Gods of trust:
Ancient Delos and the modern economics of religion

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Abstract
Students of ancient history and the ancient economy have only lately begun to engage with recent advances in the study of religion and economics. This deficit is particularly pronounced in scholarship on the classical Greco-Roman Mediterranean (5th c. BCE—3rd c. CE), where a sustained economic efflorescence took place alongside massive capital investments in religious institutions and behaviors. My paper contends that the importance of religious practices to generating positive social capital among economic agents in the ancient Mediterranean context has been unjustifiably overlooked. The test case for this argument is the 2nd and early 1st c. BCE island of Delos, a commercial *emporion* in the Greek Aegean whose wealth of inscribed cultic dedications and monumental sacred architecture attests to the frequency with which merchants from all over the Mediterranean interacted with each other in Delos' religious settings. According to one ancient source (Pausanias 3.23.3), the presence of the island's patron god Apollo in the form of a public statue was believed to make Delos safe for business. I develop Pausanias' claim by demonstrating how the material relics of ritual and cultic interactions among the Delian merchants—statues, inscriptions, shrines—triggered priming effects that enhanced trust and thereby facilitated economic transactions. My work promises to be relevant not only to students of antiquity, but to scholars seeking a firmer handle on how to read the interplay of religion and economics in the historical record.

Introduction: an old but powerful statue

In the second century of our era, the Greek periegetic writer Pausanias noted in his *Description of Greece* that the island of Delos in the Aegean had previously been believed to be safe for traders on account of the god Apollo. Just prior to making this remark, Pausanias alludes to a wooden statue of the god that formerly stood in Delos but that by the time of his writing had made its way to a place sacred to Apollo on the Peloponnesian coastline.[1] Through this mention of the statue, we are invited to reflect on the connection between its previous placement in Delos and Delos' sustained run of success as a major port. [The illusion of security provided by the statue was rudely shattered in 88 BCE,[2] when the forces of Menophanes, a general of King Mithridates of Pontus—then engaged in a campaign against Rome and its allies in the Greek East—sacked Delos[3]; during the ensuing chaos and destruction one of his soldiers hurled the statue into the sea. But according to Pausanias, the aftermath of the sack confirmed the vindictive power of the offended god: Menophanes died in a confrontation with outraged merchants on his way out of

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[1] Pausanias 3.23.3: "For the wooden statue of Apollo which is now there [at Epidelion on the Peloponnesian coastline] used to stand at Delos. When Delos was a trading hub for the Greeks and was held to be secure for merchants on account of the god…" (τὸ γὰρ τοῦ Ἀπόλλωνος ξόανον, ὃ νῦν ἐστιν ἐνταῦθα, ἐν Δήλῳ ποτὲ ἵδρυτο. τῆς γὰρ Δήλου τότε ἐμπορίου τοῖς Ἕλλησιν οὔσης καὶ ἄδειαν τοῖς ἐργαζομένοις διὰ τὸν θεὸν δοκούσης παρέχειν…). I cannot explore here Pausanias' literary aims or the ambitions and generic standing of periegetic literature in his time more generally; for a fresh take on his work's "shuttling" between local and translocal identity-formation see Whitmarsh 2010, 14-16.

[2] All dates in this paper are BCE unless otherwise specified.

[3] In addition to Pausanias 3.23.3-5, note also Strabo 10.5.4; Plut. *Sull*. 11; App. *Mith.* 28; Florus 1.40.8.

Delos, and his king (much) later committed suicide. As for the statue? It bobbed on the waves of the Aegean until it arrived at its new destination on the Peloponnesian coast; Apollo did just fine for himself. The port and island of Delos, however, did not—it fell into a slump that worsened after a second exogenous shock, this time in the form of an assault by pirates in 69. Three-quarters of a century later, the Augustan-era geographer Strabo informs us that by his time the island had still not recovered from the destruction unleashed by Mithridates' troops, and archaeological evidence in the form of a dramatic fall-off in monumental and commercial activity of all kinds seems to bear him out.]

This paper was born out of an attempt to understand Pausanias' characterization of this statue and of the presence of the god on the island as enticements to traders. According to one reading of this passage, the phrase "on account of the god" (*dia ton theon*) should be read as emphasizing a "system of commercial oaths and curses": we know that Greek and Roman merchants swore on statues and on altars near statues to finalize agreements.[4] But I propose to show in the next few minutes that Pausanias' words can open the door to a more far-ranging and more productive re-examination of the linkages between economic activity and religious observance. The argument I will be making—to be fleshed out in more detail in a moment—is that sacred artifacts such as statues *influenced* behavior, in particular the behavior of merchants and traders wary of being hustled or cheated. But before proceeding to the argument itself, I need first to explain why the small island of Delos matters.

Already in the eighth and seventh centuries BCE, Delos—famous in Greek myth as the birthplace of the gods Apollo and Artemis—was a site of cultic activity; by the late archaic and early classical period, the island's annual festival in honor of the god Apollo had become central to the religious self-identification, communal socialization, and networking not only of resident Delians but of inhabitants of the neighboring islands and of the European and Asia Minor coastlines.[5] Pausanias' remark about the appeal of the island to traders refers to what happened next: an island of initially rather unprepossessing economic indicators,[6] Delos slowly grew into the most prosperous and dynamic *entrepôt* in the Aegean, in no small part because of Apollo's festival and cult. Already in 1919, the French scholar Jean Hatzfeld made the point: *because* Delos was a sanctuary site, it became an international center; *because* it was an international center, it became a focus for

[4] For this reading see Rauh 1993, 288.

[5] A clear and theoretically informed account of this centuries-long development—taking into account both the literary testimony and the archaeological evidence—can now be found in Constantakopoulou 2007, ch. 2.

[6] Against the view that Delos' geographic placement in the center of the Cyclades made its ascent as a regional center of commerce more or less unavoidable, it should be noted that the neighboring island of Gyaros never amounted to anything economically. On the piddling tribute that Gyaros could barely muster in the Augustan age, see Strabo 10.5.3 with Reger 1994, 1.

commerce.[7] But Hatzfeld's confidence in this causality has been elided in more recent work on the economic prowess of the island. The recurring challenge faced by succeeding generations of scholars has been to make better sense of the relationship between religious activity and economic performance.

This paper will push Hatzfeld's claim rather aggressively by building on the quotation from Pausanias with which I began. Pausanias attributes part of the appeal of Delos to the presence of Apollo as embodied in his statue. I will argue that the built-up landscape of religious praxis on the island—the statues and shrines and votive dedications that attested devotion not only to Apollo but to other gods as well—enhanced Delos' appeal to merchants and traders. I will suggest that this built-up landscape generated positive social capital among economic agents, and that the lurking presence of this embodied social capital encouraged cooperation and good dealing. These arguments are important for two reasons. First, the importance of religious practices to generating social capital among economic actors in the ancient Mediterranean has been overlooked. In light of the emerging consensus—to be discussed at greater length in a moment—that for much of the first millenium BCE the ancient Mediterranean benefited from periods of accelerating economic growth (by pre-modern standards), it is worthwhile to consider what, if any, role in this development was played by religious and cultic practices. The proposition of this paper is that these practices are far from being epiphenomenological: while they are not *drivers* of macro economic growth to the same extent that demographic changes or large-scale alterations in production and consumption patterns are, they do generate and maintain behaviors that keep the ball rolling. Second, this line of analysis can be meaningful and instructive for scholars seeking a firmer handle on how to read the interface of religion and economics in the historical record, especially in cases and for religions where we do not have doctrinal statements and have no access to the inner minds of devotees.

In what follows I build up to my core set of arguments by (1) providing some context on the general economic efflorescence within which Delos became prosperous; (2) zeroing in on one of the main features of this efflorescence on display at Delos—the private association; and (3) reading the materiality of religious observance on Delos through the bifocal lens of (a) social-capital theory and (b) ecological signaling theory.

I: Background: Delos at the crossroads of "Wealthy Hellas" and hegemonic Rome

To properly contextualize the interplay of religion and economics on ancient Delos, some words concerning the regional processes under way at the time of the island's transformation into a major port are in order. That the archaic, classical, and early Hellenistic eastern Mediterranean world of the eighth through third centuries BCE benefited from a sustained economic efflorescence is now coming into clearer

[7] "Parce que Délos était un sanctuaire, elle est devenue une ville internationale: parce qu'elle était une ville internationale, elle est devenue une place de commerce": Hatzfeld 1919, 36-37.

focus.[8] While the exact quantitative parameters of this efflorescence remain open to dispute, archaeological indices—buttressed by demographic modeling—point to several centuries of increasing consumption and production, first in the eastern and then in the western Mediterranean.[9] Especially for the eastern Mediterranean, several studies have demonstrated that quality of life, real wages, and overall rates of economic growth were exceptionally high by premodern standards, possibly on a par with the economic efflorescence of the Dutch Republic in the late 16th and early 17th centuries. In the case of the non-Greek Mediterranean—and in particular Rome, the city-state which over a span of three and a half centuries takes over first the western and then the eastern Mediterranean, fusing the two halves under a consolidated imperial system—the details are a little hazier, but several indications in the material and environmental record have been interpreted as signaling an economic boom over the course of the last three centuries BCE and first century CE[: a spike in the number of recovered shipwrecks, suggestive of increasing seaborne commerce; the intensification and commercialization of agricultural production, as reflected *inter alia* in a large-scale traffic in slaves—many of which supplied the labor for rural estates turning out goods such as wine and olive oil for sale on the open market; the acceleration of monetization, driven in large part by first the Roman Republic and then Empire's minting on a scale paralleled and perhaps surpassed only by Han China, that formed the backbone of what the sociologist and ancient historian Keith Hopkins memorably termed the "taxes and trade" system; and, to sustain this monetization, the unprecedented and centuries-long exploitation of mines, the environmental consequences of which are corroborated by Greenland ice-core samples that rather unequivocally show substantially higher concentrations of lead pollution in the atmosphere for this period.[10] There is no agreement on the direction of the causal arrows, on appropriate or even viable measures for quantifying GDP, or on the precise timing of the Roman economy's wax and wane; I will sidestep the vigorous debates surrounding each of these points and

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[8] For the Greek city-state ecology of the archaic and classical period, Morris 2004 and Ober 2010 make the case and provide the evidence for economic growth. Useful additions to the new "consensus" are to be found in the essays on Greece in Scheidel et al. 2007. In addition to the demographic parameters set out in these pieces, note also the influential model formulated in Hansen 2006. Framing and characterizing economic growth in the subsequent Hellenistic period has proven fiendishly difficult; see next footnote.

[9] The transition from growth in the eastern to growth in the western Mediterranean occurs in the context of the political and military transformations conventionally grouped together under the heading of the "Hellenistic period." Unfortunately, a comprehensive account of the economics of the Hellenistic world has yet to be undertaken, in large part because of the challenges any such account would face: the dizzying number of geographical regions and political entities to consider, a tremendously diverse and constantly expanding—but still lacunose—evidentiary base to marshal, etc. For a descriptive overview, see Davies 1984. Regional studies whose foci and lines of interpretation bear directly or indirectly on this paper: Reger 1994 and 2007.

[10] The literature on each of these points and on the overall question is vast and continues to grow; for an analytic summary of the major bodies of evidence and an orientation to the main interpretive debates see Scheidel 2009.

simply note that the economy of the Roman world, much like that of the Greek world which it took over, enjoyed a period of economic efflorescence, and that this period likely extended into the first century of the Common Era.]

It must be stressed that the arc of Greco-Roman economic growth was high *by premodern standards*; the presence of devastating diseases such as malaria for which there was no cure, the absence of truly transformative and broadly disseminated technological innovations, and a variety of other social and institutional pressures acted to prevent first Greek and then Roman societies from breaking through the Malthusian ceiling and reaching higher levels of social and economic development.[11] It is a matter of ongoing debate as to which of these factors—technological limitations, disease regimes, institutional and ideological configurations—is most responsible for the inability of the Greco-Roman world to escape the Malthusian trap.[12] [Again, I sidestep this debate to note only that the efflorescence comes to an end. The motor of economic progress seems already to be grinding to a halt in the first century CE; then comes the exogenous shock of the second-century plagues that according to some reckonings might have carried off a third of the Empire's population; then come the military and political disasters of the third century, from which the western Empire is never able to fully recover—even though first North Africa and then the Greek East do experience an economic uptick as the western Mediterranean begins to unravel.]

With this historical and economic background in mind, we can now come to grips with the specific case of late Hellenistic Delos. Already a bustling port during the classical and early Hellenistic periods, as we noted earlier, Delos takes off as one of the major nodes for Mediterranean commerce in the years after 167/6 BCE, when Rome, by this point the undisputed hegemon of the Mediterranean, makes Delos a duty-free port and entrusts its management and supervision to Athens. [Over the course of the next few decades, the island—with a resident population of only several thousand at its peak—witnesses a hitherto unprecedented surge in urbanization and in commercial activity. The main evidence for these conjoined processes has survived to us in archaeological form: the expansion and renovation of harbor and storage facilities, the expansion and renovation of the island's residential quarters, and—crucially for our purposes—the building of shrines, sanctuaries, and clubhouses dedicated to the worship of specific gods by private associations whose names, functions, and officer lists are in some cases preserved by inscriptions.] Excavations conducted on Delos by French archaeologists since the late 1800s have brought to life the staggeringly diverse array of cultic and religious practices on the island and the tremendous energy and resources lavished on these practices by private associations of Delian merchants—both those resident on the

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[11] On the disease environment see Sallares 2007; on demographic constraints and the Malthusian ceiling, Scheidel 2007; on institutions—a hot topic ever since the ancient historian Moses Finley faulted social and ideological constraints for what he saw as the fundamentally static nature of the Greco-Roman economy—Frier and Kehoe 2007.

[12] Scheidel 2009; note also the social development index proposed in Morris 2010 and explained at greater length in Morris 2013 that seeks to quantify just how far the Greco-Roman world did come relative to other ancient and modern societies.

island year-round and those coming in on regular trips.[13] The associations, at least twenty-four of which are documented epigraphically,[14] reflect the geographic diversity of the mercantile influx into Delos throughout this period: not only Greek but Italian and Phoenician merchants came together in corporate units that carried out ritual and cultic observances and built religious structures on the island. While membership in these bodies seems to have been largely dependent on ethnic background—if you were a Phoenician, you probably joined the Phoenician corporate group worshipping Phoenician gods—there is substantial evidence for their openness and mobility, and in particular Italians and Phoenicians seem to have had relatively few scruples about joining in or subsidizing the activities of a religious association that offered cult to gods not worshipped in their homelands.[15] [This willingness to participate in cult to a god or goddess that is not natively one's own is undoubtedly related to the syncretistic mode of cognition known as *interpretatio* characteristic of religious practice throughout the Mediterranean for much of the first millenium BCE: gods and godddeses slipped across regional, ethnic, and political boundaries largely because believers were willing to accept equivalencies between X god of those people and Y god of my people; among the best studied of these syncretisms is that between the Phoenician Melqart and the Greek-Roman Herakles/Hercules, but there are many other examples.[16]]

The emergence of these corporate bodies is part of a Mediterranean-wide, Hellenistic-era phenomenon that has elicited much discussion since the pioneering works of Erich Ziebarth and Franz Poland at the turn of the twentieth century. [We cannot really begin to understand the manifold intersections of mercantile activity and religiosity on Delos unless we scrutinize these associations a little more carefully. Why do they emerge, and what purposes do they serve? The answers to these questions are linked—and these answers, I hope to show, have a great deal to do with the statue of Apollo mentioned by Pausanias with which I led off this paper.

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[13] The standard synthesis of this religious activity is Bruneau 1970, to be supplemented now with the focused work of Claire Hasenohr on the Agora of the Competaliastai and the activity of the Competaliastai (2000, 2001, 2003). Note also Trümper on the association clubhouses (2006) and on the construction, architecture, and functions of the "Agora of the Italians" (2008).

[14] The overview of the evidence for these Delian associations in Roussel 1987 remains fundamental. For a succinct introduction to them in their wider Hellenistic context see Reger 2007, 477; I return to this setting in a moment.

[15] For more on these two groups see Hasenohr 2007a; on the cultural lability of the Italians especially see Hasenohr 2007b, and for a prosopographic catalogue of the Italians on the island that points in much the same direction see Ferrary et al. 2002. To our knowledge, membership in any one ethnically/religiously-oriented association did not preclude membership in others.

[16] While the standard works on Greek and Roman religion (Burkert 1985, Bremmer 1994; Beard et al. 1998) deal with this practice *passim*, a thorough and theoretically nuanced exploration of the phenomenon is urgently needed. On the Greek side, note the remarks in Assman 2004; on the Roman, Ando 2008.

II: The religious association and its trust-generative outcomes: first steps

In the decades leading up to the publication of Erich Ziebarth's *Das griechische Vereinswesen* in 1896, considerable ink was spilled over why the ancient Greeks, for all their advances in specialized and increasingly sophisticated craft, artistic, and luxury-item production, never developed anything quite along the lines of a guild.] Ziebarth and thirteen years after him Poland were among the first to understand that the commercial and professional associations which emerge in the Hellenistic period do exhibit some of the properties of a guild—but that their distinctive constitution in the form of cult groups and under theophoric names (such as the *Hermaistai* or "worshippers of Hermes," the *Apolloniastai* or "worshippers of Apollo," etc.) needed to be taken into account when assessing the broad spectrum of their social and economic utilities. These associations, often but not always of traders and merchant-ship owners (*emporoi* and *naukleroi*) and in quite a few cases of non-Greeks transacting at Greek ports, are attested beginning in the late fourth century at Delos and elsewhere: at Athens, where we know of associations of Egyptians, Tyrians, and Sidonians, among others; and at Rhodes, for a century and a half the dominant Mediterranean port until the Romans' grant of duty-free status to Delos drew traffic away and eviscerated its commercial influence, where approximately two hundred associations—some Greek and some non-Greek—are known. The blossoming of this so-called *fenomeno associativo* has been variously understood: (1) as a real-time referendum on the waning powers of the Greek city-state or *polis*; (2) as an institutionalized expression of the need for small, frequently face-to-face groups to undertake the vetting, enforcement, and regulatory operations without which the viability of medium- and long-distance commercial activity would be seriously imperiled.[17]

[Responses to these interpretations have taken issue with the idea of the *polis* on the wane and mobilized the considerable evidence for city-provided regulators and administrators at the major ports of Athens, Delos, and Rhodes.[18] To be sure, any trader or merchant who felt himself cheated and sought support from city-appointed adjudicators would incur financial, opportunity, and possibly reputational costs. The question, presently unanswerable given the state of our evidence, is when and to what extent those costs were accounted for and offset in the design of the institutional apparatus for arbitrating disputes. There is some evidence to suggest, for example, that Athens sought to lower the costs of appealing to a city-appointed adjudicator in instances where the validity of a coin as good currency was being disputed.[19] On Delos, the number of thanksgiving dedications

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17 A third possible line of interpretation would re-evaluate the explosion of Hellenistic-era private religious associations according to the typology set out in Iannaccone and Bose 2011; I am preparing a short study along these lines.

18 For a useful overview of this evidence see Bresson 2008, ch. 4.

19 See e.g. van Alfen 2005 and Ober 2008, ch. 6, on the famous coinage decree of 375/4. More broadly on the emergence and efficacy of *polis*-based institutional controls and oversight see van Alfen 2011. On the magistrates at Delos see Hasenohr 2012, 100-102.

erected by groups of merchants and residents to the *epimeletes*—the appointed overseer of the island, a position that changed annually—might speak to efforts at getting and staying in the good graces of powerful individuals whose intervention could prove decisive in the settling of any future disputes: buff up his self-regard now, enjoy the benefits of his protection later.[20]]

In these and other similarly oriented accounts of the activity of associations at Delos and elsewhere, the role of religion and religious praxis is rather undertheorized. This oversight becomes all the more problematic when we consider how much in the way of time and resources these associations invested in religious activity. Why did resident and itinerant merchants join together in associations of cult, and why were they so willing to lavish resources on the material appurtenances of religious devotion? The volume of sacred dedications, architecture, and inscriptions generated by the activity of Delian residents and merchants in the period 167/8 to 88 is impressive, especially in comparison to preceding and later periods. And the *location* of this build-up is significant: much of it, notably the significant percentage traceable to the activity of Italian merchants and private associations, takes place in the immediate vicinity of or at a short distance from the port. Why in this location, and to what effect(s)? An easy answer to the question of *why* is "conspicuous display," but I would suggest that such an interpretation only begins to scratch the surface. In his 2009 book *The Evolution of God*, the journalist Robert Wright offered a stimulating if all-too-brief treatment of the Delian scene: stressing the "positive network externalities" at work in the structuring of these associations, Wright located their appeal for prospective merchant members in the fact that each was "both a database and a network of useful contacts" through which merchants could glean "useful information from other merchants and shippers." It is not immediately apparent, however, why *religious* and *religiously* themed associations would have emerged as the means for redressing the information asymmetries that medium- and long-distance merchants frequently encountered. A provisional answer might be at hand in recent work on trust and social capital.[21] In his attempt to grapple with the rise and proliferation of these associations, Vincent Gabrielsen has sketched their operation as "brotherhoods of faith" in which the performance of repeated acts of religiosity and piety created "faith in other people"[22]—conducive in turn to the creation and maintenance of the long-distance trust that is a *sine qua non* for geographically wide-ranging commercial activity, as Douglass North and other economists have

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Separately, note also the efforts undertaken by Athens and Delos to improve port facilities and infrastructure, presumably with an eye to luring and keeping traders: Burke 1985, 259, on the former; Duchêne and Fraisse 2001 on the latter.

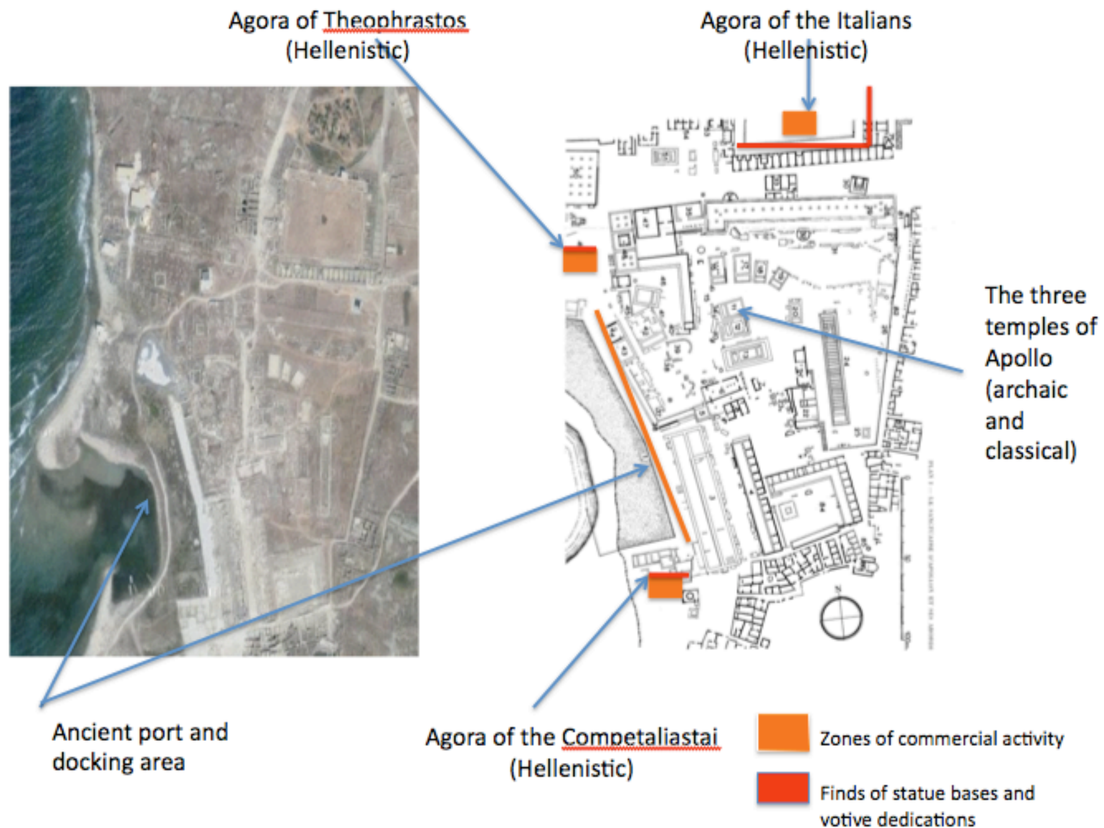
[20] Examples abound. Consider for purely illustrative purposes the dedications made to Medeios, *epimeletes* of Delos in 99/8: *ID* 1711, 1757, 1761, 1816, 1929, 2400.

[21] More broadly on religion as social capital see Witham 2010, 172-74.

[22] Gabrielsen 2008, especially 196 on associations as "repositories of religiosity and piety."

repeatedly emphasized.[23] These "brotherhoods of faith" cultivate and promote a very specific kind of social capital: the connection and sense of kinship you feel with your fellow association member who has participated in cult with you.

Fig. 1: Location and layout of the ancient port and adjacent area[24]



While social capital approaches to the study of Hellenistic associations are gaining traction,[25] the methodological apparatus underlying theories of social capital have come in for vigorous criticism:[26] one repeatedly flagged concern is that the precise mechanisms for the creation and transmission of social capital are regularly left underelaborated or unstated. In the case of Delos, we need to be a little more precise about just where, how, and with what consequences social capital is generated through the presence and collective action of cultic associations. How do

23 On long-distance trust as a requirement for the mobility of financial and commercial capital see e.g. North 1990, 125-26.

24 Image sources: the map on the left was generated through Google Earth; the archaeological plan on the right is Plan 1 in Bruneau and Ducat[3] 1983 with my overlays. By "zones of commercial activity," I indicate zones of *likely* commercial activity: while the precise *lieux d'échange* at Delos remain a source of debate, I ground my designations in Hasenohr's (2012) cautious overview of the evidence for the sites marked in orange.

25 Kierstead *forthcoming* on associations in Athens.

26 Critiques of the major schools of social-capital theory are set out in Seubert 2009.

we know that this social capital is being generated? How do we know that its transmission is taking place successfully? The answer I propose to both questions is one and the same: the material record of ritual and sacred activity these associations leave behind.

We need to refine our understanding of the tangible impacts of social capital on networking, trust-formation, and norm compliance by viewing the almost hypertrophic output of dedications and offerings to the gods at Delos not as some static marker of piety but as a dynamic agent in the landscape of individual choices. Pausanias was right: people *responded* to the statue of Apollo—and potentially to the many other statues dotting the landscape as well.

IV: Under the sign of the (cooperative) ecology: priming environments at Delos

The number of religious offerings and shrine dedications that proliferate all over Delos but especially in heavily frequented areas of the island during the late Hellenistic period can best be understood by reference to what religious studies scholars Joseph Bulbulia, Marcus Frean, and Paul Reddish have described as a "cooperative ecology" and "ecological signalling."[27] [To appreciate these related concepts and their bearing on my argument, a quick overview of the intellectual background against which and in dialogue with which they were formulated is in order.] Psychological studies over the past two decades have demonstrated how extraordinarily sensitive rates of norm compliance or defiance are to external environmental cues. [In a much-cited 1990 article, Robert Cialdini and his colleagues presented and analyzed an experiment in which observed participants were much more likely to litter in dirty environments than in clean ones. Their conclusion was that the presence of a dirty environment primed individuals—on a level unbeknownst to them *consciously*—into an act of norm defiance (littering) they would have far less likely to commit otherwise.[28] Successive experiments modeled along similar lines have confirmed the same principle in a variety of different contexts and domains.[29]]

The overall picture emerging from this research is one in which priming and activation effects operate at very subconscious levels to guide individual behavior. Joseph Bulbulia and his colleagues have been quick to grasp how the lessons of these studies can be applied to the study of religion.[30] According to their

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[27] Bulbulia et al. 2013, which represents a substantially beefed-up version of the "coordination by sacred cues" model set out by Bulbulia and Frean in an ASREC 2009 paper.

[28] Cialdini et al. 1990 on what has since come to be known as the "Cialdini effect" (incorrectly spelled in Bulbulia et al. 2013 as "Caildini").

[29] See e.g. Vohs 2006; Berger et al. 2008; Keizer et al. 2008. Kahneman 2011, ch. 4, offers an accessible and general synopsis of the basic concepts and the current state of research.

[30] Bulbulia and Frean 2009 and Bulbulia et al. 2013 present a simple and useful cooperation-defection game (NB: not a classical or even modified Prisoner's Dilemma, but rather a "stag hunt") to illustrate how cue-based signaling works.

evolutionary scheme of the connection between religious belief and enhanced prosocial behavior, "religions evolve to generate representations—explicit and implicit—that spread optimism and restore order." In their account, "the exogenous mechanisms that evolve to facilitate such a spreading of order" are *ecological signals* (2013, 103), [which take two forms. In addition to what they term "*declarative* components of religious cognition"—the shared memories and beliefs often formalized through speech and often transmitted through texts—Bulbulia and company ask us to take stock of "non-declarative cognitive states." Among the different strategies for generating and sustaining these states, they single out bodily movement. One of the most promising lines of research in behavioral psychology has focused on the ways in which forms of mimicry and synchronized movement can induce cooperative engagement.[31]] I would like to extend their signaling model beyond the ritualization and choreographing of the body to include the physical structures created and continuously modified by religious activity. To put it starkly: the inscribed dedications, altars, offerings, sacrifices, and shrines dotting the Delian landscape all functioned as ecological signals that primed individuals into prosocial behavior.

Pausanias' remarks about the sense of commercial security promoted by Apollo's statue implicitly acknowledge the operation of one such ecological signal: the image of the patron god of the island. While we have no direct evidence for subconscious effects—after all, the ancients were not, to the best of our knowledge, conducting psychological experiments on each other from which they could glean and report such effects—we do know that the inhabitants of the ancient Mediterranean were very aware of the emotional and communicative potency of statues, especially divine ones. To consider only one testimonium, the late second century Roman poet and satirist Lucilius had some choice remarks about individuals who reacted too gullibly to statues of the gods:

> The bogeymen and witches that your woodland prophets and your ancient kings instituted, he trembles at them, he stakes everything on them. Just as children before they can speak believe all bronze statues to be living and to be human, so too those adults think all those molded objects are real—they think there is sentience in the bronze statues.[32]

There is a voluminous literature on responses to cult statues in the Greco-Roman world whose conclusions I will not reprise here.[33] For our purposes the important takeaway is that the excessive piety of believing the statue to be real—and fearing its agency as if it were real—is the butt of Lucilius' mockery. [Throughout the Greco-Roman world, divine statues were venerated because they were believed to embody

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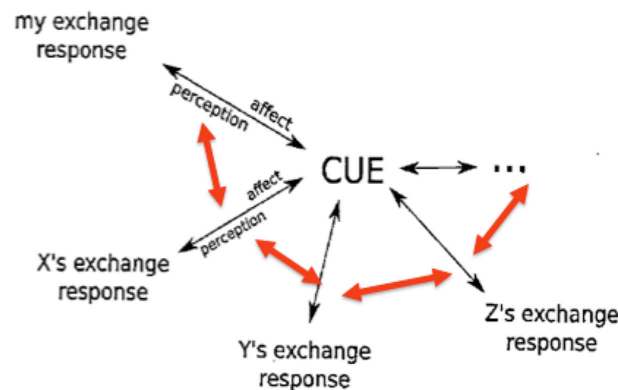
[31] In addition to the research summarized in Bulbulia et al. 2013, 105-106, note also the "ideomotor link" demonstrated to striking effect in Mussweiler 2006.

[32] Lucilius frs. 484-8 Marx (tr. Feeney 1998, 93, modified).

[33] Overview of this debate and its multiple moving parts in Feeney 1998, 92-97. See also Collins 2008, 19, on Greco-Roman cultures "liv[ing] the reality" of statues as animate beings; Collins felicitously invokes the model of "real physical interactions" with divinity proposed by Alfred Gell in his influential 1998 work.

the god or goddess they represented; they were capable of inducing the proverbial fear and trembling among those offering worship. On one level, we can speak of the direct, awed reaction of god-fearing individuals to the sight of a divine statue.] Far from being compartmentalized within the walls of the shrine or temple, this direct reaction of awe enjoyed a reasonably high degree of public visibility: Greco-Roman cult was primarily an outdoor activity; the statue of the divinity or divinities, installed in a room within the temple, was usually apprehended from the outside by participants in a religious ceremony; sacrifice was almost always conducted on altars erected in front of the temple, within the *temenos* or sacred precinct.[34] In other words, this is not a world of "private" religious devotion: if you were "trembling" at the awe-inspiring sight of the divine statue, in all likelihood other people were watching you tremble. All right, you might be wondering, but what about those Greeks and Romans who were not so emotionally vulnerable to the sight of a statue—surely there were more folks like Lucilius who either cast a skeptical glance at the proceedings or simply dismissed them as bogus? In response to just this type of question, I want to dig a little deeper into the nitty-gritty of ecological signaling, specifically as represented in the following model:

Fig. 2: Bulbulia et al.'s cooperative ecology model, modified



I have modified Bulbulia et al.'s visualization of a cooperative ecology (original in black[35]; the red lines are my addition) to bring into clearer focus the *interdependence* of individual responses to specific environmental cues. While research into the dynamic features of ecological response is still very much in its infancy, we can reasonably say that my response to the specific cue will not be unmediated; routinely and in many cases unconsciously we process the responses of others around us prior to and during our own. Back to Lucilius' gullible trembler: if the statue that inspires such fear in him is the primary cue, he and his response

[34] An accessible account of this aspect of Graeco-Roman religious observance can be found in McLean 1996; fuller treatments can be found in the relevant sections of Burkert 1985 and Beard et al. 1998.

[35] Bulbulia et al. 2013, Fig. 6.1.

are important *secondary* cues. A person in the immediate vicinity will take the measure of the statue and of the gullible trembler as he formulates a consciously explicit response of, say, hardening skepticism. Subconsciously, however, he is taking in something else about the environment he is in—something capable of steering his actions in a very targeted way. To clarify just what this "something" might be and how it might direct our merchant's behavior, we would do well to consider two recent studies, one on the effects of priming "God" concepts and the other on the priming effects of the "gaze."[36] In the first, subjects for whom notions of God had been implicitly activated were significantly more generous in an anonymous dictator game; in the second, contributions to a office honesty box in a university coffee room rose considerably when an image of a pair of eyes was placed above the coffee and tea. Despite being conducted on modern subjects, these studies are useful for elucidating how our Delian merchant might have been primed by his environment, inasmuch as (1) his environment was studded with reminders of divinity; (2) one of these reminders consisted of statues with eyes.[37]

Let us pull these various threads together. **If our merchant—Greek or Italian or Phoenician merchant—has been socialized into thinking that statues embody a living god, or even into thinking that most other people believe that statues embody a living god, he will be subconsciously primed into being more generous and into acting on an implicit belief that the people around him are fundamentally pious and good whenever he happens to be in close physical proximity to statuary, votive offerings, and shrines or temples.**

Can we gauge the location and intensity of this priming effect? Ancient Delians are not around today for us to run controlled experiments on them, so any attempt at quantification will be indirect and loosely approximative at best. As a provisional first step I offer a simple Bayesian model that seeks to identify *where* in the decision-making process of any one businessman or merchant the effects of priming might have been most acutely—or most consequentially—felt. Suppose that I, a Delos-based trader, am considering a transaction with a merchant whom I know nothing about. The transaction he is proposing is very profitable, but I am extremely risk-averse and have no independent reason to trust the man making the proposal. Let us assume a decently low prior probability of 25% that I will trust this man enough to accept the proposed transaction and do business.[38] To encourage me to accept the proposal, the merchant now offers to swear by the gods; he even proposes to go the extra mile and set up some kind of offering to the gods on our behalf. This new offer gives me information I can use to assess his trustworthiness. While I am impressed by his apparent godfearingness, I am a hardened skeptic, so I

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[36] Shariff and Norenzayan 2007; Bateson et al. 2006.

[37] And not just divine statues, but human honorific statues as well; Ma *forthcoming* will address the latter comprehensively in their ancient urban context. The evidence of our hardwired, unconscious reaction to human faces is strong and growing; on the "neuroethology" of the social gaze see Emery 2000.

[38] We will also assume purely for the sake of this exercise that the only factor in my decision to cooperate is my degree of trust in the merchant (i.e., no other explicit determinative considerations).

do not swing too quickly in the direction of trust: *conditional on the offer* I will reckon it a 50-50 prospect that he is trustworthy.

Fig. 3: A Bayesian account[39]

Baseline	*Priming intervention* I	*Priming intervention* II
Prior probability (x) = 0.25 Conditional, (y) = 0.5 Conditional, (z) = 0.5 Posterior probability = 0.25	*Priming raises x x = 0.35 y = 0.5 z = 0.5 Posterior = 0.35	*Priming raises y (and lowers z) x = 0.25 y = 0.6 z = 0.4 Posterior = 0.48
	Priming intervention I, t_2	*Priming intervention* II, t_2
	new x = 0.45 y = 0.5 z = 0.4 posterior = 0.45	new x = 0.48 y = 0.6 z = 0.4 Posterior = 0.58

Using Bayes's Theorem, we arrive at the entirely unsurprising posterior possibility of 25% for the likelihood that I will trust him enough to accept the offer—nothing has changed. Now, let us return to t_0 and assume that, throughout the period of my initial reflection on the offer, I have been primed by the surrounding environment of statues and sacred artifacts into being just a bit more prosocial and inclined to cooperate. This priming has raised the prior probability of my being trusting enough to agree to the transaction from 25% to 35%. The merchant makes his offer to swear by the gods, and again I am split evenly on the question of whether this augurs trustworthiness or its opposite. The posterior possibility that I will agree is, then, simply 35%. Once more, let us backtrack. This time, we will assume that the priming effect operates not by raising the prior probability of my trusting enough to cooperate, but by upgrading the merchant's trustworthiness in my eyes once he makes his offer. Perhaps the priming intervenes at this juncture because I am seeing or have seen other merchants and traders engaging in ritualized activity—and because I am in an environment dotted with evidence of that activity. Conditional on his offer, there is a a 60% chance I will deny my previous inhibitions and find him sufficiently trustworthy. The posterior probability that I will agree to a transaction now swings up to 48%. The ten-percent primed uptick in my assessment of the merchant's good faith returns a higher posterior probability than if I simply entered the transaction slightly more primed to cooperate. If we run this game through a second iteration—the next interaction I have with a new merchant I don't know—the gap remains: with a priming effect that acts to raise my generic inclination to trust to 45% (but holding conditional probabilities constant at 50-50), the likelihood of my agreeing to the transaction will also rise to 45%; with a new 48% confidence

[39] Bayes's Theorem: xy / [xy + z(1-x)], where x = prior probability, y = probability conditional on hypothesis being false, and z = probability conditional on hypothesis being true.

level, and with a priming effect that alters the conditional probabilities to make me 10% more likely to trust, the likelihood of my agreeing to the transaction will rise to 58%. To recap and interpret: if priming to induce greater cooperation is in fact taking place in the sacralized trading environments of Delos, the payoff is larger if that priming influences my assessment of the individual once we are already in dialogue with each other.

V: Final remarks

The analysis I offer makes no claims to being comprehensive, all-encompassing, or even verifiable in a directly testable sense. What it does offer is a proposal and a strategy for relating the substantial material output of sacred artifacts in late Hellenistic Delos to the sense of security traders felt in making dealings on the island. Further work is required to put the environmental effects of statues and sacred artifacts on a firmer conceptual, empirical, and comparative footing. For now, two takeaways:

1. The *priming* effects of sacred environments on commercial activity are on a level with the more explicit forms of social-religious capital currently receiving attention in the literature;
2. These priming effects motivate cycles of virtuous behavior and norm compliance that on a micro level generate feelings of greater security and thereby contribute to enhancing economic performance.

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