence in the fourteenth and fifteenth centuries. With the opening of Poland, they sold cloth and salt to the Baltic and bought grain in return. England switched from export of raw wool to the production of woolen cloths; by cutting out Flemish producers. The Southern German towns of Ulm, Augsburg, Nürnberg, supported by other smaller towns, emerged as dominant centers of cloth and metal production. They became important centers of banking, as well. The Hanse dominated politics of the weaker Baltic countries (such as Sweden) and affected the German politics. Although competition with Hanse put pressures on Flanders, its continuing demand for luxury cloth and centrality of Bruges as its main port allowed it to preserve its prosperity in the fourteenth and fifteenth centuries. However, the economic center of Flanders moved northwards, and the economic activities slowly moved towards intensive agriculture and production of cheap cloth. In this process, Antwerp replaced Bruges as the main commercial center. However, the new productive and commercial activities did not replace the old ones, but rather were an addition to them. Furthermore, they were highly integrated into the Hanse (Wickham 2016).

In the Mediterranean, not only high artisanal production, especially silk industries, developed in Milan, Venice, Ferrara, Florence, and Naples under the preferential treatment of state policies; but also, small town and rural artisanal activity increased, indicating the growth of widening of urban-rural exchange. Venice and Genoa continued to dominate the Mediterranean luxury trade. After the Battle of Chioggia, Venetians established their complete control over long distance luxuries trade in the Eastern Mediterranean. More importantly, however, both cities began to evolve into production centers. In Venice and to a lesser extent in Florence, the reallocation of surplus capital from long distance trade to manufacture and state-making were promoted and organized by the urban merchant classes. The Venetian capitalists invested in slave plantations,

commercial agriculture, manufacturing, mining, and forestry in the Colonies, *terraferma*, and the city proper (Lane 1973; Cox 1987; Crouzet-Pavan 2002; Ciriaco 2006; Ouerfelli 2008; Demo 2013; Pezzolo 2013). In Genoa, however, the process reallocation of surplus capital was controlled by the landed aristocracy due to its overwhelming influence on politics. Consequently, independent bourgeois wealth and power was limited. The landed aristocrats rushed to re-feudalize themselves following the Black Death (Braudel 1992). In the aftermath of the Battle of Chioggia, the Genoese, isolated to a few enclaves, were forced to organize the Western Mediterranean. Accordingly, the Genoese capital expanded to Sicily, Valencia, and the Castilian entrepôt of Seville. They invested in grain production in Sicily and promoted the expansion of sugar plantations in Sicily, southern Spain, Morocco, Algarve, and Atlantic Islands. They dominated the silk trade from Sicily and Calabria via Messina. They had settlements in North Africa, Seville, Lisbon, Bruges, and later Antwerp. They also manufactured goods for foreign trade at home (Verlinden, 1970a, 1970b, 1970c, 1970d; Fernández-Armesto 1987; Braudel 1992; Abulafia 2011).

The aftermath of the Black Death also led to political transformations (Watts 2009). High Medieval Europe was characterized by a variety of state-forms (Tilly 1990) and “parcellized sovereignties” (Anderson 1974). In the periphery, parcellization would continue, whereas bureaucratic and fiscal centralization would institutionalize in the core states. During the up-phase, the feudal lords thrived and resisted any attempts by the territorial states to expand their power and authority with varying success. However, during the down phase, they found themselves more and more vulnerable in the face of declining revenues and peasant mobilizations. During the fourteenth and fifteenth centuries, the landlords turned to states to impose order. Consequently, states grew stronger vis-à-vis landlords. The cost of war-making had increased and the need for standing armies became clear. So, these centuries witnessed the emergence of “great restorers of order” such as Louis XI of France, Henry VII of England, Ferdinand of Aragon, and Isabella of Castile, who could create strong bureaucracies capable of taxation and financing the military expeditions (Wallerstein 1974). The most crucial “event” of the period was the Hundred Years’ (1337–1453). It was significant for several reasons. First, the semi-permanent state of war defined the axis of European politics. The English and French not only fought each other but were also involved in the Anglo-Scottish Wars and Castilian-Portuguese Wars. In return, other European powers were involved in the Anglo-French Wars. Second, the war and its spin-offs were constitutive in the formation of national consciousness in various European countries. Third, the feudal armies based on aristocrats were largely replaced by professional troops. Armies no longer relied on heavy cavalry of the aristocrats, but instead on mercenary troops recruited from the lay population. Weapons, tactics, and army structures were transformed. In other words, it led to the “democratization of warfare,” that is, the end of aristocratic military hegemony. After the fall of the Roman Empire, this war set the conditions for the formation of first standing armies. Finally, the rise of professional armies necessitated fiscalization and bureaucratization of states (Wickham 2016).

Conclusions

Although tributary world-ecologies experienced periods of demographic, productive, commercial, and monetary expansion globally such as the twelfth and thirteenth centuries (Abu-Lughod 1989), these expansions were characteristically checked by the tributary relations and forces of production, established on the premises of non-commodification and low-productivity of land and labor. The expansionary phases (A-phase) were usually initiated by, on one hand, a new combination of forces and relations of production and, on the other hand, favorable ecological conditions (high natural fertility, warm weather, and abundance of resources). This led to an increase in agricultural productivity. Rural and urban populations rose. Arable land and pastures expanded at the expense of forests, swamps, and marshes (Bloch 1966). The terms of trade became favorable to urban production vis-à-vis agriculture; consequently, urban handicrafts and commerce expanded (Habakkuk 1958; Brenner 2001). However, at some point in their expansions, these tributary world-ecologies faced socio-ecological limits and contradictions conditioned by their own relations and dynamics. Territorial expansion led to deforestation, erosion, floods, and silting, which resulted in a decline in rural and urban productivity. Consequently, rural and urban incomes fell. Under pressures from the falling rate of tribute, the ruling classes resorted to increasing “absolute surplus labor” through political-military means rather than increasing “relative surplus labor” through productive investment. The real incomes for the mass of working population began to decrease, and the rise in agricultural prices created unfavorable terms of trade for industry vis-à-vis agriculture. In turn, the Malthusian checks, especially famine, starvation, and epidemics, would intervene due to overpopulation and exhaustion of natural resources. Consequently, the contraction phases (B-phase) would begin, which were characterized by falling or stagnant populations, contraction of the arable and pasturage land, depressed agricultural surplus labor yet higher mass incomes (Habakkuk 1958; Brenner 2001). Hence, this *motion biseculaire* (two-phase movements) defined the tributary world-ecologies (Le Roy Ladurie 1976; Brenner 1985a).

What distinguished the capitalist world-ecology from all other world-ecologies, hence allowed it to escape *motion biseculaire*, was the infiltration of capital into the sphere of production and the consequent transformation of the mode of appropriation of labor and nature. If—and only if—capital infiltrated the sphere of production could the continual production of surplus value; hence, endless appropriation of nature, ceaseless accumulation of capital, and territorial expansion of the capitalist world-ecology could be guaranteed. Transition to the capitalist world-ecology through the long fourteenth century (*circa* 1300–1450) was, therefore, nothing other than the emergence of the socio-ecological conditions for capital to reorganize the mode of appropriation of nature in various rural and urban productive activities on the basis of multiple forms of commodity-producing labor—free-peasantry, serfdom, indentured servitude, slavery, and wage-labor. The dominant relation of production—wage-labor—became *internally articulated* with other relations of production on the ontological basis of value. Hence, they came to operate on the basis of (exchange)-value metrics. Not only surplus labor (profits), but also necessary labor (wages) and means of production (constant capital) were exchanged (or became exchangeable) on competitive markets. The production units became oriented toward the world-market, (rather than

aiming self-sufficiency) and their socio-ecological reproduction became dependent on the world-market. They no longer operated according to their independent logics. The struggle over profit (surplus value) became the prime mover of the entire capitalist world-ecology. This set the conditions for the a) *expansion of value space-time*, that is, generalization of commodity production and circulation on the basis of territorial expansion and commodification of land, labor, and money; and b) *concentration of means of production in value space-time* in the form of productive capital (i.e., spatio-temporal fixes) (Harvey 2001).

The capitalist world-ecology blew into existence as a result of the tributary collapse. In the presence of peasant resistance and rebellion, the landowning ruling classes could neither enserf their peasants nor resist capitalist attempts to take control of production in the prospective core countries. This set the conditions for the replacement of the landowners by the industrial capitalists as the ruling class. The industrial capitalists initiated the development of new forms of exploitation of labor, appropriation of nature, and state-making. They began organizing production in agriculture, mining, forestry, and manufacture. Wage-labor gradually became the dominant form of labor. Commodities began to be produced for the world-market. Mass demand was generated by the freed laboring classes. In Jan de Vries' (2008) terminology, "industrial" and "industrious" revolutions were markedly interconnected. Laboring households worked harder to earn cash to buy commodities, material culture and consumption patterns became diversified, and the world-economy expanded. In contrast, forms of subsistence production (serfdom and peasant small-holding) either re-emerged or persisted in the prospective European peripheries and semi-peripheries, where landlords preserved their power. Furthermore, the rise of industrial capital not only accelerated capital accumulation but also strengthened state power in the emerging core countries. In order to guarantee capital accumulation, the capitalists and their states adopted the "cheap nature" strategy—cheap labor, raw materials, food, and energy. (Moore 2003c, 2009, 2010a, 2010b, 2010c, 2016, 2018) They reorganized production processes in the (Eastern) European and non-European peripheries. This occurred through either indirect commercial domination or direct colonization. They set up novel unfree labor relations in the temperate and tropical zones of the Mediterranean, Atlantic, and Americas. By globalizing production, they freed it from the whims of local and regional climate. However, they also progressively subjugated it to global climate.

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