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How to Cite: Ambasciano, L 2016 The Fate of a Healing Goddess: Ocular Pathologies, the Antonine Plague, and the Ancient Roman Cult of Bona Dea. *Open Library of Humanities*, 2(1): e13, pp. 1–34, DOI: http://dx.doi.org/10.16995/olh.42

Published: 10 May 2016

Peer Review:

This article has been peer reviewed through the double-blind process of *Open Library of Humanities*, which is a journal published by the Open Library of Humanities.

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Leonardo Ambasciano, 'The Fate of a Healing Goddess: Ocular Pathologies, the Antonine Plague, and the Ancient Roman Cult of Bona Dea' (2016) 2(1): e13 *Open Library of Humanities*, DOI: http://dx.doi.org/10.16995/olh.42

HEALING GODS, HEROES AND RITUALS IN THE GRAECO-ROMAN WORLD

The Fate of a Healing Goddess: Ocular Pathologies, the Antonine Plague, and the Ancient Roman Cult of Bona Dea

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The aim of this article is to offer a diachronic and dynamic contextualisation of the ancient Roman cult of Bona Dea, connecting its cognitive underpinnings with its healing dimension. Special attention is devoted to the ocular concerns attested in the epigraphic inventory. The decline of the presence of Bona Dea on the religious scene, attested by the 3rd century CE, is considered to be the multi-causal result of the long-lasting, ocular side-effects of smallpox in the aftermath of the so-called Antonine Plague, which interacted with the correlated and prolonged lack of positive reinforcement concerning symptom relief and cognitive feedback.

> *'No civilization that unites tens of millions of people for the first time can escape the appearance of new forms of infectious disease'*
>
> (Reff, 2005: 45)

> *'The dominant motif of a religion – its fundamental characteristics – is often most clearly revealed in the ways in which it explains misfortune and sickness and by the steps recommended to avert them'*
>
> (Marshall, 2008: 593)

0. A brief introduction to an ancient epidemic and a peculiar cult

The Antonine plague has been in the eye of the historiographical storm since the very inception of Roman history in academia (Bruun, 2007: 201–3), cited either as an unprecedented event which paved the way toward the final disintegration of the Roman empire (cf. Rufus Fears, 2004; CB Cunha and BA Cunha, 2008: 13) or as an episode that should be put in context with other causes and which, if taken on its own, did not have a significant impact on the general conditions of the Roman state (cf. Scheidel, 2012). Given this background, and with a grand, teleologically driven scope in mind such as the decline of Rome or the so-called 'third-century crisis' (Bruun, 2012), other possibly minor yet noteworthy areas of enquiry have been neglected. For instance, notwithstanding earlier speculations about the general impact of the Antonine plague on culture (cf. Bruun, 2007: 202), religious environment, healing procedures, and cognitive frameworks have received substantially less attention compared to demographics and economics (Reff, 2005; Panagiotidou, 2014). As Daniel T. Reff has recently underscored, '[i]n keeping with recent trends in theory, particularly the eschewing of material causality, many scholars in the humanities clearly perceive biological processes as somehow too mundane or irrelevant' (Reff, 2005: 40). To readdress this pernicious one-sidedness, and in the wake of the now re-emerging *longue durée* framework in historiographical sciences (Christian, 2011), the present article deals with the study of the impact and the consequences of what is believed to have caused the 165 CE epidemic, i.e. smallpox (Sallares, 2009: 174), on the ancient Roman cult of Bona Dea.

Considering the coercive patriarchal system and the oppressive androcentrism which characterised Roman society (e.g., Cantarella, 1987; Scheid, 2002), this peculiar cult was remarkable in many ways. Since the earliest literary documents, Bona Dea was presented as a prestigiously ancient State goddess, whose cult was the only one officially reserved for women. Extraordinarily, women were allowed to perform a sacrifice on the night between December 3 and 4 on behalf, and for the benefit, of the whole populace, i.e. *pro populo* and *pro salute populi Romani*[1] (sacrifice was rigorously reserved for men). The ritual took place in the house of the magistrate *cum imperio*, where the festive celebration included music, dances, and wine (otherwise prohibited to women). Yet, the magistrate did not participate: men were strictly and scrupulously excluded from this religious festival, and the cult was led by his wife, the Vestal virgins and, possibly, female slaves. The mythographic rationale behind this gender separation was based on unlawful consumption of wine (a crime for women), an attempted rape, and a murder by the mythic Latin king Faunus, Bona Dea's husband (or brother/father, according to other variants). Very little else is known about the cult itself, except that another festival was performed in the Aventine temple in May (for all the relevant sources see Brouwer [1989]).

A late passage from Macrobius informs us that '[. . .] all kinds of herbs are found in [Bona Dea's] temple, from which the priestesses mostly make medicines which they distribute' (*Saturnalia* I xii 26; transl. from Brouwer, 1989: 224). On the basis of this literary passage, the only one that is specifically related to the medical dimension of the cult (Brouwer, 1989: 346), a consistent effort has been made to identify the corresponding *apothecae* in the scattered archaeological remains of Bona Dea's temples, although not always convincingly (cf. Arnhold, 2015: 53, note n. 11).

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[1] Cicero (*Ad Atticum* I xii 3, I xiv 1–2; *De Domo Sua* XXIX 77; *De Haruspicum Responsis* VI 12, XVII 37–XVIII 38; *De Legibus* II ix 21), Seneca (*Ad Lucilium* XVI 97 2), Juvenal (*Saturarum Libri*, III ix 115–117), Dio Cassius (*Ῥωμαϊκὴ Ἱστορία* XXXVII 35 3–4); cf. resp. Brouwer, 1989: 145–146, 147–148; 158; 163–166; 173; 192; 205–206; 213; see also *ibi*: 247–248.

1. From punitive blindness to healing: the Bona Dea cult as a lived experience

However questionable the archaeological remains might be, the healing dimension of the cult as deduced from the literary record was readily translated into embodied healing and religious experience by the worshippers (cf. Bendlin, 2000: 132; Várhelyi, 2015). As noted by Piccaluga (1964: 200, note n. 21), the prohibition for men to see and know the cult, and the dissuasive presence of the threat of blindness in the case of impious non-observance attested in various literary sources,[2] also called *tabu optique* (Cipriani, 1990: 102), find an echo in the apotropaic recourse to the goddess as a healer of eye-diseases, in one instance defined as *Oc*[u]*lata* (CIL VI 75 = ILS 3508. 'The epithet *Oclata* is probably an adjectival equivalent of the phrase *ob luminibus restitutis* [. . .] of CIL VI 68'; from Savage, 1940: 42; cf. Brouwer, 1989: 25, 28). Another similar case would be the epithet *Lucifera* (CIL VI 73 = ILS 3506, although Brouwer raises the possibility of a dedication to a goddess of birth, as in *Bona Dea Nutrix* from CIL VI 74 = ILS 3507; cf. Brouwer, 1989: 33–4, 346).[3]

Although the specific male ban applied to cult celebrations, to exclusive priesthood, and probably temple attendance, the extended, and external, worship

[2] Propertius (*Elegiae* IV ix 53–58), Cicero (*De Domo Sua* XXXIX 104-XL 105; *De Haruspicum Responsis* XVII 37–XVIII 38), the *Scholia Bobiensia* (frgm. XX, Hildebrandt, 1907: 25) and Tibullus (*Corpus Tibullianum* I vi 2l–24); cf. resp. Brouwer (1989: 178–181; 158–160; 164–166; 153; 177).

[3] A remarkable quantity of anatomical and eye-shaped *ex voto*, quite common in both *Latium* and *Etruria* (Gentili, 2005: 370), has been found at *Lucus Feroniae*, in the *Ager Capenus*, where the worshipped healing goddess was Feronia, who particularly appealed to freedmen (Sgubini Moretti and Bordenache Battaglia [1975]; on Feronia and freedmen see Dorcey [1992: 109–110]). The popularity of such *ex voto* documents, probably justified by the rural workload of local slaves and freedmen (Sperduti, 1997), has been tentatively explained as a consequence of the local introduction of Asclepius' cult (Pensabene, 2001: 112). Even if a more rigorous interpretation would necessarily entail the re-evaluation of all the relevant archaeological finds and sites (Gazzetti, Gavallotti and Aiello, 1992: 35), we should note that, perhaps unsurprisingly given the common core of features, five inscriptions dedicated to Bona Dea, one specifically citing *Bona Dea Sepernas* (a local epithet elsewhere unattested), have also been assigned to *Lucus Feroniae* (Church of S. Antimo, Nazzano; CIL XI 3866; CIL XI 3867; CIL XI 3686; CIL XI 3869; CIL XI 3870; see Brouwer [1989: 107–110]). Moreover, as was the case with the cult of Feronia, 'slaves and freed[wo]men make up a greater percentage of [Bona Dea] worshippers than the nobility (and more than the *plebs ingenua*)' (Brouwer, 1989: 258). For the ocular *donaria* from *Lucus Feroniae*, dated between 1st century BCE and 2nd century CE, see the popular synthesis in Baggieri and Baggieri (2013).

of Bona Dea was available to anyone, men included (Schultz, 2000; Arnhold, 2015). Therefore, men had recourse to the goddess and to medical assistance by the priestesses (for what it was worth) when suffering from specific health problems. A detailed story of healing practices and devices concerning the devotion to Bona Dea reads as follows:

> *Felix publicus / Asinianus pontific(um) / Bonae Deae Agresti Felicu(lae?) / votum solvit iunicem alba(m) / libens animo ob luminibus / restitutis derelictus a medicis post / menses decem bineficio Dominaes medicinis sanatus per / eam restituta omnia ministerio Canniae Fortunatae* (CIL VI 68 = ILS 3513).
>
> Felix Asinianus, slave in the service of the priests, has fulfilled his vow to Bona Dea Agrestis Felicula, willingly and heartily, sacrificing a white heifer, thanking her for the recovery of his eyesight. Though given up by the physicians he recovered after ten months by taking medicines, by the aid of the Mistress. It was by her help that everything was restored during Cannia Fortunata's term of office. (transl. from Brouwer, 1989: 53)

Although the absence of significant temporal parameters makes it difficult to date the thankful, *ex voto* dedication with clear-cut precision (1st century BCE-1st century CE; Brouwer, 1998: 35), this remarkable document clarifies that '[d]ivine and human healing were thus complementary, and how and when each was to be used was a personal decision' (Nutton, 2004: 279; cf. Arnhold, 2015: 53–5, 68), as happened with Asclepius', Hygieia's (literally, 'health'), and other Graeco-Roman healing cults. Personal decision and 'religious hybridization' are also reflected in the choice of the sacrificial animal reserved for Bona Dea, mythographically reputed to be a sow (Bendlin, 2000: 132; see Scheid, 2002: 393).

Epigraphic documents reflecting a more general healing activity of the goddess are well known, and their historiographical value has been already assessed in Brouwer (1989: 248–9), which serves as the basis for the brief list that follows. An altar from *Cissa* (Časka, Isle of Pag) dating from the 1st century CE, is particularly interesting for the sequence of epithets, which comprises *Conservatrix*

('She who preserves') and *Potens mentium bonarum et remediorum* ('the Mistress of wisdom and medicine', which recalls Macrobius' description; Šašel n. 260 = AE 1964, 111; transl. from Brouwer, 1989: 127–8); an inscription *Pro salute* is known from *Picenum* (Falerone) and has been ascribed to a rather vague 'imperial age' (CIL IX 5421; Brouwer 1989: 95–6); and an altar from *Lambaesis* (modern-day Tazoulte/Tāzūlt/Taẓult), interestingly recovered near a temple dedicated to Asclepius and Hygieia and dating to 232–235 CE, thanks the goddess *pro salute reciperata* (AE 1960: 107; Brouwer, 1989: 140). Furthermore, the healing domain, shared with other deities, led some devotees to dedicate their inscriptions *Deae Bonae Valetudini Sanctae* (a fragmentary dedication dating from 235 CE and recovered in *Auzia-Aumale*, *Mauretania Caesarensis*; now Ghorfa des Ouled Slama/Awlād Slāma/Uled Slama. EE V 1299 = CIL VIII 20.747; Brouwer, 1989: 142) and to *Bona Dea Hygi*[*ei*]*a* (Rome, 2nd century CE; CIL VI 72 = ILS 3514; Brouwer, 1989: 33).

The role of protectress and healer was the *trait d'union* among different goddesses such as Valetudo, Hygieia, Fortuna (concerned with good fortune), and Bona Dea (cf. Brouwer, 1989: 236, 395). In particular, the similarities between Hygieia, Fortuna, and Bona Dea are also attested from a statuette recovered in Albano (*Ager Albanus*, *Latium*) dedicated to the goddess by Callistus, 'agent of our Rufina [. . .] because of a vision, by order (of the goddess)' *Ex visu iussu Bonae Deae / sacr(um) / Callistus Rufinae n(ostrae) act(or)*; transl. from Brouwer, 1989: 83), which had been described at the end of the 19th century (Marucchi, 1879), was subsequently lost in 1914, and has recently been rediscovered (Candilio and Bertinetti, 2013). The artifact, dated at the 'time of the Antonines' and reworked during the 3rd century CE (Brouwer, 1989: 83), was fortunately accompanied by an inscription which allows us to affirm that Bona Dea's iconography constitutes a middle ground between Hygieia and Fortuna, blending the characteristic snake of the former with the cornucopia of the latter (CIL XIV 2251 = ILS 3503; Brouwer, 1989: 340, note n. 136; Candilio and Bertinetti, 2013; Ogden, 2013: 319; cf. Eidinow, 2011: 50; for conceptual blending from a cognitive perspective see Fauconnier and Turner [2002]).

Obsequens, *Opifera*, and the dedication *Auribus* ('to the ears [of the goddess]') are other epithets that can be linked to the healing character of the goddess (cf. resp. CIL V 814; AE 1961, 9.10, n. 45; CIL XII 656 and AE 1946, 153; Brouwer, 1989: 119, 67, 134–5; *Opifer* is also an attribute of Asclepius; cf. Ovid, *Metamorphoses*, XV 653). The latter dedication is explained by the fact that healing gods and human supplicants were both liable to communicative negligence (Barrett, 2002; see Chalupa, 2010). The epigraphic reference to the deity's own ears was intended to enhance the visibility of the message for the gods or to acknowledge *ex post facto* the reception and fulfillment of the supplicants' healing requests (see also CIL V 759 = ILS 3497; CIL XII 654 = ILS 3496 for other dedications and plastic representation of the auricles; cf. resp. Brouwer, 1989: 113–14; 131–3). Undoubtedly, additional epigraphic analyses will surely contribute to bridge the many remaining gaps in the knowledge of this cult.

2. The merry-go-round of superhuman divine healers and the impact of the Antonine plague

In the Graeco-Roman world, local and foreign gods were actively pursued to counteract epidemics via the agentive notion of healing. According to this intuitive *modus operandi*, superhuman agents had full access to strategic knowledge concerning healing otherwise unknown to human patients. A social action able to restore the misalignment between the gods' will and the devotees' lives could have reversed the effects of the disease (e.g. Boyer, 2001; Bloom, 2007: 149; Pachis, 2014). The historical merry-go-round of the adoption and subsequent fall into oblivion of these cults reflected the inexorable waxing and waning of each god's healing abilities. Asclepius' cult provides a brilliant example.

As one of the first foreign cults to be brought to Rome as expiation of a prodigy (i.e. an epidemic), the cult of Asclepius was officially the object of an *evocatio* in 293–292 BCE via an official embassy sent to Epidaurus after an oracular consultation (Brouwer, 1989: 346). Asclepius was the chosen god capable of providing immunity for the healthy and the necessary healing powers for the sick. Afterwards, in 180 BCE, and perhaps in 87 BCE, the god was called upon to relieve the army from epidemics

(Renberg, 2006/2007: 90). Unfortunately, time appears to have worn out the god's abilities and when most needed, a few centuries later, Asclepius seems to have lost any significant appeal. As Gil Renberg aptly remarks:

> After 180 BC[E] there are no recorded instances of the Roman government calling upon Asclepius to ward off a plague. Even during the great epidemic of Marcus Aurelius's reign there is no evidence that Asclepius's aid was officially sought by the senate, though admittedly the contemporary sources for this period are relatively sparse. (Renberg, 2006/2007: 91, note n. 9; cf. Bruun, 2012: 138: '[. . .] nothing seems to indicate a particular interest for [Asclepius] during the years of the Antonine plague')

The godhead's inability to provide the required cure was even polemically cited by two Christian writers (Augustine, *De Civitate Dei* III 17; Arnobius, *Adversus Nationes*, VII 47; see Renberg, 2006/2007: 91, note n. 9).

To what extent can we assume that what happened to Asclepius' cult was indicative of a common trend? What about the impact of epidemics on other cults? Regarding Bona Dea, the occurrence of literary data, archaeological remains, and epigraphic documents recording cult places per geographical location, hardly allow a straightforward interpretation. Brouwer's (1989) masterly data collection and analysis have revealed that the statistically rather small sample of all the available sources is plagued by the presence of fragmentary data, by the absence of chronological clues to root a consistent portion of the non-literary record, by the biased representation and narration of historical events in the literary record, and, more often than not, by the impossibility to assign a sufficiently reliable chronological continuity to regional worship. These are all factors which undeniably contribute to muddling the analysis of the cult. From the available data (Brouwer, 1989), a substantial peak in the 1st century CE seems unquestionable, and so does a decline between 2nd and 3rd century CE. Beyond that, and according to the selection criteria chosen *a priori* to manage the signal-to-noise ratio in the extant data, there are two options, each one leading to a strikingly different hypothesis:

a) if we include all the uncertain or incomplete evidence whose chronological attestation is non-specific (i.e. 'Republican' or 'Imperial' age in the material listed by . . . Brouwer [1989]), evenly distributing the data across the inferred chronological setting, the Bona Dea cult seems to have continued thriving, although with a near-to-zero geographic expansion, until the 4th (archaeological data) or even 5th century (literary record). In this case, the drop-off is contained, smooth and gradual;
b) if we exclude all the uncertain or incomplete evidence whose chronological attestation is too generic, the Bona Dea cult appears to have dwindled in popularity soon after the outbreak of the Antonine plague. The resulting decline is rather steep and abrupt.

The rigorous evaluation of these hypotheses should comprise the identification of local variations on a chronological continuum and, possibly, the inclusion of a sufficient set of variables. A quantitative analysis or modelling of the growing spread and constraining action of other contemporary cults, the generational mnemonic resilience of those who experienced the disease, and the intergenerational, horizontal cultural transmission of the cult among specific social actors, should also be carefully taken into account. The modelling of the Antonine plague itself could provide an invaluable help (Löb and Ditter, 2011a; 2011b). Finally, assuming that the distribution of all the uncertain or incomplete data included in hypothesis (a) can account for alternative patterns, and considering the nature of the taphonomically and selectively biased documentary record, randomisation-based inference of the dataset should be performed.

However, we are not starting from scratch. Even if this road map entails a long-term research approach to the topic, there is a conspicuous amount of historiographical, qualitative data which could be valuable in contextualising these hypotheses. Let us turn now to the most relevant circumstantial evidence; we will draw some conclusions later.

3. Mapping and describing the epidemic

Given the available evidence and the healing dimension of Bona Dea, and all else being equal, the so-called Antonine plague of 165–190 CE and the subsequent plague of Cyprian dating to *ca.* 251–270 CE are worth considering as probable actors in the demise of the cult (cf. McNeill, 1976: 103–4; Reff, 2005: 46–9; Stathakopoulos, 2008). These were not the first outbreaks of a devastating plague, to be sure, but they were probably the first of such size in the new Eurasian 'confluence of civilized disease pools', each one with a substantial isolated history and thus potentially lethal for peoples lacking immunity and prior exposure (McNeill, 1976). While the Middle Eastern regions coped substantially better, the two ends of the geographical continuum suffered major outbreaks of diseases (i.e. China and Europe; Christian, 2011: 315–16; for later divergences cf. Scheidel [2009]). As William H. McNeill highlights, in a world of increasing traffic, commerce, and population growth:

> [a]ll that was needed to provoke spillover from one pool to another was some accident of communication permitting a chain of infection to extend to new ground where populations were also sufficiently dense to sustain the infection either permanently, or at least for a season or two. (McNeill, 1976: 97)

The Antonine plague probably originated in the Eastern provinces of the empire, following the deployment of the troops of emperor Lucius Verus from the Parthian borders to the Germanic *limes*. The disease was explained *ex post facto* by the *Historia Augusta* and Ammianus Marcellinus as reportedly originating from the sack of Seleucia by the Roman troops guided by Lucius Verus in 165 CE: a divine retribution in the form of pestilence caused by the desecration of the temple of Apollo Komaios, or Comaeus, whose statue was to be transferred to the temple of Palatine Apollo in Rome (Ammianus Marcellinus, *Rerum Gestarum libri qui supersunt*, XXIII vi 23–4; 'Iulius Capitolinus', *Vita Veri*, VIII 2). The same year the plague reached the Aegean coast, and during the next year it arrived in Rome, where it ravaged the population from 168 CE onwards. Egyptian tax documents have allowed

the plausible reconstruction of a consistent reduction of the local population from *ca.* mid-2nd to mid-3rd century CE (Lo Cascio, 1991: 708; Scheidel, 2002; *contra* Bruun, 2007) and, it should be underscored, Egypt was one of the major exporters of grain within the entire imperial economic system (Scheidel, 2012). According to the *Historia Augusta*, the co-occurrence of pestilence and war, and possibly the moral burden of Lucius Verus' desecration (if we accept what is narrated by these later sources), prompted emperor Marcus Aurelius to act as the Senate had with Asclepius, and:

> summo[n] priests from all sides, perfor[m] foreign religious ceremonies, and purif[y] the city in every way, and he was delayed thereby from setting out to the seat of war. The Roman ceremony of the feast of the gods [*Romano ritu lectisternia*] was celebrated for seven days. And there was such a pestilence, besides, that the dead were removed in carts and wagons. ('Iulius Capitolinus', *Vita Marci*, xiii 1–2; cfr. also *ibid.* xiii 3, xxi 6; transl. from Magie, 1921: 167–8; cf. Fraschetti, 2008: 72; Birley, 2012a: 163)

Between 168 and 170 CE, Quadi and Marcomanni penetrated into the North-Eastern portion of the Italic peninsula, destroyed the town of *Opitergium* (Oderzo) (Fischer, 2012: 30) and besieged the city of Aquileia (Birley 2012b: 224), which also served as imperial residence during the Marcomannic wars on the Germanic front (Kovács, 2012: 84). At that time, Aquileia represented a key location for the infrastructural networks that linked the Cisalpine region to the inland of *Pannonia*, projecting its commercial route towards the Amber Road (Fitz, 1991: 496; Marcone, 1991: 477).[4] It was also the place where the physician Galen of Pergamum probably had the first direct experience of what he called the 'great plague' in 168 CE, when he was summoned to Aquileia by the emperors Lucius Verus and Marcus Aurelius:

[4] Bona Dea worship is also attested from two inscriptions from *Aquincum*, modern-day Budapest (CIL III 10.394=ILS 3516; NS 1912, p. 313 = BullCom 1916, p. 204 = AE 1917–1918: 22, n. 94; cf. Brouwer [1989: 274]), which was probably elevated to the rank of colony in 202 CE during an imperial visit to the military camps (see Marcone [1991: 490]).

> When I reached Aquileia, the plague descended as never before; so that the emperors immediately fled to Rome with a few soldiers, while most of us struggled for a long time to stay alive, and a great many died – not only because of the plague, but also because these things were happening in the middle of the winter. (Galen, *De Libris Propriis* II, xix 18K; transl. from Mattern, 2013: 197; Lucius Verus died en route to Rome; the political reasons for the departure of the co-emperors are briefly exposed in Fraschetti [2008: 76])[5]

We still lack microbiological confirmations (Manley 2014), but judging from the available ancient symptomatologic descriptions of the disease recorded by Galen (black rash, intense coughing, larynx ulceration, eruptions on the skin of the body, possibly scarring; cf. *De Methodo Medendi* V 12; Johnston and Horlsey, 2011, 2: 85–96), the responsible pathogen can be ascribed to the family *Poxviridae*, most probably a form of Variola, gen. *Orthopoxvirus* (RJ Littman and ML Littman, 1973; CB Cunha and BA Cunha, 2005: 9–13; Mattern, 2013: 201–2; cf. Semba, 2003). The imperial call to have Galen at the winter camp in Aquileia seemingly accords with the seasonal pattern of the disease, which peaked during winter months (see Cliff, Haggett, and Smallman-Raynor, 2004: 38). Since lower rates of death are registered among immunised people (cf. Semba, 2003: 715), this:

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[5] Galen, a bit at a loss in describing the symptomatology of the Antonine plague, labelled it *ex post* as a 'very long plague' or the 'great plague', and he identified the cause as the same as the one described by Thucydides for the plague of Athens – which was probably typhoid fever (but see Manley [2014: 394–395]; cf. Mattern [2013: 198–199, 200]). Notwithstanding the match, was Galen's description of a very long, uniform plague reliable? Could that be a superficial false positive? Medical diagnosis is informed by the modern scientific revolution, and ancient writers might have been interested in different themes (Manley, 2014: 396). Yet, Galen had the chance to travel and visit Aquileia (where the emperor and his legions stationed while engaged in the Marcomannic war), the Eastern part of the empire and, of course, Rome. When the emperor Marcus Aurelius called him to supervise medical operations on the Germanic front once again, he was so distressed that he managed to avoid this daunting task by conveniently adducing as an excuse a dream in which Asclepius himself told him not to go (Galen, *De Libris Propriis*, II xix 18–19K; Mattern [2013: 205]).

> would seem to work against the plague's recurrences later in the third century [i.e. the plague of Cyprian]. Nevertheless, it is possible, and very likely, that these recurrences were merely instances of the plague entering previously unaffected areas of the Empire, making smallpox a perfectly viable cause [for the later epidemic]. (CB Cunha and BA Cunha, 2005: 12)

More precisely, the pathogen responsible for the later Justinianic plague (542–543 CE) has been identified in a strain of *Yersinia pestis*, the vehicle of bubonic plague (Wagner et al., 2014; cf. McNeill, 1976: 109), thus supporting the outbreak of a previously unattested pathogen in an area where the exponential growth (and diffusion) of the Antonine plague and, probably, the plague of Cyprian already gave way to the gradual exhaustion of susceptibles (i.e. the slow decline of infected individuals), with smallpox surviving endemically (Ferguson et al., 2003: 682; which nonetheless suggests the adoption of a network-based analysis for simulating the spread of smallpox).

Interestingly, Aquileia and the neighbouring areas host one of the most significant caches of archaeological data concerning Bona Dea outside Rome and *Latium* (Brouwer, 1989: 300). The ultimate origin of the cult can probably be traced back to the foundation of the Latin colony in 181 BCE and to the existence of a Romanised 'municipal bourgeoisie' (Aquileia became *municipium* in 90 BCE; see Gabba, 1990: 74; Foraboschi, 1990: 815; Rebecchi, 1993: 202). While most of the archaeological documents date from the Tiberian-Claudian era to the 2nd century CE, a rather exceptional continuity until the 4th century CE is attested thanks to numismatic finds in a Bona Dea temple in *Tergeste* (Trieste). Although we cannot possibly tell if the building was destined for a different use at a certain time (Brouwer, 1989: 423), and taking into account the probable concomitant increase in local religious affiliations to other cults (especially Mithraism; cf. Buora, 2002: 97), it would nevertheless be tantalising to assign the local continuity of the cult – or of a similar healing devotion – to the long-lasting, cultural representations born out of the Marcomannic wars and the Antonine plague.

Meanwhile, in the Eastern part of the empire, Apollo was a sought-after agent of disease-avoidance and protection (Nutton, 2004: 282). The effects of the plague also determined an upsurge in the devotion to other superhuman sources of potential disease-avoidance, thus bringing about a rise or intensification in the local supply of cults such as that of Glycon, the snake-god whose 'cult had been established in the 150s [CE] based on an artful combination of Pythagoreanism, Asclepius worship, hymns, choirs and mystery religion' (Nutton, 2004: 282; the cult was lambasted by satirist Lucian of Samosata and identified as an elaborate hoax; see Lucian, *Ἀλέξανδρος ἢ Ψευδομάντις* in Harmon [1961/1925: 173–244]).

Regarding the empire as a whole, a remarkable set of relevant finds seems to point to a rather exceptional state of emergency, as it were, so that a whole army of gods was summoned to provide collective healing: a collection of Eastern oracular responses from Claros, a set of possibly related Western inscriptions, and some bilingual epigraphs from the Roman Forum (not far from the Bona Dea temple) dedicated *diis deabusque secundum interpretationem oraculi Clari Apollinis*, all appear to be connected to the smallpox epidemic at the outbreak of the Antonine plague. Unfortunately, the nature and exact dating of these items are still hotly debated (see Bruun [2012: 136–7] for discussion and bibliography).

In any case, as sensational as it might have been, the spread of the disease alone does not tell the whole story. The Antonine plague may have been the first domino in a sequence that led to the third century crisis, but what put these tiles in place was a concatenation of prior events. 'The plague', as Peter Turchin and Sergei Nefedov write in their *longue-durée* model of cyclical patterns of socio-political and economic change:

> hit the empire when it was already under an enormous demographic-structural stress. In the absence of such stress, the population losses caused by the epidemics would have been made up in a generation, at most two. But by 165 the social system was already near a critical point, and the plagues pushed it beyond it. (Turchin and Nefedov, 2009: 234)

As Turchin and Nefedov infer by a comparison with the effect of the late Medieval Black Death, among the many problems here is the differential death rates among social classes, which decimated the manpower of the slave economy and led to a rise in the elite population, resulting in intra-elite competition and political fragmentation. The two authors state that '[. . .] it was the ensuing century of socio-political instability that was responsible for preventing population recovery after the epidemics (and, in fact, probably caused further population decline)' (Turchin and Nefedov, 2009: 235; cf. Schiavone, 1999: 731, 772–3; for a rebuttal of the Black Death comparison see Bruun [2012]).

Like a domino effect, the Antonine plague contributed to putting in motion an interconnected chain of socio-economic and related epidemiological events; from the massive alteration of the ancient Roman pathogen community with its resulting impact on population growth, to individual and collective behaviours, economic procedures, institutional responses, religious and philosophical beliefs, etc., resulting in the gradual dismantling (or transformation, depending on the preferred perspective) of the old socio-political system (Lo Cascio, 1991: 715; Mattern, 2013: 200; Beard, 2015).

4. The lack of positive reinforcements and its effects on the religious environment

What about the people's faith in the healing deities listed above, all summoned in different locations to help in protecting and healing the local population of affected areas within the empire? The possible answer to this question, which is of capital importance for our understanding of the Bona Dea cult, involves the power-law distribution as well as cognition.

Epidemics are complex systems and, like other cultural artefacts (e.g. market fluctuations) and natural events (e.g. earthquakes), they exhibit a power-law distribution: that is, they are scale-free phenomena whose appearance, intensity, and time interval are determined by stochastic processes and a variable schedule. In the case of large events, the maximum extent coincides with the whole range of the entire phenomenon, i.e. a global pandemic. Given that social cognition in human beings is deployed even in domains where it is useless (Whiten, 2000), the most intuitive

response to exert some kind of (deceptive) control is ritualised behaviour supported by operant conditioning. In other words, causality is consciously or unconsciously manipulated to set up a link between different cognitive domains, in order to deal with something haphazard and beyond human power by reducing it to a more manageable agentive causality (cf. Martin, 2013; Nieuwboer, van Schie and Wigboldus 2014).

For instance, if we return to the example of the Antonine plague, we find the case of such an agentive causality in the figure of a malicious magician. In a small town in Lydia and in *Callipoli* (modern-day Gallipoli, Turkey), a magician was held responsible for the plague and local authorities responded by destroying some artefacts at oracular shrines, which had the effect of increasing devotion among the local population to a local apotropaic statue depicting Artemis. A statue was subsequently dedicated to Apollo and accompanied by the usual sacrifices, 'carefully sprinkling the pyre with grey sea water. If plague returned – and driving it away was far from easy – Apollo promised to send further instructions' (Nutton, 2004: 282; sources resp. from *Epigrammata Graeca* 1034 Kaibel and Lane Fox [1986: 232–3]).

Therefore, similar specific ritual actions considered effective against a disease were fixed whenever the time interval between two episodes of the unpredictable phenomenon positively reinforced and rewarded the behavioural output of devotees (in the same way, the addictive nature of gambling can be ascribed to the variability in its rewards, which in most cases follows a power-law distribution). After the reinforcements of such behavioural outputs in response to unpredictable events, other cognitive mechanisms might have provided the decisive factor that motivated devotees' continuing belief in the effectiveness of such ritualised actions. For instance, confirmation bias, an innate psychological tendency to avoid falsification while looking for supportive evidence, is an efficient tool that might help to strengthen superstitious behavioural output. As István Czachesz elegantly emphasises, this is the kind of magical thinking that has supported many key religious behaviours, stories, and explanations (Czachesz, 2011; cf. Shermer, 2012). Interestingly, in a self-reinforcing feedback loop, the more helplessness and hardship are experienced, the more meaning-making is triggered and potentially fulfilled by religious narratives (Whitson and Galinksy, 2008; Stephens et al., 2013). Indeed, an epidemic is most likely to cease

after some time, whatever the intensity or the diffusion, thus any kind of petitionary prayer and ritualised behaviour could be reputed to be magically effective inasmuch as the epidemiological diffusion is sufficiently limited on a social scale, leaving survivors reasonably unaffected by complications, and/or sufficiently relieved and encouraged to endure painful, prolonged debilitating effects.

But what about the agency of those gods that continuously fail to support collective disease-avoidance, to operate individual reversal of complications or side effects, or to provide relief and healing for the sick? If the Antonine plague became endemic during the third century (cf. Löb and Ditter, 2011a; 2011b), with the plague of Cyprian as an epidemiological coda, those agentive remedies described above could have failed to cope effectively with such a long-term lack of epistemic reinforcement. We have already seen the institutional disappointment and disenchantment of the Roman senate with Asclepius' powers after the 2nd century BCE, but that is hardly an isolated example. Describing the gradual dissatisfaction, disaffection, and resignation of the citizens of Athens during the so-called plague of 430–429 BCE, Thucydides wrote that:

> [f]or a while physicians, in ignorance of the nature of the disease, sought to apply remedies; but it was in vain, and they themselves were among the first victims, because they oftenest came into contact with it. No human art was of any avail, and as to supplications in temples, enquiries of oracles, and the like, they were utterly useless, and at last men were overpowered by the calamity and gave them all up. (Thucydides, *Περὶ τοῦ Πελοποννησίου πολέμου*, II 47; transl. from Jowett, 1881, vol. I: 124)

In the specific case of the Bona Dea cult, these episodes bear a striking resemblance to the life-time events of Aurelius Antonius, a seven-year-old child whose situation we know about thanks to a late Greek epitaph from Rome (?3rd–4th century CE). In the inscription, his parents, *liberti* Aurelia Antonia and Aurelius Onesimus, reluctantly commemorate the precocious religious career of their son, *ἱερεύς* devout to 'all gods', but in particular to Bona Dea, to the Mother of Gods, to Dyonisus and to

Hegemon (IG XIV 1449; Kaibe1 No. 588; IGRRP I 212; CCCA III 271; see Brouwer, 1989: 40–3). The end of the epitaph clarifies that their son's career was in vain, and urges fellow 'initiates or friends of whatever way of living, [to avoid] coming near to all the continuous solemn mysteries of life [i.e., probably, late antique cults], for no one can break free from the thread of fate' (transl. from Brouwer, 1989: 41). Living in a period of experimental religious *bricolage*, Aurelius Antonius' parents might have been eager to collect religious affiliations for their child as a desperate, and futile, attempt to obtain some healing favours from the many gods involved (*contra* Dorcey, 1992: 124, note n. 115), before giving up all religious hopes like the Athenians and the Roman senate before them. Yet, this is a late example, possibly from around the time of the plague of Cyprian (which does not tell us anything about Antonius' cause of death, in any case). We are therefore left asking: What happened to the religious environment during the Antonine plague?

It has been proposed that those late antique epidemics selected for specific behavioural concerns such as promoting Christian basic aid and precepts to assist the sick, manage concomitant secondary infections and/or endure medical complications as a result of specific theological contents (see Cyprian's *De Mortalitate*, in Scourfield, 1996 and Brent, 2010: 106–8; cf. Stark, 1996: 73–94; Wilson, 2002: 151–153; Reff, 2005: 75; *contra* Bruun, 2012). If this were the case, we might expect other cults to have struggled with the failing qualities of their gods' healing powers, at least in the long run. Raised as a Christian and later becoming an advocate of a neo-traditional religious revival, the emperor Julian (330–363 CE), for example, tried to recalibrate the organisation of traditional moral coordinates on Christian pragmatic ethics, with the aim of creating a 'system of pagan poor relief' supported by imperial finances (Brown, 2002: 2). In 362 CE, en route towards the Persian border, Julian resided in Ancyra (modern-day Ankara, Turkey) and wrote an epistle to the pagan high priest Arsacius with the following instructions:

> In every city establish frequent hospitals [i.e., hostels; note added] in order that strangers [i.e., migrant poor] may benefit from our benevolence [. . .] For it is disgraceful that, when no Jew ever has to beg and the impious Galileans

> [i.e., Christians] support not only their own poor, but ours as well, all people see that our people lack aid from us [pagans]. (Horden, 2004: 83; transl. from Wright, 1954: 68)

Even though Julian's instructions cannot be read as a reflection upon a failing system of pagan beliefs, as Peregrine Horden notes, and should be understood as offering an observation and a suggestion that were prompted by a local situation, something during the late empire dramatically changed (see Horden [2004: 83–4, 89–92] for accommodation at healing shrines and the overall change in social and economic structures which caused the disappearance of *valetudinaria*, i.e. hospitals for slaves and soldiers). From a cultural evolutionary perspective, it could be said that when the political authorities in charge of traditional Roman religion tried to adjust the religious system to a mutated environment, they failed to understand that the processes of intellectual *bricolage* and the niche construction of deities initiated by other cults, roughly between the Antonine plague and the plague of Cyprian, set the conditions that promoted further replication by those very same cults in the socio-cultural milieu itself: '[e]ventually the successful religions not only adapted to exploit the social and political ecology, . . . but also changed it, bringing the age of early empires to an end' (Woolf, 2014: 72).

5. Aftermath of a smallpox infection

In its focus on ophthalmological health, how, then, could the Bona Dea cult have been particularly affected by the epidemic? As was the case with the pattern described by Galen, smallpox entailed in sufferers a 'rapid onset, fever, foul breath, livid red rash, blisters and sores, sensation of "intense internal heat", diarrhoea, tracheal/laryngeal ulcers, red throat and hoarseness, death by haemorrhages' (C B Cunha and B A Cunha, 2005: 12, Tab. 12; Mattern, 2013: 201–2; cf. Cliff, Haggett, and Smallman-Raynor [2004: 37–41] for the development of the disease). The mortality rate was about 20–35%, which is strikingly close to Lo Cascio's estimate of the overall magnitude of the Antonine plague (20% in twenty years; Lo Cascio, 1991: 714; Bruun, 2007: 203). Human beings are the natural reservoir of the disease; hence, infection usually

occurs via contact with individuals' secretions and scabs (Cliff, Haggett, and Smallman-Raynor, 2004: 38). Yet, smallpox is mostly airborne because of lesions occurring in the upper respiratory tract, which result in coughing (Anonymous, 1970). In this case, the inhalation of infected droplets is the most common vehicle for contracting the disease, and it is easy to suggest that any kind of temporary residence in a temple might have greatly contributed to increased contagion rates (e.g. waiting for healing instructions delivered via dreams, possibly while sleeping in the gods' temple, a technique known as incubation; see Martin, 1987: 51; Petridou 2016). Incidentally, something similar happened recently in Pentecostal communities in Ebola-ravaged Liberia, where sick people were brought inside churches for communal healing prayers and services (Onishi, 2015).

Because of potential droplet transmission, eye health is easily affected by smallpox. Pustular rash on the eyelids, conjunctival pustules, photophobia, pain, intense lacrimation (the virus is secreted in tears), corneal ulceration and corneal leukoma, can be present (Semba, 2003: 716). Indeed, some of the worst consequences for smallpox survivors are ocular complications, which occur in 5–9% of non-immunised patients (Semba, 2003: 716). To give just an idea of its overall impact, we should consider that before the introduction of the smallpox vaccine, ocular complications due to smallpox caused one third of the total number of cases of blindness in Europe (eradication was confirmed by World Health Organization in May 1980, and the virus samples are now strictly available for medical research only).

In the aftermath of such diseases, we can assume that any kind of devotion and veneration for Bona Dea, a deity primarily concerned with ocular healing, would have been put to the test. Various sociological and cognitive mechanisms are available to counteract potential disconfirmations and to further support the implied beliefs, which are usually exploited by millennial religious movements: acknowledgement of an error; identification of an external impediment responsible for the unsuccessful fulfilment; reinterpretation of the belief in order to shield it from further falsification (Talmont-Kaminski, 2013: 93; based on Zygmunt [1972]). However, since the Bona Dea cult most probably lacked any properly centralised, hierarchical authority in charge of unifying theological decisions in response to

specific health crises (cf. Chalupa, 2009; Griffiths, 2009; *contra* Mastrocinque, 2011), local priestesses and worshippers alike were at the mercy of the direst epidemiological events. It could also be argued that these exit strategies might have nevertheless been insufficient in such an attack against one of the most specific healing domains of the goddess. Moreover, such long-term effects arguably influenced the already widespread folk-theory, attested to in the literary record, that linked evil eye, ocular pathologies, and intuitive physiognomics, leaving a significant mark on the deconstruction and/or redefinition of the traditional theodicy of good fortune (see Nuño, 2012; cf. Faraone [2013] for a tentative account concerning the influence of the evil eye iconography on the Mithraic imagery).

Against this complex historiographical background, the most substantiated interpretation of the demise of the Bona Dea cult that engages with the least number of unwarranted assumptions, would be more akin to hypothesis (b) which I outlined above, than hypothesis (a) (§2). Consequently, although the gradual demise of the Bona Dea cult into infrequent instances of eclectic personal recourse is possible, the widespread persistence of the cult until the 5th century can be considered a literary artefact until proven otherwise (cf. Macrobius' *Saturnalia*; see Brouwer [1989: 221–8] for antiquarian documents dating from the late 4th to the 8th century; see also Cameron 2011: 589). The caveat, however, lies in the fact that similarly ancient circumstantial evidence alone rarely suffices to confirm such hypotheses and, therefore, every qualitative interpretation remains tentative. For the same reason, it would be reductive to conclude *sic et simpliciter* that Christian beliefs directly outperformed other cults in the aftermath of ancient epidemics or endemic diseases. As suggested in the previous paragraph, it is more probable that the changing ecology of pathogens contributed to shaping a growing disaffection and resigned apathy towards traditional healing cults. In all likelihood, this contingent process did not entail a lack of belief *tout court* but, rather, the redirection of the agentive notion of health towards other theodicies that proved themselves capable of evolving in, or exploiting, a different environment. (cf. MacMullen, 1981: 136).

Conclusions

From the perspective of the late antique and global 'interchange of disease vectors' (Christian, 2011: 316), the story of the Bona Dea cult provides an interesting case study of the cognitive dynamics at work between incipient diseases and the failure of traditional Roman religiosity to cope with a mutated epidemiological environment. Yet, until recently, the full appreciation of this relationship has been hindered by specific methodological trends. With reference to historian Fernand Braudel's *longue durée*, Mirko Grmek advanced the specific concept of pathocoenosis, i.e. the group of pathological states diffused in a specific population in a given moment and aimed at '[. . .] a state of equilibrium expressible in relatively simple mathematical expressions; that state is especially perceptible under stable ecological conditions' (Grmek, 1989: 2–4; quoted from Sallares, 2014: 255; cf. Gourevitch, 2005). This idea stemmed directly from Braudel's structuralist concept of the static nature of a biogeographical *longue durée* in which human beings appear to be inevitably imprisoned (Braudel, 1980). Yet, as Robert Sallares highlights, this monolithic and quasi-ecological concept of stasis is precisely what should be avoided in a long-term study, especially when dealing with the co-evolution of organisms, human beings and pathogens included (Sallares, 2014: 255; for a re-evaluation of Braudel's *longue durée* and stasis in a cognitive and deep-historical framework see Sørensen [2011]). Since balance is always unstable, and stasis is always temporary in complex biological systems, the cumulative effect of multiple interactions over time is the quintessential requirement for conducting a proper study of the natural and cultural interplay between human beings and diseases.

For instance, according to recent cognitive scholarship, ancient cults may have played a major historical role as the proximate social tools capable of managing, strenghtening and implementing specific systems of precaution in response to epidemiological threats. It has also been proposed that the late antique environment of competing cults, in particular, resulted in the 'pseudo-speciating' of human beings into fragmented groups that might have been useful as immunological bulwarks. Yet, under ever-changing environmental conditions, both natural and social, religious behaviours and beliefs may swiftly become maladaptive. (Boyer and Liénard, 2006;

Martin, 2013; Martin and Wiebe, 2013; Wiebe, 2013). The cognitive and evolutionary study of the historical impact of diseases on social groups, cultures, and religions is now in full bloom. Some excellent examples of the cognitive underpinnings of late antique cults – dedicated to Mithras, Asclepius and Isis/Sarapis (resp., Martin, 2013; Panagiotidou, 2014; Pachis, 2014) – have been recently published. Even if more dedicated studies in cognitive historiography are sorely needed, a wider comparative inquiry is, for the first time, within our reach. Further intra- and interdisciplinary collaboration will undoubtedly contribute to increasing our understanding of the way in which epidemiology, cognition, healing beliefs, and ritual actions interacted in past religions.

Competing Interests

The author declares that they have no competing interests.

Acknowledgements

I would like to thank for the invaluable help, the necessary support and encouragement, the thought-provoking discussions, and/or the unbelievable amount of patience displayed during the completion of this contribution, in alphabetical order, Andrea Cau, Athanasios Koutoupas, Luther H. Martin, Panayotis Pachis, Elisabeta Pop, Donald Wiebe, and, last but not least, the editors and the staff of the OLH. I shall also express my gratitude to two anonymous reviewers, whose in-depth, thoughtful comments on a previous draft have tremendously contributed to fill many gaps and to improve the present article. I can only hope that they may find it sufficiently comprehensive in its present form.

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How to cite this article: Ambasciano, L 2016 The Fate of a Healing Goddess: Ocular Pathologies, the Antonine Plague, and the Ancient Roman Cult of Bona Dea. *Open Library of Humanities,* 2(1): e13, pp. 1–34, DOI: http://dx.doi.org/10.16995/olh.42

Published: 10 May 2016

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