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Organizing Our Thoughts: "Global Systems" and the Challenge of Writing a More Complex History

WITH A DEEP REVERENCE for science and at a high level of generalization, Alan Wood advocates writing what he calls "global systems history"—an account of events that draws on the work of complex systems theorists and, in its best realization, "balances unity with diversity, the general with the particular, the whole with the parts, the macrocosmic with the microscopic, the synthetic with the analytic." Professor Wood identifies five characteristics of complex systems that he finds most valuable for global history scholars: emergence, feedback, interconnectivity, self-organization, and cooperation. These attributes "grew out of the observation of physical, chemical, and biological processes in the natural realm." He believes that "a new [global systems] view" of history is needed because our problems today "are systemic, interdependent, interdisciplinary, and interconnected," though, presumably, so were the problems of the past. Whether our understanding of "the commonalities that unite us" will promote a more global civil society, I leave to others to debate. Rather, I would like to bring the conversation down from the lofty level Professor Wood leaves it on, and

discuss what insights a complex systems approach brings to some actual historical questions.[1]

The complex systems approach is one I have been sympathetic to for a number of years. In my first book, *Citizens of the World*, I examined the business and social strategies of entrepreneurially minded men who helped develop the British Empire in the eighteenth century. I viewed their activities in the context of the development of Britain's colonies in America and the sociability of polite and industrious people in Britain. Two things that struck me most about the world that these men created were its connectedness and the nonhierarchical nature of eighteenth-century commercial relationships, both features of complex systems.[2]

Recently I have explored these and related aspects of Atlantic life in greater detail in *Oceans of Wine*. By reconstructing the lives of producers, distributors, and consumers, as well as the economic and social structures created by globalizing commerce, the book examines how the Portuguese Madeira wine trade shaped the Atlantic world and American society between 1640 and 1815. Using voluminous archives pertaining to wine, many of them previously unexamined, I offered a new perspective on the economic and social development of the Atlantic world. Instead of the traditional interpretations identifying states and empires as the driving forces behind trade, I found a decentralized, self-organized early modern commercial system that emerged from the actions of market participants working across imperial lines. Wine traders formed commercial networks that they later expanded into social and political networks that served as conduits for ideas about reform, revolution, and independence.[3]

One reason systems analysis has not caught on with students of history is that explanatory paths are numerous and crowded; convincing alternate paradigms lie ready to use. Another reason is that much writing about it is so general that it borders on fatuousness. Consider a recent book, in this case

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[1]Alan T. Wood, "Fire, Water, Earth, and Sky: Global Systems History and the Human Prospect," *The Journal of the Historical Society* 10:3 (September 2010): 287–318.

[2]David Hancock, *Citizens of the World: London Merchants and the Integration of the British Atlantic Community, 1735–1785* (New York: Cambridge University Press, 1995).

[3]David Hancock, *Oceans of Wine: Madeira and the Emergence of American Trade and Taste* (New Haven: Yale University Press, 2009).

by a biophysicist, *The Emergence of Everything: How the World Became Complex*. In it, Harold J. Morowitz looks at twenty-eight "emergences"—from the primordium, the stars, the periodic table, and the solar system, to vertebrates, hominization, language, philosophy, and the spirit. Emergence, he tells his readers, was everywhere. This seems true enough, at some level, but so what? His capsule summaries don't treat anything in sufficient detail to show the power (or lack thereof) of the analytical approach.[4] Nor does Wood's *cri de coeur*.

Toward that end, I will offer some examples of systems thinking applied to historical peoples, trades, institutions, and ideas from the period and region that I am most familiar with—the Atlantic community of the seventeenth and eighteenth centuries. They exhibit some of the traits Wood highlights: emergence, interconnectivity, and self-organization. (Feedback and cooperation prevail in many complicated analytic models; while important to a complex system, they are hardly peculiar to it.) My goal in detailing them here is to find out whether the approach tells us something we didn't already know.

Emergence

Historians love revolutions. Among others, we've identified the Scientific Revolution, the Technological Revolution, the Consumer Revolution, the Enlightenment, and the Democratic Revolution in the early modern period of Europe and the European-influenced world. Part of the great attraction of revolutions for historians is that we get to argue about whether they exist. Some contrast the state of affairs at one time compared to decades or centuries later, and find that a revolution has occurred. Others trace the individuals involved and their struggles with inherited ideas and institutions, and find continuity of purpose and method. Steven Shapin famously began his book *The Scientific Revolution* with the sentence, "There was no such thing as the Scientific Revolution, and this is a book about it."[5] These

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[4]Harold J. Morowitz, *The Emergence of Everything: How the World Became Complex* (Oxford: Oxford University Press, 2002).
[5]Steven Shapin, *The Scientific Revolution* (Chicago: University of Chicago Press, 1996), 1.

arguments are one version of the divergence between universal and particular explanatory frameworks that has always bedeviled historians.

The idea of "emergence" is an attempt to bridge this gap. In its essential formulation the term denotes the processes wherein complex configurations, patterns, and systems arise, not because they have autonomous agency or because they are decreed, but because they are made up of the interactions among numerous simpler entities. The complex outcomes or wholes cannot be predicted or even completely understood merely by apprehending the component elements, because the "higher level" phenomena are made up of the interactions, not simply the sum of the components. Scientific examples include the emergence of weather from the movement of air and water molecules, and the emergence of consciousness from the actions of the neurons of the brain.[6]

Consider the Atlantic socio-economy, a cohesive, integrated world of commodities, trading, and ideas that first functioned in a coherent fashion in the seventeenth and eighteenth centuries. By comparing the contacts, exchanges, and influences among the peoples around the Atlantic Ocean in 1815, compared to 1640, say, we see an "Atlantic Revolution": the emergence of a self-sustaining Atlantic commercial and intellectual community—inter-imperial as much as intra-imperial—that had its own identity, even as it shared identities with other empires.

"What?" you say! "What Atlantic Revolution?" When William Bolton went out to Madeira in 1695, he was seeking his fortune in the way generations of younger sons had done before him. When Richard Oswald settled in London in 1746 after having been his cousins' agent in the Caribbean, he was making a straightforward economic calculation that London would offer more trading opportunities than Glasgow. When John and Randle

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[6] As an analytical matter, emergent phenomena need not and often do not look like constituent parts—the human body is not an organic molecule writ large, for instance, and a market is not a goal-seeking actor in the way that an entrepreneur may be. Understanding phenomena as emergent removes the constraint of having to apply the same historical constructs to all levels of analysis. Understanding a customer network requires analyzing an individual's goals and resources—particularly relationships and information—whereas the global market of which he is a part requires different, more impersonal categories, such as aggregate quantity, reliability of suppliers, and categories of intermediaries. Still, this approach imposes an obligation to explain the relationships among levels (something often not done).

Mitchell of Philadelphia agreed with backcountry entrepreneurs in the early 1770s to divide the work and split the capital requirements of establishing the first chain-store network in the Atlantic world, they were making a virtue out of necessity, since neither side had the wherewithal to build the network alone. There was no revolution here.

The Atlantic socio-economy was an emergent phenomenon. By 1815 the peoples around the ocean knew about each other, interacted and traded with each other, and influenced each other in ways that the world had never seen 150 years before. Simple collocation of states and peoples didn't create such a community. No state or person set out to create an Atlantic marketplace, or articulate an Atlantic culture. Nor did anyone plan to develop ocean-wide, inter-imperial commercial networks or institutions. Such structures were too grandiose and complicated—and too intangible—to have been imagined in advance. Yet they came forth, and contemporaries recognized them. They were created by the interactions of individuals working out solutions to local problems and extending the solutions through their networks to places, personalities, and situations one step beyond, where they were adopted and adapted.[7]

Approaching the Atlantic socio-economy as an emergent phenomenon dissolves the "was there a revolution?" question. That, by itself, is satisfying because it avoids disputes over nomenclature. But it is more useful than that. Much of our interest in history comes from a fascination with the large-scale changes we can see, and the insight they give us into the variety of ways humans have made their livelihoods and used their imaginations. But when we look closely at the individuals involved, we often see doggedness and slow progress, rather than breakthroughs, in pursuit of goals; small, rather than grand, modifications of received traditions; and people attributing "old-fashioned," rather than revolutionary, meanings to their actions. The emergence approach embraces both scales of analysis. It points out that great movements in history from pedestrian individual actions grow. The Atlantic Revolution (if there was one) was not the sum of Bolton, Oswald,

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[7]Hancock, *Oceans of Wine*.

and Mitchell. It came from their interactions with other people who were as humble as they were. And the world changed.[8]

INTER-CONNECTIVITY

Historians have taken to networks with more vigor than they have embraced the concept of emergence, perhaps because networks are more palpable. The list of examples is long.[9] Networks of diasporic peoples, possessing both shared ethnicity or race and an experience of dislocation, such as the Jews, the Huguenots, and African slaves, helped shape the modern world.[10] Bernard Bailyn and Christopher Bayly have shown how networks facilitated the movement of people and information, as they crisscrossed the lands and seas of the early modern era. Atlantic-wide networks of traders and goods

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[8]Jeffrey Goldstein's definition of emergence is useful for historians: "Emergence as a Construct: History and Issues," *Emergence* 1:1 (1999): 49–72. See also Peter A. Corning, "The Re-Emergence of 'Emergence': A Venerable Concept in Search of a Theory," *Complexity* 7:6 (2002): 18–30.

[9]The published historical scholarship that deploys network analysis is voluminous. Bernard Farber, *Guardians of Virtue: Salem Families in 1800* (New York: Basic Books, 1972); Jerome H. Wood, Jr., *Conestoga Crossroads: Lancaster, Pennsylvania, 1730–1790* (Harrisburg: Pennsylvania Historical and Museum Commission, 1979), 93–112; Darrett and Anita Rutman, *A Place in Time: Middlesex County, Virginia, 1650–1750* (New York: Norton, 1984); Lorena S. Walsh, "Community Networks in the Early Chesapeake," in Lois G. Carr et al., eds., *Colonial Chesapeake Society* (Chapel Hill: University of North Carolina Press, 1988), 200–241; Peter Bearman, *Relations into Rhetorics: Local Elite Social Structure in Norfolk England, 1540–1640* (New Brunswick: Rutgers University Press, 1993); John Padgett and Christopher Ansell, "Robust Action and the Rise of the Medici," *American Journal of Sociology* 98 (1993): 1259–1319; Rosalind Beiler, "Distributing Aid to Believers in Need: The Religious Foundations of Transatlantic Migration," *Pennsylvania History* 64, Supplement (1997): 73–87; Leos Müller, *The Merchant Houses of Stockholm, c. 1640–1800: A Comparative Study of Early-Modern Entrepreneurial Behavior* (Uppsala: S. Academiae Ubsaliensis, 1998); R. Darrell Meadows, "Engineering Exile: Social Networks and the French Atlantic Community, 1789–1809," *French Historical Studies* 23 (2000): 67–102. Network analysis is especially useful for the study of business history. Scholars who incorporate such theory, apart from those already mentioned, include: Mary B. Rose, *Firms, Networks and Business Values: The British and American Cotton Industries since 1750* (Cambridge: Cambridge University Press, 2000); Silvia Marzagalli, *Les Boulevards de la fraude: le négoce maritime et le Blocus continental, 1806–1813* (Villeneuve d'Ascq: Presses universitaires du Septentrion, 1999); Nuala Zahedieh, "Credit, Risk and Reputation in Late Seventeenth-Century Colonial Trade," *Research in Maritime History* 15 (1998): 53–74.

[10]Richard L. Kagan and Philip D. Morgan, eds., *Atlantic Diasporas: Jews, Conversos, and Crypto-Jews in the Age of Mercantilism, 1500–1800* (Baltimore: Johns Hopkins University Press, 2009); Bertrand Van Ruymbeke, *From New Babylon to Eden: The Huguenots and Their Migration to Colonial South Carolina* (Columbia: University of South Carolina Press, 2006); David Eltis, *The Rise of African Slavery in the Americas* (Cambridge: Cambridge University Press, 2000).

served as the integument of an evolving inter-imperial economy, as Daviken Studnicki-Gizbert and I have demonstrated.[11] Much like scholars working in ancillary disciplines, from the sciences and mathematics to economics and sociology, historians discovered networks, shifting the focus from individual agents and discrete phenomena to the universe of relationships.[12]

Network analysis offers historians a social conception of agents and agency, with people, actions, and institutions embedded in webs of relationships and patterns of interaction. One of the most robust findings is that individuals connect to the world through others whose networks do not completely overlap their own. The sociologist Mark Granovetter first drew attention to this phenomenon, emphasizing how social networks generally yet incompletely overlap.[13] The physicist-sociologist Duncan Watts and the mathematician Stephen Strogatz formalized this insight, demonstrating how, if agents have partially overlapping networks, it takes only a handful of "super-connectors" to create a "small world," where each agent is connected to all or most of the others by a few intermediaries.[14]

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[11]Bernard Bailyn, *The New England Merchants in the Seventeenth Century* (Cambridge, MA: Harvard University Press, 1955); Christopher Bayly, *Empire and Information: Intelligence Gathering and Social Communication in India, 1780–1870* (Cambridge: Cambridge University Press, 1996); Hancock, *Oceans of Wine*; Daviken Studnicki-Gizbert, *A Nation upon the Ocean Sea: Portugal's Atlantic Diaspora and the Crisis of the Spanish Empire, 1492–1640* (Oxford: Oxford University Press, 2007).

[12]Two nonhistorians exerting a great influence on historians are Michel Callon and Bruno Latour. The sociologist Michel Callon maps material/semiotic relationships in society. His most famous essay describes stages in which marine biologists, working to restock a bay with scallops, created a network in which members agreed to build and defend the effort. "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay," in John Law, ed., *Power, Action and Belief: A New Sociology of Knowledge?* (London: Routledge and Kegan Paul, 1986). The sociologist Bruno Latour adopts a more heterodox view: the work of scientists was not a product of scientific principle or experiment but of scientists' beliefs, traditions, and practices; network members include not only sellers and buyers but also commodities, ledgers, monies, even attire. *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, MA: Harvard University Press, 1987).

[13]Mark Granovetter, "The Strength of Weak Ties," *American Journal of Sociology* 78 (1973): 1360–1380, and "The Strength of Weak Ties: A Network Theory Revisited," in Peter Marsden and Nan Lin, eds., *Social Structure and Network Analysis* (Beverley Hills: Sage Publications, 1982), 105–130. Granovetter's original article is one of the most cited in the sociological literature.

[14]D. J. Watts and S. H. Strogatz, "Collective Dynamics of 'Small-World' Networks," *Nature* (1998), 393, 440–42. Watts summarizes the finding in *Six Degrees: The Science of a Connected Age* (New York: Norton, 2003), 38–42, 83–91.

How does this shape our understanding of the history of early modern commerce? In the eighteenth century many, perhaps most, traders stayed local, dealing with the relatively small number of people they personally knew, but the more ambitious and successful among them managed their suppliers, customers, and even competitors to maintain networks that connected customers in the Americas, Europe, Africa, and India with producers in Portugal, Scotland, Sweden, France, Spain, England, the Netherlands, and Italy.[15] The super-connector George Frey, a German who ran a tavern, general store, and milling operation in Middletown, Pennsylvania, between 1760 and 1800 was one such trader. Frey managed his retailing businesses by building and nurturing connections to rural suppliers and patrons. By the late 1760s, however, he needed a greater variety of drink and a greater amount of credit, so he turned to Philadelphia and began calling on its merchants for European wines and British manufactures. Some of them also became customers for the barter goods he accepted in Middletown.[16]

Frey's network did not remain confined to local, colonial, or even imperial channels. He developed a business exporting grain and flour, sending the bulk of it to a customer in Delaware for retransport to Iberia, along with hardware, deer skins, and agricultural products. As the grain business grew more valuable than merchandising, Frey adjusted his network, directly seeking European buyers for Pennsylvania grain and flour and European suppliers of manufactured goods. During the American Revolution, he backed his own adventures to the Wine Islands and elsewhere, carrying wheat and other grains and returning with liquor, salt, oil, and fruit. Overseas adventures like these became an important component of his business, and in time he linked himself to numerous Atlantic port merchants. Frey enhanced his international trade by also widening his customer network at home. He could have sold his imports in Philadelphia, but its market was competitive and frequently glutted. Instead, he looked to the backcountry

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[15]Hancock, *Oceans of Wine*, chap. 5, n. 28.

[16]On Frey, see David Hancock, "The Triumphs of Mercury: Connection and Control in the Emerging Atlantic Economy," in Bernard Bailyn, ed., *Soundings in Atlantic History: Latent Structures and Intellectual Currents, 1500–1830* (Cambridge: Harvard University Press, 2009), 112–140.

traders, becoming a major wine supplier to Pennsylvania wheat farmers and Virginia and Maryland tobacco planters.

Now, this is not the story of early modern trade that imperial historians have described. Frey operated from Middletown, not a port and hardly a center of commerce. His supply lines led outside the empire and for the most part avoided the mother country. While his ties to Germany might be explained by his origin, much of his trading was with Iberia. Nor is it the story domestic historians have told. Frey's Middletown was not a self-sufficient agricultural community, but was integrated into markets and ideas that extended far beyond the coastal communities of Philadelphia and Wilmington to the wide oceanic marketplace.

Networks are "any collection of actors . . . that pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange relationships."[17] They operate in contrast to happenstance or episodic relationships, and to a hierarchy's recognized lines of authority. Frey and his fellow inhabitants of the eighteenth-century Atlantic world created networks to marshal dispersed resources and to mitigate the swings in supply and demand, the fickleness of consumers, and the unreliability of distributors. The commercial, informational, and social networks they created gave them access to useful, widely dispersed information about consumers' tastes, the successes and failures of other merchants, the prosecution or overlooking of infractions of commercial laws, and the like.

The networks were "flat," and the relationships among members were lateral, at least to the degree that each participant had the right to participate in a transaction or decline to. Power inequities of wealth and experience existed, of course, but it was nearly impossible for traders to force a particular outcome; everything was open to negotiation.

In a flat world, reputation is paramount, because there are few formal avenues for resolving disputes. This was the case in the Atlantic demesne among inter-nationals and inter-imperials in the early modern period.

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[17] Joel M. Podolny and Karen L. Page, "Network Forms of Organization," *Annual Review of Sociology* 24 (1998): 59.

Networks defined the space within which conflicts were resolved, and helped members cope with noncooperative, shoddy, or failing suppliers, hostile competitors, and adverse political and economic situations. They were collective solutions to failures resulting from the information and transaction costs of long-distance trade and premodern technology.

Because the networks were also essentially discursive, they could be adapted for other purposes beyond buying and selling. Once established, members used them to transmit information—economic, social, and cultural norms; commercial, moral, and political attitudes. When Philadelphians, Madeirans, and Londoners corresponded about a cargo of wine, for example, they also transmitted military and diplomatic news, shared their opinions on matters such as reform, independence, and revolution, and established guidelines for fiscal and moral probity directly through instruction and indirectly through commentary on others. At their most intense, members' ties came to be ratified in contractual partnerships and marital alliances that cut across ethnic, racial, religious, political, and national allegiances. Out of seemingly disconnected actors, impulses, conditions, and opportunities, the networks they built created a dense, integrated, inter-imperial set of social, economic, and cultural institutions.

SELF-ORGANIZATION

The idea of self-organization—that "the internal organization of a system, normally an open system, increases . . . without being guided or managed by an outside source"[18]—is an old one, with its roots in Descartes' *Discourse on Method* and eighteenth-century naturalists' drive to comprehend universal laws of form. In its present incarnation, the idea is grounded in the work of late twentieth-century biology, chemistry, physics, computer science, and neuroscience, all of which have investigated the ordered behavior of large-scale aggregates as the result of complex interactions among many smaller-scale elements that operate according to simple behavioral rules. The attention to phenomena that result from interactions among

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[18] William R. Ashby, "Principles of the Self-Organizing Dynamic System," *Journal of General Psychology* 37 (1947): 125.

individuals makes self-organization a companion concept to emergence. Both emphasize the internal "logic" of systems: their connections to their constituent elements, their relationships with other systems, and the processes of growth and decay. Emergence concerns the "why are there new things in the world?" question; self-organization concerns the internal make-up of systems, addressing the question "how do internal structures and relationships come to be, and come to be regular, ordered, and systematic?" Let me give two examples from the world of early modern trans-Atlantic commerce.

Consider European wine culture in the eighteenth century. By the latter part of the early modern period, a Madeira wine culture had emerged in the Atlantic; it was multinational and inter-imperial, Madeira wine being one of the first commodities to acquire these characteristics. The wine was drunk in cosmopolitan, coastal South Carolina and rustic, backcountry Virginia, in the East Indies and the West Indies, in polite circles in London and rude military messes along the Mississippi River, where it assumed similar meanings (with hints of luxury and cosmopolitanism)—the heritage of an origin in a global conversation about the drink. The Madeira wine culture structured and constrained the possibilities for drinkers. It established whom one could drink with in public and whom one should invite into one's home; which drinks connoted health or dissolution and which cosmopolitanism or patriotism; whether a toast at a dinner party showed courtesy or incompetence; and how to display wineglasses, decanting apparatus, and cellars to show one's social acumen and resources. The "rules of the game" of Madeira wine were components of an apparatus of social status, meaning, and display with Atlantic scope.

The Madeira rules of the game became more structured over the eighteenth century. Madeira traders came to export more types of wine, made from more varieties of grapes. At the end of the seventeenth century, there were only three varieties; by the beginning of the nineteenth century, there were twenty-three. The correspondence between producers, distributors, and consumers shows that the offerings expanded as Madeirans experimented with viticulture and American drinkers reported what types they preferred. By the end of the eighteenth century, the erstwhile simple

table wine had been transformed by experimental and market imperatives: fortified with brandy (promoting longevity), shaken (dispersing the brandy and mellowing the taste), aged (enriching the flavor), heated (promoting longevity and flavor), packaged (providing different containers for different classes of customers), and stored in a certain way (maintaining maturation and promoting longevity). It had been transformed into a complex, highly processed, expensive, and status-laden beverage.[19]

The price of Madeira rose in the second half of the eighteenth century, compared to other drinks, and the multiplicity of varieties allowed certain types to bear the status of rarified, luxury commodities, marked by higher prices and prestige packaging. Drinking Madeira became more complicated and nuanced. Producers and distributors devoted much ink to educating consumers about the proper handling of the wine and the correct paraphernalia for storing, decanting, and drinking it. The correct types of Madeira, served "politely," became status symbols. Interestingly, there were regional variations in the correct type of Madeira, and the exporters were expected to modify their product to suit local markets in America and India. Specific practices, objects, and behaviors—dictated not by elites or metropolitans, but derived experimentally and transmitted by imitation and epistolary didactics around the periphery—carried more, and more complex, information and required more nuanced interpretation.

The Madeira wine culture, a component of a more general culture of consumption, was self-organized in this period. The range of wine behaviors—choosing a type of wine, obtaining the right wine paraphernalia, cellaring, decanting, pouring, toasting, and the rest—increased dramatically. They increased as exporters on the island introduced varietals and variations to which they attempted to associate meanings, and consumers took up or misunderstood the exporters' injunctions or replaced the exporters' meanings with codes of their own. To create a "patriotic" or "political" wine in the late 1790s, for example, one Madeira export firm shipped a wine named the "U.S.S. Constitution," while a competitor boasted to would-be consumers that it supplied President Washington and the Federalists.

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[19]Hancock, *Oceans of Wine*, chaps. 2–3, 10–11.

Self-organizing institutions are apparent almost anywhere there is systemic growth.[20] To the participants, of course, their actions looked like nothing so grand. The Madeira exporters regarded themselves as yeomen in the fields, attending to their customers' demands and fending off the constant threats from competitors. Consumers regarded themselves as choosing their drink and behaving sociably, although the more observant of them would have acknowledged that they thought about "the way it would look." Each of them could have explained his or her actions by reference to the immediate context they found themselves in and the decisions they were called on to make. Through connecting, they elaborated the institutions of their local, colonial, imperial, and oceanic environments in response to geographic, climatic, and political constraints, as well as economic and social imperatives motivating them.

Consider another example: European commission merchandizing in the seventeenth century. Commission merchants based in European ports handled the needs of colonial planters and merchants. This solved the economic problem of having agriculturally productive land far from the mother country and its markets. To exploit the land, traders based in the metropolis financed and provisioned the plantations, and sold their produce at long distances from the point of production. Such was the work of men like William Freeman in the 1670s and 1680s. Roughly 4,000 miles separated London, England, from Charlestown, Nevis, where Freeman once lived and still owned sugar estates. Outbound ships commonly took nine weeks to get to Nevis and inbound ships eight weeks to get back. Enterprising Londoners provided the critical supply, finance, and sales links for colonists. In the agricultural-commercial system they developed, colonial plantations were owned by residents or absentees like Freeman, managed in the colonies by an aggressive and self-seeking group of transplants, and supported by agents in urban England—"commission merchants"—who, again like

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[20]Legal and political concepts, like the law of nations or the idea of sovereignty, likewise became more "regular" and systematic during this period, and scholars are just beginning to study them from this point of view. Lauren Benton, *A Search for Sovereignty: Law and Geography in European Empires, 1400–1900* (New York: Cambridge University Press, 2010).

Freeman, were themselves more often than not former colonists.[21] Metropolitan traders and planters in the islands were each other's eyes and ears. Commission merchants wrote their correspondents about the prices of the various grades of sugar in London, and how they compared to prices in Bristol, Chester, Liverpool, and Dublin. They kept their correspondents apprised of the opportunities for shipping to and from the islands, and of freight and insurance rates. They passed on rumors about the credit-worthiness of the planter's friends and business contacts in England. By return post, the colonials told the merchants of the state of the crop, the duplicity or bankruptcy of other planters, and the predatory advances of foreign interlopers into the island markets.

Historians have paid some considerable attention to the commission merchandising system, to the point that we often take for granted that it was an effective mechanism to accomplish planters' and traders' goals.[22] But it was not inevitable. Alternatives were available: ship owners and captains could have sailed from port to port making one-off sales of goods from Europe and buying produce to carry back to the metropolis. Even in a principal-agent relationship, London merchants could have been the principals, establishing agents in the colonial ports. In fact, both of these were tried in the Anglophone Atlantic marketplace. Commission merchandising came to dominate because the participants with relatively more access to confirming and contesting information were the principals; they then chose the agents. Because of the distances, agents needed sufficient latitude to work quickly and decisively on behalf of principals, and this raised the specter of conflicts of interest. Colonial planters and merchants usually had more avenues of information about the prices of goods and conditions of carriage in the metropolis than London merchants did about soil and weather conditions, and managerial diligence in the colonies. To the extent that the Londoners acted as principals with colonial agents, there was more room for

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[21]David Hancock, "'A World of Business to Do': William Freeman and the Foundations of England's Commercial Empire," *William and Mary Quarterly*, 3rd ser., 57 (2000): 3–34.

[22]K.G. Davies, "The Origins of the Commission System in the West India Trade," *Transactions of the Royal Historical Society*, 5th ser., 2 (1952): 89–107.

hornswoggling than when the planters acted as the principals and chose their London agents.

The commission merchandising system did not eliminate hornswoggling, though. London agents served many masters, and acted as principals as well. So, many of the "institutions" of the commission merchandising system developed early, as attempts to mitigate the trust problem. These institutions were ways for agents to identify their interests with the planters, or accent the similarity of their interests. Three of the institutions are particularly evident in Freeman's career: owning colonial lands, origin in the colonies, and providing comprehensive services. These traits were important enough that they came to be shared by nearly all of the London agents who traded extensively and successfully with Britain's American colonists between 1651 and 1775.

Contrary to the suggestions of current, dominant historical interpretations, the first British Empire was not governed by a unified set of ideas, policies, or laws, much less by a unified group of administrators. Indeed, Freeman and commission merchants like him gave the empire a peculiarly decentralized commercial cast. The relationship between metropolitan agents and colonial planters was neither legislated by a Parliament, chosen by a "Company in Council," nor dictated by a European mercantilist theory designed to enrich European states at the expense of their colonies. The imperial geography that resulted from British military and diplomatic efforts and the mercantile legal framework of Britain's Navigation Acts established a landscape, so to speak, for entrepreneurs like Freeman. But these structures were not dispositive of particular events or institutions. The colonial planter/metropolitan agent model that dominated commerce in the late seventeenth and eighteenth centuries was "self-organized" to solve the trust problem inherent in commercial agriculture at a distance. It emerged from the individually opportunistic choices of people trying to profit from the agricultural potential of the New World.

Just as North American Madeira wine culture was embedded in the eighteenth-century Atlantic culture of consumption, the commission merchandising system was a component of Atlantic trade. It affected Chesapeake

tobacco, Carolina rice, Swedish iron, and French wine.[23] As the seventeenth and eighteenth centuries advanced, distributors dealt with greater numbers of customers, agents, and partners, across wider expanses of land and sea; they provided their customers with more and more varied products, obtained through longer journeys with heavier, more varied cargoes. The increased complexities were difficult to control, however, pressuring the individuals involved to innovate in the ways they organized business and deployed human and social capital. Activities that had been tasks—individual bits of work, performed as a part of a larger set of duties—were elevated into roles, with their own titles, characterizations, and expectations, and people stepped into them. Many of the new roles, such as London commission merchants and Chesapeake tobacco storekeepers, were intermediaries; some, such as snuff dealers and bill brokers, were specialists. Intermediation and specialization were also part of the self-organization of Atlantic trade, and they likewise emerged out of the conduct of traders without being organized or controlled by centrally situated persons or governments. The Atlantic-spanning, inter-imperial economic institutions of the age emerged from the individual but connected actions of people who were working out solutions to specific problems and extending the solutions through their networks, to places, personalities, and situations one step beyond, where they were adopted and adapted.

Grounded Systems

Let me return, now, to the question with which I began this essay: what insights does a complex systems approach bring to historical questions? Alan Wood has sketched the principal attributes of a complex system for us, and passionately argued for investigating them when doing global history.

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[23] Jacob M. Price, *Capital and Credit in British Overseas Trade: The View from the Chesapeake, 1700–1776* (Cambridge, MA: Harvard University Press, 1980), and "The Rise of Glasgow in the Chesapeake Tobacco Trade, 1707–1775," *William and Mary Quarterly*, 3rd ser., 11 (1954): 179–199; Kenneth Morgan, "The Organization of the Colonial American Rice Trade," *William and Mary Quarterly*, 3rd ser, 52 (1995): 433–452; Chris Evans and Göran Rydén, *Baltic Iron in the Atlantic World in the Eighteenth Century* (Leiden: Brill, 2007); Thomas Brennan, *Burgundy to Champagne: The Wine Trade in Early Modern France* (Baltimore: Johns Hopkins University Press, 1997).

Emergence, interconnectivity, and self-organization, along with feedback and cooperation, are valuable constructs for investigating historical phenomena. For historians, it is important to understand that these ideas are not just new ways of saying that something changed, people are social and connect with each other, and systems have some sort of structure. Rather, they explicitly connect the activities of individuals with higher-order phenomena, such as the use of commodities as props in expressive discourse, and the role of intermediaries and specialists in trade. It concerns the origins and evolution of phenomena such as occupational roles, professional norms and ethics, and expectations of individuals about how to interact with each other. They move us toward a history that treats the big issues by grounding them in the details of individual lives, in evidence. Evidence-grounded studies are essential if the approach is to have explanatory power for historians. I hope the instances from my own work on early modern economic life have illustrated how a view of an Atlantic-wide marketplace that became more integrated and cohesive over several centuries emerges from the details of individual traders and commodities—backcountry retailers who were enmeshed with Europeans, Africans, and Americans through networks of people, goods, and information; European wines whose distribution and culture became more organized and structured as producers, distributors, and consumers conversed, corresponded, and traded among themselves; and plenty of others to keep graduate students busy for a long time to come. As Charles Darwin said in a different context, "There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, . . . from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved."[24]

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[24]Charles Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (London: John Murray, 1859).