

Research paper

The importance of religion in shaping volcanic risk perception in Italy, with special reference to Vesuvius and Etna

David K. Chester ^{a,*}, Angus M. Duncan ^{b,1}, Christopher J.L. Dibben ^{c,2}^a Department of Geography, University of Liverpool, Liverpool, L69 3BX, UK^b LIRANS-Institute of Applied Natural Sciences, University of Bedfordshire, Park Square, Luton, LU1 3JU, UK^c School of Geography and Geosciences, University of St. Andrews, St. Andrews, Fife, Scotland, KY16 9AL, UK

Received 31 October 2006; accepted 11 December 2007

Available online 11 February 2008

Abstract

With the exception of societies that are relatively untouched by modernism, the academic consensus holds that since the Eighteenth Century *Enlightenment* popular perception of divine responsibility for disasters has been progressively replaced by a perspective that views losses as resulting from the effects of extreme natural events upon vulnerable human populations. Nature is considered to be de-moralised. By means of examples of volcanic eruptions that have occurred over the past one hundred and fifty years and which transcend place, culture and faith tradition, the present authors have maintained a contrasting position, by arguing that religious perspectives are still important features of the ways in which people in many societies perceive volcanic eruptions. In the present paper it is argued that religious terms of reference have been and remain vital elements in the perceptions held by a significant proportion of the population in southern Italy when confronted by volcanic eruptions, particularly those that have occurred on Vesuvius and Etna. Within the context of what is termed *popular Catholicism*, the development of distinctive religious responses in *pre-industrial* times is first described. Next, through bibliographic research and social surveys, it is argued that the idiosyncratic religious character of disaster responses has been maintained following eruptions that have occurred during the past one hundred years, including the small number of eruptions of Etna that have taken place in the early years of the twenty-first century. The implications of these religious perceptions and behaviours are discussed within the context of emergency planning and the suggestion is made that they form part of a ‘parallel practice’ in response to volcanic threat, where actions to encourage the miraculous take place at the same time as more ‘rationally’ grounded protective measures such as evacuation.

© 2007 Elsevier B.V. All rights reserved.

Keywords: volcanic eruptions; southern Italy; religious perceptions; Vesuvius; Etna; disaster planning

1. Introduction

The decade of the 1990s – designated by the United Nations the *International Decade for Natural Disaster Reduction (IDNDR)* – was characterised by a singular lack of dialogue between applied volcanologists and hazard analysts on the one hand and, on the other, theologians, sociologists and psychologists who were interested in the ways in which people affected

by eruptions attempted to make sense of their losses within the context of religious belief (Chester, 2005a). As a consequence of the spread of modernist thought from the time of the Eighteenth Century *Enlightenment* (Pailin, 1983), a view of disasters as malign ‘Acts of God’ has been progressively replaced by one grounded in notions of human vulnerability and a de-moralised nature (Alexander, 2000, pp. 186–7; Steinberg, 2000; Chester, 2005b). It is maintained that when religious frames of reference are employed by those affected by eruptions then examples are archaeological, historical or apply to societies relatively untouched by modernism, where they represent the last redoubts of superstition and backwardness (Chester, 2005a). These *pre-industrial* societies (White, 1973) are to be found across a range of religious traditions and cultures, and an

* Corresponding author. Fax: +44 151 794 2866.

E-mail addresses: jg54@liv.ac.uk (D.K. Chester), angus.duncan@beds.ac.uk (A.M. Duncan), cjld@st-andrews.ac.uk (C.J.L. Dibben).¹ Fax: +44 1582 743741.² Fax: +44 1334 463949.

extensive literature has developed on what is termed ‘geomythology’ (Harris, 2000). In the context of an often rudimentary knowledge of natural processes, geomythology studies the ways in which religious explanations and actions are used, not only to make sense of the phenomena that give rise to disasters, but also as means of coping with undeserved and apparently inexplicable human suffering (Blong, 1984, pp. 175–179; Fisher et al., 1997, pp. 179–198).

In contrast to this academic consensus, it has recently been argued (Chester and Duncan, *in press*) that explanations of losses within religious frameworks are not confined to *pre-industrial* societies and are more widespread than is commonly assumed. Using a detailed bibliographic study of 49 major eruptions that occurred between 1850 and 2002, we contend that the reactions of faith communities are frequently omitted both from articles in learned journals and from eruption reports produced by government agencies. A ‘hidden history’ of religious responses is to be found in diverse sources, which include newspapers of record and the findings of anthropologically and ethnographically based research. Examples include studies of: Javanese eruptions of various dates (Schlehe, 1996); the 1991 Pinatubo eruption in the Philippines (Leone and Gaillard, 1999) and Montserrat in the Caribbean, which erupted from 1997 (Possekel, 1999, pp. 161–3; Barnes, 2002). Frequently cited reviews of the Mount St. Helens eruption (USA) in 1980 (e.g. Perry and Greene, 1983; Anderson, 1987; Saarinen and Sell, 1987), for instance, fail to mention the importance of religion in conditioning some of the responses to the emergency, even though these were discussed in newspapers at the time and in other readily accessible sources (Anon, 1980, 1983; Blong, 1984, pp. 176; Tiedemann, 1992, pp. 338). A lack of academic interest in matters spiritual, even though responses are couched in religious terms, has characterised the reporting of many recent eruptions within societies having differing religious traditions. These include: Agung 1963 (Bali, Indonesia); Arenal 1968 (Costa Rica); Heimaey 1973 (Iceland); Nevado del Ruiz 1985 (Colombia); Pinatubo 1991 (Philippines); Popocatepetl 1997 (Mexico) and Nyiragongo 2002 (Democratic Republic of Congo) (Chester and Duncan, *in press*). Non-Christian religious traditions are more varied in their approaches to disasters than is often acknowledged by ‘western’ trained scientists and social scientists. For example, the island of Java in Indonesia has frequent eruptions, and losses are often interpreted syncretically using an amalgam of Islamic, Christian, Hindu and animist spiritual understandings (Schlehe, 1996). Many western commentators have emphasised that Islam is strongly ‘instrumentalist’ in its view of suffering; with God making use of disasters in order to bring adherents back to the prophet’s teaching (e.g. Bowker, 1970, pp. 113; Bemporad, 1987; Anon, 1997, pp. 968). Islam is in fact much more theologically varied, and there is no typical response which is independent of the culture in which the disaster occurs (Dhaoudi, 1992, pp. 41; Halliday, 1994, pp. 96; Al-Azmeh, 1996, pp. 44; Degg and Homan, 2005).

Examination of the 49 eruptions contained in our survey showed that there were only 16 instances where no religious responses were evident. Our study was based on internationally available bibliographic sources and it is possible that if local

archives were examined then a religious element would be found in at least some of these 16 cases. In fact it was only when we began research on the perception of risk on Vesuvius and Etna that we became fully aware of the range of religious responses carried out by those living in the vicinities of these volcanoes, both in the past and at the present time.

In the present paper the historical development of distinctive religious reactions to eruptions of Vesuvius and Etna is first described and this is followed by a discussion of the ways in which, during the twentieth and the early years of the twenty-first centuries, hazard perceptions have continued to be coloured by theistic belief. Finally we consider the implications of these distinctive hazard perceptions for the exercise of disaster planning.

2. The development of distinctive religious responses to eruptions on Vesuvius and Etna during *pre-industrial* times

In the classical era the peoples of Vesuvius and Etna (Fig. 1) attempted to blame and appease deities when confronted with natural disasters, including volcanic eruptions. Lucilius Junior (first century AD) notes that on Etna people offered incense to propitiate the gods who were thought to control the mountain and its eruptions (Hyde, 1916), and extensive accounts of legends connected to such figures as the Greek divine smith Hephaestus – or his Latin equivalent Vulcan – are summarised in accounts by Chester et al. (2000), Johnston (2005) and Smolenaars (2005). In terms of religious-based responses that are important today, the distinctive theologies of southern Italian Catholicism which developed in the *pre-industrial* era (i.e. from the late Classical Period to around 1900 AD) are particularly germane (Table 1).

Certain features in Table 1 require further discussion, the first being the theologies lying behind the responses. The word theodicy was originally confined to Christian theology, but is now more widely applied to other world faiths (Bowker, 1970) and is used to describe attempts to reconcile theistic belief with the presence of human suffering. Although first coined in 1710 by the philosopher Gottfried Wilhelm Leibniz (Leibniz, 1712, 1952), theodicy has a much longer history which transcends time, place, culture and religious tradition (Bowker, 1970). In Christian theology a number of models of theodicy have been proposed (Chester, 1998, 2005a), but in the *popular Catholicism* (Carroll, 1996) of the Italian south a conflation of two of these – the *Augustinian* and the *retributive* – has been particularly important. *Augustinianism* holds that suffering relates to the freedom granted by God to human beings. Freedom holds the potential for misuse and suffering reflects human sinfulness, because a person or a society may choose to act against God’s will (Lewis, 1944; Plantinga, 1974; Davis, 1981). The *retributive* model is strongly supported by many passages from the Bible especially from the Old Testament or Hebrew Bible, and under this theodicy a disaster is an expression of divine wrath visited on a sinful people. In Italy, clerical writers have often used the term *flegelli* (i.e. scourges of God), to describe all manner of disasters that are supposedly visited on sinful people (Logan, 2002, pp. 99). God’s wrath may, however, be appeased

Table 1

Religious responses to eruptions of Vesuvius and Etna, which occurred between Classical times and the close of the *pre-Industrial Era* around 1900 AD. The pivotal roles played by the two principal saints, Gennaro in Naples and Agatha in Catania, are discussed in detail

Vesuvius S. Gennaro

The skull and two vials of the blood of S. Januarius (S. Gennaro), who was martyred in 305 AD in the reign of Diocletian, were often appealed to by the citizens of Naples during eruptions of Vesuvius. According to legend, Gennaro was condemned to death three times. He first survived the stake, he was then thrown to the lions and was finally beheaded (Brown, 2005). S. Agrippino was the first patron saint of Naples, but when Vesuvius erupted in 472 AD people prayed for the first time to S. Gennaro, who soon replaced the former saint in the affection of the people (Lancaster, 2005, pp.6).

In services – often conducted by the Cardinal Archbishop of Naples – the congealed blood of the saint is usually observed to liquefy, a lack of liquefaction being taken as a very bad omen. In fact it is claimed that when the ‘miracle’ did not occur in 1527 this was followed by plague and in 1980 by the Campanian (i.e. Irpinian) earthquake (Anon, 2005a). However in a detailed account of the ‘miracle’, Carroll (1992, pp. 116) shows that the blood is meant to liquefy on 18 days each year: on the saint’s feast day – September 19 and several days after; on the first Saturday in May – the anniversary of the saint’s relics being brought to Naples and for some days following this; and on December 16 – commemorating the deliverance of Naples from Vesuvius. In fact failures to liquefy in December are quite common (Carroll, 1992, pp. 117).

In AD 685 the Campanian countryside was devastated by an earthquake, which was followed by an eruption. The relics of S. Gennaro were displayed and this, so it is claimed, prevented further destruction (Hoffer, 1982, pp. 118.). Further use of the S. Gennaro’s relics and/or intercession through the saint occurred during eruptions in 1631, 1707, 1766, 1794 and 1767 and 1872 (Hamilton, 1772; Philips, 1869; Anon, 1872a; Fisher et al., 1997).

Examples of other religious manifestations

Many saints were involved as objects of intercession, and saintly relics were frequently the focus for processions during times of danger (Fig. 2). Each village on the flanks of Vesuvius had at least one saint and images of the Madonna were also frequently employed. At the end of the sixteenth century Naples had 7 patron saints, 25 more being added during the seventeenth century. *Ex-voto* objects – often portraits of saints and/or the Madonna – were commonplace, with people asking favours by donating objects of value to the saintly image (Astarita, 2005, pp.144). Confraternities (i.e. religious associations formed by lay people around a saintly images or relic) were frequently involved in organising processions. There are examples of images of the Madonna and local saints being unceremoniously dumped at the side of the road or in fields because they were unsuccessful (Douglas, 1920).

Etna S. Agatha

In 252 AD the people of Catania used the veil of S. Agatha, who had been martyred the previous year, to halt a lava flow. Information on Agatha martyrdom is unreliable, but further details may be found in: Kirsch (1907–14) and Anon (2005b). The three day patronal festival of S. Agatha is one of the most popular in the world, belief in S. Agatha being one of the ways people define themselves as citizens of Catania (Anon, 2005c). On February 4 and 5 people process through the streets of Catania behind the saintly image and relics, and visit places associated with the saint’s life.

Following 252 AD the veil was used on many occasions, for instance during 1669, 1886 and 1892 eruptions (Chester et al., 2005). In 1669 it was claimed the veil prevented the whole of Catania being destroyed, while in 1886, the citizens of the village of Nicolosi used various religious relics which were carried to the flow front, including a picture of their own patron saint. These proved unsuccessful, but when the Bishop of Catania arrived in procession with Agatha’s veil the lava halted (Chester et al., 1985). So efficacious was the veil thought to be, that following the Lisbon earthquake in 1755, many in Portugal believed that S. Agatha should be adopted as their saint to prevent a recurrence. In the event the Iberian, St Francis Borgia, was afforded this signal honour (Kendrick, 1956, pp. 72).

Examples of other religious manifestations

There are accounts of people praying and crying out to God and to the saints during many eruptions. In 1669 people mortified themselves with whips and made other corporal other signs of penance (Chester et al., 1985, pp. 254).

During the 1669 eruption, a church near to Nicolosi (Fig. 1) was destroyed by lava. The church contained a statue of the Madonna (Fig. 3, see Lyell, 1835, pp. 172–3). There is an apocryphal story that, following the eruption, someone dreamt that he knew where the church was and that the statue of the Madonna was still intact. People dug through the lava, found the statue and placed it on an ox cart. The ox moved 25 m but refused to go any further, so a new church was built on this site (Pinkerton, 2006). Many other examples of religious responses are noted in Rodwell (1878) and the references cited above.

century *grand tour* (Astarita, 2005, pp.243) and more particularly in the late nineteenth century following Italian unification, ‘the concept of the south was (re-invented) and a massive accretion of real and symbolic problems rapidly began to shape that concept as a national concern’ (Dickie, 1999, pp. 143). Views of the south were often shaped – even manufactured – by northern Italian elites to give the impression of a morally simple region, despoiled by organised crime and resistant to all forms of modernity (Riall, 2001; Gobetti, 2002). There is in fact abundant evidence that *Augustinian* and *retributive* theodicies were not the exclusive preserve of the Italian south and islands, but were adopted by the vast majority of people living in *pre-industrial* societies across Europe and that these included the peoples of northern and central Italy. In England, John Wesley (1812) claimed that the 1755 Lisbon earthquake represented divine retribution for the excesses of the inquisition, many in Eighteenth Century Britain saw the hand of God in all manner of catastrophes (Kendrick, 1956; de Boer and Sanders, 2005; Ingram, 2005a,b) and many other

examples, some of which relate to Italy, are discussed in detail by Cunningham and Grell (2000) and Aberth (2001). In this respect southern Italy was far less ‘alien’ and representative of the ‘other’ than many commentators have asserted (Anon, 1872b). Even if broadly similar theodicies are accepted, the ways in which *popular Catholicism* in the south responded to disasters were unique and diverged significantly from the rest of the country. Practice was also frequently at variance with that enjoined on both parishes and individuals by official Vatican teaching.

Until the 1990s little was known outside Italy about the nature of *popular Catholicism* in the *pre-industrial* south (Carroll, 1992), but in recent years this deficiency has been rectified by the publication of a number of important works. At the core of popular religion was a belief in supernatural beings, who had the power to change God’s will through intercession (Carroll, 1986, 1989, 1992, 1996; Hanska, 2000; Kelikian, 2002; Astarita, 2005). Catholic orthodoxy maintains that Christ is divine, Mary and the saints are mortal, have no power on their



Fig. 2. Processions held during the 1944 eruption of Vesuvius. Even in wartime the processions were well-supported and elaborate images were displayed at the flow front. Local clergy lent active support. The photographs are reproduced with permission of the *Imperial War Museum*, London — negative numbers MEM 929 and MEM 939. They cannot be reproduced without the permission of the *Imperial War Museum*.

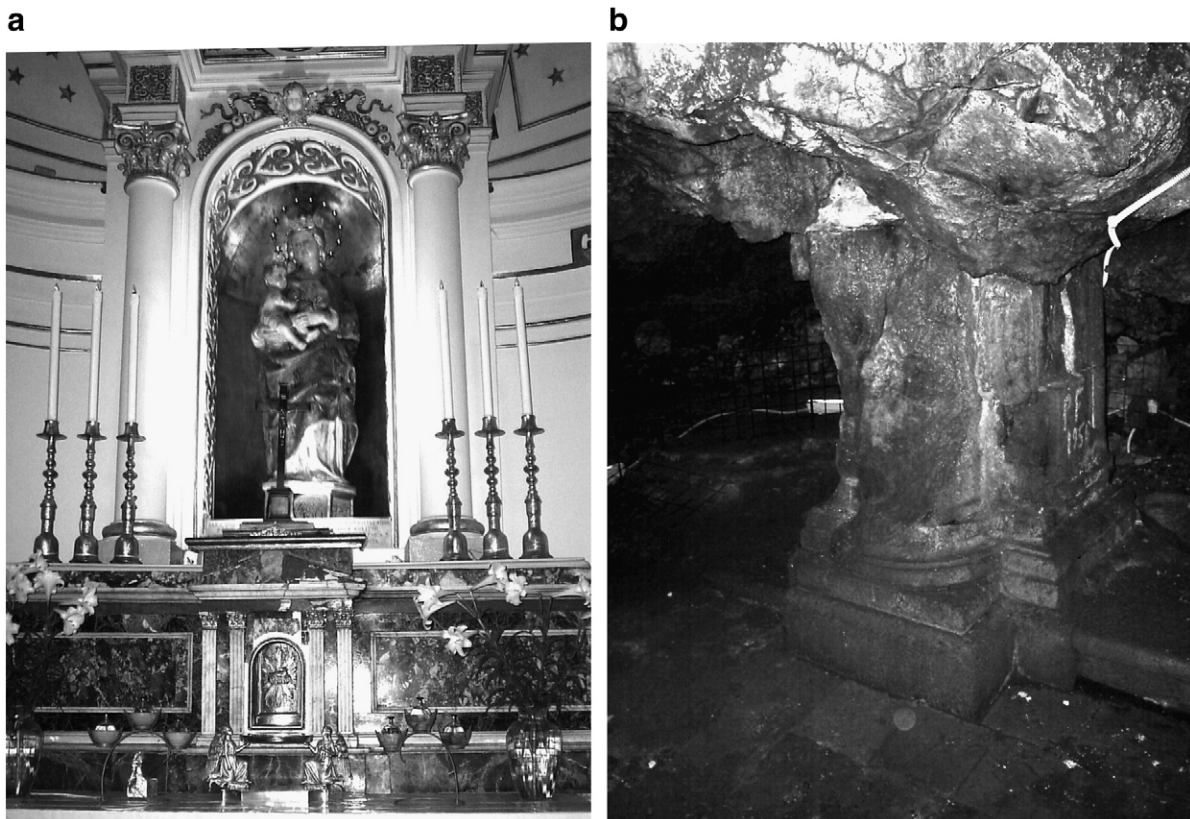


Fig. 3. a. The statue of the Madonna recovered from beneath the 1669 lavas of Etna. A new church was built and the statue now forms part of the altar. b. The remains of the church from which the statue was recovered. Note the tiled floor and column truncated by the lava (photographs copyright Angus Duncan).

Table 2
The range of religious responses to eruptions of Vesuvius and Etna: 1906–1971

Date of major eruption	Nature of religious response
Vesuvius 1906	This was a very destructive eruption that produced major property losses in the town of Boscorecase, while ash-fall caused problems in many settlements, including the village of S. Giuseppe Vesuviano (Fig. 1) where the roof of the parish church collapsed and over 100 people were killed (Abatino, undated; Anon, 1996; Scarth and Tanguy, 2001; Lirer et al., 2005). Some English language reports were scathing about the religious fervour of the population; one author – a British military diplomat – expressed his disquiet in what would today be described as unacceptably sectarian and sexist terms. ‘Beyond running away the utmost the people did to help themselves, was to carry about images of their saints in front of the lava in processions which largely consisted of women and girls, with their hair loosened, wailing and singing. This strikes the feminine spectator as very ‘touching’ and picturesque, but is really a pitiful exhibition of superstition, a mixture of vanity, and hysteria on the part of the women and indulgence and ignorance in the men. It is also deplorably impractical’ (Delme-Radcliffe, 1906: 5–6; quoted by Blong, 1984). In a report, which subsequently became a volcanological classic, the American scientist Perret (1924, pp. 48), provides a more considered and balanced view. ‘The behaviour (<i>sic</i>) of these stricken folk was admirable, and a greater patience, resignation and “savoir faire” could hardly have been expected of any race’. Many religious processions were held (Anon, 1906) and culminated with the head of S. Gennaro being carried in procession by the Cardinal Archbishop of Naples.
Etna 1923	Processions were held in several villages and, when the people of Linguaglossa learnt that the flow had been arrested, thanksgiving services were held in front of large congregations. At one of these a benediction was spoken by the Bishop of Acireale, so providing tacit support for the action from the Catholic hierarchy (Anon, 1923). At the village of S. Alfio, Monsignor Nicotra announced from the pulpit that he would offer his life for the salvation of the village. S. Alfio was spared, but four months later the priest died from natural causes (King, 1973, pp. 163). This incident has now attained a legendary status in the Etna region. Responses to the eruption showed a strong intervention by Mussolini’s <i>fascist</i> government and local officials took over and used many of the processional images of popular Catholicism (Mack-Smith, 1983, pp. 118; Gentile, 2006). It was even claimed by one pro- <i>fascist</i> newspaper that the arrival of the <i>Duce</i> was ‘of Messianic import being the principal reason why the eruption ended so promptly and caused so little damage’ (Chester et al., 1999, pp. 34).
Etna 1928	This was the most destructive eruption of the twentieth century, much agricultural land was sterilized and the village of Mascali was destroyed. In Mascali there were processions of the image of S. Leonardo Abate to within 50 m of the flow front, but these were to no avail and on November 6, which was coincidentally the saint’s day, lava entered the village. Nearly 70 years later one eyewitness reported that when the saintly protection failed people became resigned to their fate. They had to place their trust <i>nelle mano di Dio</i> (i.e. in the hands of God) (quoted by, Duncan et al., 1996). In the town of Giarre images of the patron saints of the villages of Piedimonte and Linguaglossa were carried in procession, the latter being held responsible for preventing the destruction of the town. Some of the people from outside Giarre, however, attacked the image of the saint and members of his <i>confraternita</i> because they believed that the saint could only save one village by allowing another to perish (Anon, 1928). Government intervention during the eruption was impressive and, following the destruction of the village of Mascali, a new village – a showcase of modern architecture and amenities – was constructed by the <i>fascist</i> authorities. As in 1923 Christian imagery was taken over and exploited by Mussolini’s officials, the most extreme example being the decoration of outside of the new cathedral-sized church. Here the <i>fascist</i> torch is placed above a less prominent crucifix (Chester et al., 1999).
Vesuvius 1929	‘Parallel practice’ was in evidence, while many people prayed for a miracle, they also took steps carefully to plan for losses. Evacuations were arranged, possessions and household effects were removed and newsreels even show tiles being removed from the roofs of houses. This was a fairly small-scale eruption (Lirer et al., 2005), which destroyed properties on the outskirts of Terzigno (Fig. 1), where people prayed in church and processed a statue of the Virgin, together with a large painting of the Sacred Heart (Anon, 1929).
Vesuvius 1944	This was an eruption in which lava destroyed large tracts of the villages of San Sebastiano and Massa di Somma. Ash was deposited on many of the settlements on the eastern and southern flanks of the volcano (Guest et al., 2003; Chester et al., 2007). Despite the exigencies of wartime – especially difficulties of travel – and the occupation of the area by allied forces, elaborate rituals of divine propitiation were still carried out. These included the procession of saintly images and body parts (Anon, 1944; Bentley and Gregory, 1944, see Fig. 2). There was great rivalry between the confraternities supporting S. Gennaro and S. Sebastiano, the latter being the eponymous saint of the village (Lewis, 1978).
Etna 1971	The inhabitants of Fornazzo, S. Alfio and other villages (Fig. 1) threatened by lava, paraded images and bones of local saints through the streets and at the flow front, and special masses were held in several churches (King, 1973, pp. 164). Nearly every resident of S. Alfio was involved in a procession to the flow front and reports make it clear that the village priest actively embraced a theology of divine responsibility (Anon, 1971).

own and only intercede through the agency of Christ. In southern Italy this order is reversed and the situation may be summarised thus: ‘Christ is more powerful than God the Father, Mary is more powerful than Christ; and Saint Joseph, the universal father, is more powerful than God the father, Christ and the Madonna together. But more powerful than God and all the saints is the one saint that – from as far back as the distant centuries of the Middle Ages – the inhabitants of a given place have selected as their patron’ (Carroll, 1992, pp. 15–16). It is within the context of the local saint and Madonna that many of the religious reactions to eruptions of Vesuvius and Etna were grounded and, despite its heterodox character, this theology was given legitimacy through the participation of local clergy. These

were usually priests but in some cases even bishops became involved.

Processions were also far from being fully in accord with orthodoxy. In Post-Tridentine Catholicism processions were only permitted on a few specified occasions such as: Palm Sunday; and Rogation days (i.e. April 25 and the three days before Ascension). Rogation days were set aside for prayer and fasting and were instituted to appease supposed divine anger because of human sinfulness, to ask for God’s protection and to produce bountiful harvests (Mershman, 1907–14). Extraordinary processions, including those to prevent calamities, were also allowed and liturgies were usually developed from Rotation rites. Rites were supposed to be under the strict control of

the clergy, be fully in accord with Catholic orthodoxy and not pamper to ignorant superstition particularly the supposed ‘power’ of sacred objects (Thurston, 1907–14). As Table 1 and the references cited within it show, this was seldom the case. The heterodox theology practiced on the slopes of Etna and Vesuvius greatly troubled church leaders, but there was little they could do to prevent it because of the active participation of educated and powerful elites, including many local clergy. Repression was inevitably half-hearted (Astarita, 2005, pp. 141).

Little is known about the eruptions of Etna between c. AD 400 and 1329 (Chester et al., 2000, pp. 187). For Vesuvius the record is only slightly better. Following the AD 79 eruption, there was a possible event in AD 203 and a major eruption in AD 472. Relatively small eruptions occurred in AD 968, 1037 and 1139 (Guest et al., 2003, pp. 48), but there is virtually nothing recorded for either volcano on the human impact of eruptions before the later Middle Ages. This means that the detailed reasons why religious expression developed in such a distinctive manner during more than a millennium of Christian history remain elusive. Church historians have, however, tentatively pointed to the fact that the supposed power of saintly relics and images represents a syncretic relationship between Christianity and other faiths. In early Medieval times there were a variety of ethnic groups, languages and religions both in southern Europe in general and the Italian south in particular (e.g. Christian, Moslem and Jewish) syncretism occurring, not only amongst these faiths, but also with much vaguer pre-Christian beliefs and practices that were still extant within the region (Astarita, 2005 — see also Sigurdsson, 1999, pp. 71–84). For example, Maniscalco (2005) discusses the spiritual response to Mount Etna in prehistoric times. She notes that the Sikel god, Hybla, is associated with the mud volcano near to Paterno at the southwest margin of Etna and reflects the divinity associated with the volcano in pre-classical Roman and Hellenic traditions.

When people were threatened by disaster, *popular Catholicism* was expressed as ‘a form of shamanism’ (Astarita, 2005, pp. 144), in which saintly relics and images had the supposed power to produce favourable outcomes for individuals and communities. The spread of heterodoxy was assisted by the large number of clergy who were recruited from the areas in which they served. They were frequently ill-educated and shared the values, attitudes and superstitions of the local populace. In the south there was also the institution of *chiesa ricettizia*. These were groups of locally recruited priests who were under only the loosest of Episcopal control (Carroll, 1996, pp. 6–8, 202).

Following the Council of Trent (1545–63), which largely defined the reformist agenda of the counter-reformation, visits to the south by clergy from outside the region revealed alarming levels of ignorance of even elementary Christian beliefs amongst clergy and people alike. Drawing on their overseas missionary experience, the Jesuits called the south the ‘Indies over here’, because of the need for education in basic doctrine (Astarita, 2005, pp. 133). The pattern of beliefs that was present in medieval times continued for the rest of the *pre-industrial* era, but was developed and refined as a result of external pressures. In post-reformation times southern Italian

Catholicism generated a style of religious practice that highlighted differences between it and Protestantism, with southerners in particular magnifying ritualistic, saintly and Marian observance (Carroll, 1989, pp. 154–175). Also from the time of Italian unification in 1860 disasters of all types became increasingly associated with punishment for the supposed iniquities of the liberal Italian state, the formation of which had involved a loss of papal land, political power and moral authority. For instance following an earthquake near Venice in 1873 and to the dismay of many catholic theologians, the increasingly reactionary Pope Pius IX claimed that this disaster represented a display of God’s justice, and he launched into an invective against revolutionary forces and ‘spoilers’ of the church (Anon, 1873). Although present as a strand within elite circles for centuries, after 1860 a distinctive anti-clericalism developed within Italian intellectual circles as a reaction to the conservative and often anti-progressive policies being enunciated by the Vatican (Vidler, 1971; Dickie and Foot, 2002; Logan, 2002).

A third feature emerging from Table 1 concerns the psychological complexity of responses. Severe panic is rarely mentioned in accounts of eruptions, day-to-day activities frequently continue unaffected and the calm shown by the population has often been commented upon by observers (Chester et al., 2005). In fact during eruptions many of the religious reactions recorded in Table 1 occurred at the same time as more practical measures were being put into place by the populations affected. Naturalist explanations of eruptions were also widely held by more enlightened thinkers and were not entirely absent from clerical circles (Logan, 2002). For instance the Dominican priest, Valerius Faventius, published a treatise on mountains, in which he discussed the origins of Etna and Vesuvius (Faventius, 1561). Slightly later his fellow Dominican, Giordano Bruno, left his order to devote himself to science. This included research on volcanoes, but his free-thinking eventually sealed his fate at the hands of the Inquisition and he was burned at the stake for heresy in 1600 (Sigurdsson, 1999, pp. 88). Later writers were able, however, successfully to combine science with active Christian ministry without suffering punishment. The famous German Jesuit scholar, Athanasius Kircher, visited Italy on several occasions and wrote extensively on Italian volcanoes (Kircher, 1665); while in the Eighteenth century Canon Giuseppe Recupero accompanied the pioneer volcanologist Sir William Hamilton on a visit to Etna (Chester et al., 1985, pp. 26). Recupero’s detailed research on Etna was not published until forty years after his death (Recupero, 1815) and it was used extensively by Sir Charles Lyell and other Nineteenth century volcanologists.

A tension between the rational and the irrational is normally a feature of more ‘modern’ societies, but may be seen in the responses of many to the eruptions which occurred on Vesuvius and Etna during late *pre-industrial* times. During the 1872 eruption of Vesuvius, for instance, the correspondent of the *London Times* draws a distinction between the practical relief carried out by local government bodies and the perceived excesses of religious reaction on the part of the populace (Anon, 1872b). Etna is a continually active volcano, large flank eruptions have occurred on a regular basis during its history and

cognitive dissonance (i.e. tensions resulting from inconsistencies between beliefs and actions) may be seen most clearly in the deeds of those who took practical measures to reduce their risk exposure. A well-known example occurred during the 1669 eruption, when one Diego Pappalardo and some fellow citizens of Catania attempted to divert a lava flow which threatened their city. Following other eruptions villages destroyed by lava were quickly re-built by their inhabitants, extended family networks habitually housed refugees, fragmented landholdings acted to prevent all a family's agricultural land being wiped out by a single eruption and in the 1843, 1852, 1863 and 1883 flank eruptions villagers salvaged and stored all they could from threatened buildings. During the 1892 eruption local relief committees were set up (Chester et al., 2005).

3. Recent religious responses

The literature on hazard management makes a distinction between *pre-industrial* (i.e. folk) and *industrial* (i.e. modern technological) reactions to hazards (White, 1973; Chester et al., 2005). For most of human history people have resided in *pre-industrial* societies, many continue to live in them today, but as economic development has occurred the burden of losses has been transferred from the community, family and individual to the state and international agencies and loss-sharing has been facilitated through aid transfers from central government. Insurance and technologies of hazard reduction are innovated and hazard planning becomes a prominent element of public policy. In many parts of the world features of the *industrial* and *pre-industrial* may be seen to occur at the same time amongst different groups and/or regions within the same country, but progressively elements of the *pre-industrial* become less common (Chester, 1993, pp. 236–7).

In Italy the transition from a *pre-industrial* to an *industrial* pattern of loss-bearing took place during the twentieth century, with an increasing number of features typical of the latter appearing with the 1971 and subsequent eruptions of Etna. As argued in the introduction to this paper, the interpretation of natural catastrophes in theological terms is a feature of many contemporary societies (Chester and Duncan, in press), but what is remarkable about disasters in southern Italy is that a wide range of religiously-based responses has persisted and continues to involve a large number of people. In May each year congregations still queue for a long time to kiss the relics of S. Gennaro in Naples (Table 1) and, despite some decline in regular church attendance, sites at which miraculous events are claimed to have occurred have never been more popular venues of pilgrimage (Carroll, 2000). Table 2 summarises the range of religious responses to volcano-related emergencies on Vesuvius and Etna that occurred between 1906 and 1971.

Since 1971 detailed studies of human responses have been published and these allow the psychological dimensions of responses to be brought more clearly into focus. In 1995 an evacuation plan for Vesuvius in the event of a future eruption was published, with land being classified into a number of zones; the *red zone* being the most dangerous (Anon, 1995). Two recent papers have reported on a survey that has compared public

understanding of volcanic risk amongst respondents drawn from differing risk zones on Vesuvius and from Etna (Davis and Ricci, 2004; Davis et al., 2005). Despite the comprehensive character of this survey no mention of religious beliefs was evident in the responses and the principal researcher, Professor Davis, has confirmed to the authors that religiosity was neither explored by the researchers nor freely mentioned by respondents (Davis, 2006). The findings of the survey are expressed exclusively in secular terms and include such concerns as:

- a. political, criminal and social issues are rated more highly by the public than threats of a volcanic character;
- b. perceptions of volcanic risk do not always mirror volcanological assessments;
- c. residents of Vesuvius have little faith in public officials and
- d. many people on Vesuvius had neither a detailed knowledge of, nor confidence in, planned evacuation.

The observed persistence of elements of *popular Catholicism* within responses are, however, at variance with the findings of this survey and have been prominent in all major eruptions of Etna since 1971 (see Section 3.1). Although Vesuvius has not erupted since 1944, other disasters in the Italian south have shown well-developed religious dimensions (Section 3.2) and a detailed survey carried out on Etna in the late 1990s indicates that *popular Catholicism* is still a potent force within the psyche of many people as they react to actual and threatened eruptions (Section 3.3).

3.1. Religious reactions to eruptions of Etna since 1971

Since 1971 major flank eruptions of Etna have occurred in 1974, 1981, 1983, 1991–1993, 2001 (Guest et al., 2003) and 2002–3, and many of these have been associated with religious rites which have received overwhelming public support (Vulliamy, 1992). In July 2001, for example, the Archbishop of Catania – Luigi Bommarito – celebrated Mass in the village of Belpasso (Fig. 1), hopefully to facilitate an end to the eruption and for the village to be spared (Kennedy, 2001; Owen, 2001). Worshippers in Nicolosi crowded into the church of Santa Maria della Grazia and placed flowers on the shrine of their patron, S. Antonio. A school teacher claimed that ‘local people still believe in miracles. If human technology can’t keep the lava back, the eternal father is our only salvation’ (Kennedy, 2001, pp. 10). It is interesting that Belpasso and Nicolosi are well-educated communities; religious interpretations are not confined to the old and/or uneducated and involve respected community leaders whose views are shared by much of the population at risk. It is estimated that between 7000 and 10,000 people attended Mass in Belpasso, which represents around a third of the total population of village. This is many times greater than the numbers attending church on a regular basis.

3.2. Recent religious dimensions to disasters in southern Italy

There has been no eruption of Vesuvius since 1944, but there is no reason to believe that in any future eruption people will not

be respond as they have in the past by displaying the full panoply of religious observance. Earthquakes and to a lesser extent floods and landslides are characterised by rapid onset, giving limited time for liturgies of appeasement to be performed, yet religious reactions to these phenomena have been in evidence. In a study of the 1980 Irpinian earthquake in Campania, Alexander (1990) shows how the cult of S. Gennaro still remained important for middle aged and older residents and was not absent from personal accounts of students from the *Istituto Tecnico Cesaro* in Torre Annunziata (Fig. 1), all of whom came from the circum-Vesuvian region. One respondent, for example, commented on the supposed positive influence of the Virgin of the Rosary whose shrine is in Pompei (Alexander, 1990, pp. 23).

The miraculous is ever present within religious practice in southern Italy and continues to be expressed in elaborate rituals associated with saints, saintly relics and *ex-voto* images. During the twentieth century the Archbishop of Naples had around 300 candidates on file for possible beatification and Naples continued to honour more saints than the whole of France (Monter, 1986, pp. 342). Despite investigations carried out by a number of scientists into the ‘miraculous’ manner in which S. Gennaro’s blood is liquefied (Mc Mahon, 2005) and the fact that in 1964, following the Second Vatican Council, the Catholic Church made celebration of the saint’s anniversary optional outside Naples (Lancaster, 2005, pp. 7), the cult still enjoys overwhelming popular support. Any failure of the blood to liquefy (Anon, 2005d; Brown, 2005) is taken as a very bad omen and the saint’s shrine in the cathedral is continually festooned with notes containing intercessory prayers.

For many years study of the sociology of Italian religion was theoretical rather than empirical in character (Marchisio and Pisati, 1999). In the absence of firm data many authors assumed that Italian society was either becoming progressive secular (e.g. Acquaviva, 1961) or, in contrast, that religion remained a permanent feature of Italian life (e.g. Cesareo et al., 1995; Garelli, 1996).

More recently detailed evidence-based studies have shown that the actual situation is more finely nuanced. For the country as a whole and despite some falls in recent decades, rates of church attendance remain too high to support any case for secularisation. Religious commitment, conformity to Catholic doctrine and clergy recruitment are all greater in the north of the country and the notion of contrast between a religious south and a secular north is an unsubstantiated myth (Diotallevi, 2002). In an important paper based on surveys carried out by the Catholic University of Milan and the *Doxa Society of Milan* – a market research organisation – Marchisio and Pisati (1999) used a model first introduced by the British social scientist Grace Davie (Davie, 1990) to argue that many people felt they ‘belonged’ to the Catholic church without ‘believing’ the whole gamut of its teaching, and that in Italy there is a ‘lack of orthodoxy amongst the Church faithful’ (Marchisio and Pisati, 1999, pp. 253, see also: Cipriani et al., 1995; Cipriani, 2003). In the south around 45% of people attend church on a regular basis, religious practice remains more ritualist than in the north, belief is more heterodox (Cartocci, 1994) and syncretism is still in evidence. Within

Naples ‘it is not uncommon for me to encounter garbage men and parking lot attendants who were experimenting sequentially and sometimes simultaneously with variants of folk religion, Catholicism, Marxism, Neo-Fascism, Evangelical Protestantism, and even Satanism’ (Belmonte, 1989, pp. xxiv), and in the south fierce intra-communal disputes over apparently arcane aspects of religious ceremonial are still features of village life (Whyte, 1944; Palumbo, 2004).

3.3. Perception of risk on Etna

In the 1990s one of us carried out a large-scale survey of risk perception (Dibben, 1999, pp. 290–297), and this involved interviews with people living in the villages of Mascali, Trecastagni and Zafferana (Fig. 1). Part of study was retrospective and investigated the reactions of survivors who witnessed the 1928 eruption that destroyed Mascali. A typical reaction was:

‘We thought the patron saint of our town, S. Leonardo, could have stopped the lava, so some people decided to put the statue of the saint in front of the oncoming lava. They positioned it only 50 metres away, hoping it would perform a miracle but it was no good. We took it to Riposto for safety, until Mascali was rebuilt when we were ready to host it once again’ (Respondent 3, Dibben, 1999, pp. 128–129).

Suggesting a strong faith in a potential miraculous intervention – even though tinged with resignation – one interviewee recalled:

‘We all hoped for a miracle from S. Leonardo, but of course this was useless’ (Respondent 8).

Interviews carried out in Trecastagni, a large agricultural village with a population of 7000 and located some 18 km southeast of the summit (Fig. 1), illustrate the nature of current risk perception. The survey comprised semi-structured telephone interviews, had a sample size of 200 people and, in common with findings uncovered by the survey published by Matthew Davis and his colleagues (i.e. Davis and Ricci, 2004; Davis et al., 2005), respondents focused on secular rather than religious aspects of risk cognition. Dualities were evident, for instance, in reconciling the beauty of the mountain with fear of eruption; and between the perceived benefits of a lack of crime, clean air and the potential for agriculture and tourism, and the risks posed by possible future incursions of lava. The adjacent village of Fleri (Fig. 1) had been damaged by seismic activity a few years before the survey was undertaken and this may be one reason why earthquakes were more feared than eruptions. In common with Davis’s survey, immediate problems – in this case unemployment and the journey to work – were more to the forefront of public concern than the more remote risks posed by volcanic action. Although the residents were fearful of active volcanism, 71% of respondents replying that they avoided areas of active volcanism, they were still not prepared to move away from Trecastagni.

The findings of this survey indicate that when answering predetermined questions people neither instinctively use religious

language nor appeal to any innate theodicy. It is only when follow up questions were posed that it became clear that:

Some ‘groups had a fatalistic or religious attitude towards a potential event. They tended to believe that they had little control, it was chance, fate or God that would determine its effect on them’ (Dibben, 1999, pp. 195).

‘For many (people) religious beliefs play a significant role in their representation of the volcano’ (Dibben op. cit., pp. 196).

The findings of these two surveys raise a major methodological issue for studies of hazard perception. If questions about religious attitudes to losses are not specifically asked then answers may not be volunteered by respondents. Just as there are ‘hidden histories’ of religious-based reactions to eruptions (Chester, 2005a, pp. 322) so there may also be ‘hidden psychologies’ and layers of belief, in which people shy away from expressing opinions because of a fear of personal embarrassment in front of university trained social scientists especially those from Northern Italy and abroad, who may deride such opinions as being merely ignorant superstition.

More generally it appears that people living on Etna take part in what might best be described, as ‘parallel practices’, where actions to encourage the miraculous take place at the same time as more ‘rationally’ grounded protective measures such as evacuation. Religious practice does not seem to obstruct other types of protective behaviour but are simply one of the protective behaviours used by people before, during and after volcanic emergencies.

4. Implications for planning

In reviewing progress that had been made during the early years of the *IDNDR* (United Nations, 1995; Eades, 1998), the United Nations’ *Yokohama Conference* in 1994 argued for a greater focus on human vulnerability in both hazard research and planning practice, and this emphasis has become more prominent in the early years of the twenty-first century. Current United Nations policy is contained in a document, the *International Strategy for Disaster Reduction (ISDR)*, and the accent is firmly on the development of more culturally-aware responses to natural disasters (United Nations, 1999, 2002). This emphasis was re-stated by the *World Conference on Disaster Reduction* held in Japan in 2005, at which the *Hyogo Framework for Action 2005–2015* was published (United Nations, 2005).

The continuing importance of religion in conditioning responses to disasters in southern Italy, particularly following eruptions, represents a major challenge for emergency planners. On the one hand the current international agenda for loss reduction stresses that the cultural beliefs of local communities must be respected yet, on the other, government agencies seek to encourage populations to view eruptions as natural phenomena in which risks may be reduced through policies such as those involving mass evacuation that have been developed for Vesuvius (Anon, 1995). The situation is exacerbated because

there is no evidence to assume that religious frameworks for interpreting losses have become any less important within public consciousness. In Italy as in many other countries there is an urgent need for dialogue between those who hold religious views on disaster losses, and hazard analysts and planners who view losses in wholly naturalistic terms (Chester, 2005a). Fortunately in southern Italy there are signs that perspectives are not as polarised as they might appear. There is neither evidence of debilitating fatalism, nor that action by government has been resisted on purely religious grounds. For example the evacuations carried out during the 1906 and 1944 eruptions of Vesuvius had the general support of the populations affected (Chester et al., 2007), while on Etna no central or local government initiatives have been resisted because of religious considerations (Chester et al., 1985).

There are two other factors which serve to counter polarisation, both of which should be seen within the context of wider theological discussion about how apparent contradictions between Christian belief and scientific/modernist worldviews may be resolved. These are, first, developments in theodicy and, secondly, the changing perceptions of the role of the church within national emergencies. Although the *Augustinian* and *retributive* models of theodicy have held sway in popular Italian Catholicism for hundreds of years, more recently other ways at looking at apparently undeserved suffering during disasters have become more prominent within Catholic theology. The so called *Irenaeian*, or ‘best possible world’ defence holds that a world without pain and loss would be one that operated according to special laws or *providences*, rather than the laws of physics. ‘Suffering is necessary for the greater good e.g. without earthquakes there would be no mountains, without volcanic eruption no planetary atmospheres’ (Chester, 1998, pp. 505), and this theodicy is now firmly placed within the canon of official Catholic teaching (Whitney, 2003). What has been called a *liberationist* theodicy argues that losses in disasters are often due to institutional rather than individual sinfulness, with disproportionately high losses occurring amongst the poor and marginalised. This mode of thinking is evident in policy statements made by international Catholic charities concerned with development (e.g. CAFOD, 2006) and a recent report on Papal charitable giving shows disaster relief to be a prominent item of expenditure (Anon, 2004). The Vatican also continues to be concerned about the idolatrous use of images and saintly relics (Vatican, 2001). Within southern Italy the religious response, though superficially unchanged, is currently showing a subtle accommodation to these trends within Catholic teaching. For example during the 2001 eruption of Etna, Archbishop Bommarito caused considerable popular disquiet. While still seeking divine intervention, he rejected the use of S. Agatha’s veil. He is quoted as saying, ‘it is not the veil that will stop the lava but our prayer...The warmer the prayer the cooler the lava’ (Kennedy, 2001, pp. 10).

Within the context of today’s more culturally-aware research and policy agendas, there is a changing perception of the role of religion within emergencies. Alexander (2002, pp. 123) has argued that in countries with a Christian ethos churches may be important resources. He points out that they are found in

virtually all communities and can be important sources of local identity. Clergy may also offer moral leadership and churches are accustomed to both identifying those in need and providing relief to the destitute. The church in southern Italy has fulfilled these roles in a variety of disasters, often within the context of open hostility between it and the secular state. For instance, the Neapolitan cholera epidemic of 1883 occurred at the very height of hostility between the church and new Italian state. All the rituals of popular Catholicism were performed, yet Archbishop (later Cardinal) Sanfelice D'Acquavella and King Umberto decided to work together and encouraged clergy to become involved in charity work. This was a successful collaboration (Brice, 2002). Other examples include: the Messina (Sicily) earthquake of 1908, where the Archbishop remained in residence co-ordinating relief even though the *Sindaco* (i.e. mayor) deserted his post (Bosworth, 1981); and the 1980 Irpinian earthquake, where a church volunteer force was involved in the rescue operation. In 1980 relief was also provided by several Catholic charities (Alexander, 1982).

It is possible for hazard planning to recognise that many people will continue to view eruption losses in religious terms, yet at the same time integrate the leadership roles of clergy and the experience of the church in charitable works into effective programmes of disaster relief.

Acknowledgements

The authors wish to thank Mrs Sandra Mather for expertly drafting Fig. 1 and Mr Ian Qualtrough for preparing the photographs. Both are colleagues at the Department of Geography, University of Liverpool. Professor Harry Pinkerton (University of Lancaster) is acknowledged for pointing out the story of the church and the statue of the Madonna found beneath the 1669 lava flows on Etna.

References

- Abatino, E., undated. Vesuvio: a volcano and its history. Carcavallo, Napoli.
- Aberth, J., 2001. From the Brink of the Apocalypse: Confronting Famine, War, Plague and Death in the Later Middle Ages. Routledge, New York.
- Acquaviva, S., 1961. L'eclissi sel sacro. Comunità, Milan.
- Al-Azmeh, A., 1996. Islams and Modernities. Verso, London.
- Alexander, D., 1982. The Earthquake of 23 November 1980 in Campania and Basilicata, Southern Italy. International Disaster Institute, London.
- Alexander, D., 1990. Behavior during earthquakes: a southern Italian example. International Journal of Mass Emergencies and Disasters 8 (1), 5–29.
- Alexander, D., 2000. Confronting Catastrophe. Terra Publishing, Harpenden.
- Alexander, D., 2002. Principles of Emergency Planning and Management. Terra Publications, Harpenden.
- Anderson, J., 1987. Learning from Mount St. Helens — Catastrophic events as educational opportunities. Journal of Geography 86 (5), 229–233.
- Anon, 1872a. Report. The Times, p. 6. May 15, column c.
- Anon, 1872b. Report. The Times (London), p. 6. May 15.
- Anon, 1873. The Pope and the earthquake. The Times (London), p. 5. July 18, col. d.
- Anon, 1906. The eruption of Vesuvius. The Times (London), p. 5. April 11, col. a.
- Anon, 1923. Etna eruption ending. The Times (London), p. 12. Jun 26, col. c.
- Anon, 1928. Etna eruption: rapid advance of lava. The Times (London), p. 16. November 7, col., g.
- Anon, 1929. Vesuvius in eruption. Great flow of lava. Villages threatened. The Times (London), p. 14. June 5, col. c.
- Anon, 1944. Report. Manchester Guardian 5 March 23, col. f.
- Anon, 1971. Report. Time Magazine 44 May 31.
- Anon, 1980. Report. Christian Century 695 July, 2–9.
- Anon, 1983. Report. Columbian 31 March.
- Anon, 1995. Pianificazione Nazionale d'emergenza dell'area Vesuviana. Prefettura di Napoli, Napoli and Dipartimento della Protezione Civile, Roma.
- Anon, 1996. Il Vesuvio e la grande eruzione dell' April 1906. Colavecchia Colombai and C. Napoli and Rotary Club, Ottaviano.
- Anon, 1997. Theodicy. In: Bowker, J. (Ed.), The Oxford Dictionary of World Religions. Oxford University Press, New York, pp. 968–969.
- Anon, 2004. Pope's Charity gave 6.5 million to needy in 2003. The Catholic News Agency, Vatican City (<http://www.catholicnewsagency.com/new.php?n=961>). Accessed 08/01/08.
- Anon, 2005a. 'Miracle' of San Gennaro restaged. Independent (London) 22 September 20.
- Anon, 2005b. Agatha. (http://www.catholic_forum.com/saints.santa04.htm accessed 2/11/05).
- Anon, 2005c. St. Agatha and Catania: An Indissoluble Bond. (http://www.mediaonline.it/catania/agatha_en.htm - accessed 2/11/05).
- Anon, 2005d. 'Miracle' of San Gennaro restaged. Independent (London) 22 September.
- Astarita, T., 2005. Between Salt Water and Holy Water: A History of Southern Italy. W.W. Norton and Company, New York.
- Barnes, V.C., 2002. Shepherding in ashy times: pastoral care with Montserratian volcano evacuees in two Pentecostal churches in the UK. Montserrat County Conference Pre-Prints, University of the West Indies, November 2002. <http://www.cavehill.uwi.edu/bnccde/montserrat/conference/papers/barnes.html> (accessed 12/2/07).
- Belmonte, T., 1989. The Broken Fountain. Columbia University Press, New York.
- Bemporad, J., 1987. Suffering. In: Eliade, M. (Ed.), The Encyclopedia of Religion, vol. 14. Macmillan, New York, pp. 99–104.
- Bentley, H., Gregory, J.R., 1944. Final Report on the Vesuvius Emergency Operation. Allied Control Commission, Headquarters Naples Province.
- Blong, R.J., 1984. Volcanic Hazards: A Sourcebook of the Effects of Eruptions. Academic Press, Sydney.
- Bosworth, R.J.B., 1981. The Messina earthquake of 28 December 1908. European Studies Review 11, 189–206.
- Bowker, J., 1970. Problems of Suffering in the Religions of the World Cambridge. University Press, Cambridge.
- Brice, C., 2002. "The King was pale": Italy's National-Popular Monarchy and the construction of disasters. In: Dickie, J., Foot, J., Snowden, F.M. (Eds.), Disastro! Disasters in Italy since 1860: Culture, Politics and Society. Palgrave, Houndmills, Hampshire, pp. 61–79.
- Brown, M., 2005. City where miracles are in the blood Naples is alive with fresh hope when celebrating its patron saint. The Daily Telegraph April 30, p. 13.
- CAFOD, 2006. Disasters and Emergencies. (http://www.cafod.org.uk/about_cafod/what_we_do/disasters-and-emergencies). Accessed 04/07/06.
- Carroll, M.P., 1986. The Cult of the Virgin Mary: Psychological Origins. Princeton University Press, Princeton N.J.
- Carroll, M.P., 1989. Catholic Cults and Devotions. Montreal, Mc Gill-Queen's University Press.
- Carroll, M.P., 1992. Madonnas that Maim. Popular Catholicism in Italy since the Fifteenth Century. Baltimore, The Johns Hopkins Press.
- Carroll, M.P., 1996. Veiled Threats: The Logic of Popular Catholicism in Italy. Baltimore and London, The Johns Hopkins Press.
- Carroll, R., 2000. Give us this day our daily miracle. *Guardian* (London) Saturday May 6.
- Cartocci, R., 1994. Fra Lega e Chiesa. L' Italia in cerca di integrazione. Bologna, Il Mulino.
- Cesareo, V., Cipriani, R., Garelli, F., Lanzetti, C., Rovati, G., 1995. La religiosità in Italia. Milan, Mondadori.
- Chester, D.K., 1993. Volcanoes and Society. London, Edward Arnold.
- Chester, D.K., 1998. The theodicy of natural disasters. Scottish Journal of Theology 51 (4), 485–505.
- Chester, D.K., 2005a. Theology and disaster studies: the need for dialogue. Journal of Volcanology and Geothermal Research 146, 319–328.
- Chester, D.K., 2005b. Volcanoes, society and culture. In: Marti, J., Ernst, G.J. (Eds.), Volcanoes and the Environment. Cambridge University Press, Cambridge, pp. 404–439.

- Chester, D.K., Duncan, A.M., in press. Geomythology, theodicy and the continuing relevance of religious worldviews on responses to volcanic eruptions. In: Grattan, J., Torrance, R. (Eds.), *Living Under the Shadow. One World Archaeology*, Left Coast Press, Walnut Creek California.
- Chester, D.K., Duncan, A.M., Guest, J.E., Kilburn, C.R.J., 1985. *Mount Etna: The Anatomy of a Volcano*. London, Chapman and Hall.
- Chester, D.K., Duncan, A.M., Dibben, C., Guest, J.E., Lister, P.H., 1999. Mascali, Mount Etna Region, Sicily: an example of fascist planning during and after the 1928 eruption. *Natural Hazards* 19 (1), 29–46.
- Chester, D.K., Duncan, A.M., Guest, J.E., Johnston, P.A., Smolenaars, J.J.L., 2000. Human response to Etna volcano during the classical period. In: Mc Guire, W.J., Griffiths, D.R., Hancock, P.L., Stewart, I.S. (Eds.), *The Archaeology of Geological Catastrophes*. Geological Society Special Publication, vol. 17. Geological Society of London, London, pp. 179–188.
- Chester, D.K., Duncan, A.M., Guest, J.E., 2005. Responses to eruptions of Etna from the Classical Period to 1900. In: Balmuth, M.S., Chester, D.K., Johnston, P.A. (Eds.), *Cultural Responses to Volcanic Landscape. Colloquia and Conference Papers*, vol. 8. Archaeological Institute of America, Boston, pp. 93–107.
- Chester, D.K., Duncan, A.M., Wetton, P., Wetton, R., 2007. Responses of the Anglo-American military authorities to the eruption of Vesuvius, March 1944. *Journal of Historical Geography* 33, 168–196.
- Cipriani, R., 2003. Invisible religion or diffused religion in Italy? *Social Compass* 50 (3), 311–320.
- Cipriani, R., Garelli, F., Lanzetti, C., Rovati, G., 1995. *La religiosità in Italia*. Milan, Mondadori.
- Cunningham, A., Grell, O.P., 2000. *The Four Horsemen of the Apocalypse: Religion, War, Famine and Death in Reformation Europe*. Cambridge, Cambridge University Press.
- Davie, G., 1990. Believing without belonging: is this the future of religion in Britain? *Social Compass* 37, 455–469.
- Davis, M.S., 2006. Personal communication.
- Davis, M.S., Ricci, T., 2004. Perception of risk for volcanic hazards in Italy: a research note. *International Journal of Sociology and Social Policy* 24 (10/11), 159–165.
- Davis, M.S., Ricci, T., Mitchell, L.M., 2005. Perceptions of risk for volcanic hazards at Vesuvius and Etna, Italy. *The Australasian Journal of Disaster and Trauma Studies* 2005–1, 14 pages (electronic journal).
- Davis, S.T., 1981. *Encountering Evil: Live Options for Theodicy*. Atlanta, John Knox Press.
- de Boer, J.Z., Sanders, D.T., 2005. *Earthquakes in Human History*. Princeton University Press, Princeton.
- Degg, M., Homan, J., 2005. Earthquake vulnerability in the Middle East. *Geography* 90 (1), 54–66.
- Delme-Radcliffe, C., 1906. Report by Lt. Col. Delme-Radcliffe on Conditions following the Eruption of Vesuvius in 1906. H.M.S.O., London (report 14404 1).
- Dhaoudi, M., 1992. An operational analysis of the phenomenon of the other: underdevelopment in the Arab World and the Third World. In: Albrow, M., King, E. (Eds.), *Globalization, Knowledge and Society*. Sage, London, pp. 193–208.
- Dibben, C.J.L., 1999. Looking beyond eruption for an explanation of volcanic disasters: vulnerability in volcanic environments. Unpublished Ph.D. thesis, University of Luton.
- Dickie, J., 1999. *Darkest Italy: The Nation and Stereotypes of the Mezzogiorno*. Houndmills, Basingstoke, Macmillan.
- Dickie, J., Foot, J., 2002. Introduction. In: Dickie, J., Foot, J., Snowden, F.M. (Eds.), *Disastro! Disasters in Italy since 1860: Culture, Politics and Society*. Palgrave, Houndsmill, Hampshire, pp. 61–79.
- Diotallevi, L., 2002. Internal competition in a national religious monopoly: the Catholic effect and the Italian case. *Sociology of Religion* 63 (2), 137–155.
- Douglas, N., 1920. *Old Calabria*. London (New edition), Martin Secker.
- Duncan, A.M., Dibben, C., Chester, D.K., Guest, J.E., 1996. The 1928 eruption of Mount Etna, Sicily, and the destruction of the town of Mascali. *Disasters* 20 (1), 1–20.
- Eades, T., 1998. The international decade for natural disaster reduction. In: Twigg, J. (Ed.), *Development at Risk: Natural Disasters and the Third World*. Oxford Centre for Disaster Studies, Oxford, pp. 20–22.
- Faventius, V., 1561. *De montium origine dialogus*. Aldus, Venice.
- Fisher, R.V., Heiken, G., Hulén, J.B., 1997. *Volcanoes: Crucibles of Change*. New Jersey, Princeton University Press.
- Garelli, F., 1996. *Forza della religione e debolezza della fede*. Bologna, Il Mulino.
- Gentile, E., 2006. New idols: Catholicism in the face of fascist totalitarianism. *Journal of Modern Italian Studies* 11 (2), 143–170.
- Gobetti, D., 2002. Review of: *darkest Italy* by John Dickie. *Comparative Studies in Society and History* 44 (2), 405–406 2002.
- Guest, J.E., Cole, P., Duncan, A., Chester, D.K., 2003. *Volcanoes of Southern Italy*. London, The Geological Society.
- Halliday, F., 1994. The politics of Islamic fundamentalism: Iran, Tunisia and the challenge to the secular state. In: Ahmed, A.S., Doonan, H. (Eds.), *Islam, Globalization and Postmodernity*. Routledge, London, pp. 91–113.
- Hamilton, W., 1772. *Observations on Mt. Vesuvius, Mt. Etna and other volcanoes*. Cadell, London.
- Hanska, J., 2000. Strategies of sanity and survival. Religious responses to natural disasters in the Middle Ages. *Studia Fennica Historica*, vol. 2. Finnish Literature Society, Helsinki.
- Harris, S.L., 2000. Archaeology and volcanism. In: Sigurdsson, H., Houghton, B., McNutt, S.R., Rymer, H., Stix, J. (Eds.), *The Encyclopedia of Volcanoes*. Academic Press, San Diego, pp. 1301–1314.
- Hoffer, W., 1982. *Volcano: The search for Vesuvius*. New York, Summit Books.
- Hyde, W.W., 1916. The volcanic history of Etna. *Geographical Review* 1, 401–418.
- Ingram, R.G., 2005a. William Warburton, divine action, and enlightened Christianity. In: Gibson, W., Ingram, R.G. (Eds.), *Religious Identities in Britain*, vol. 1660–1832. Ashgate, Aldershot, pp. 97–117.
- Ingram, R.G., 2005b. ‘The trembling earth is God’s Herald’: earthquakes, religion and public life in Britain during the 1750s. In: Braun, T.E.D., Radner, J.B. (Eds.), *The Lisbon Earthquake of 1755: Representations and Reactions*. Voltaire Foundation, Oxford, pp. 97–113. SEV 2005: 2.
- Johnston, P.A., 2005. Volcanoes in classical mythology. In: Balmuth, M.S., Chester, D.K., Johnston, P.A. (Eds.), *Cultural Response to Volcanic landscape: The Mediterranean and Beyond. Colloquia and Conference Papers*, vol. 8. Archaeological Institute of America, Boston, pp. 297–310.
- Kelikian, A.A., 2002. The church and Catholicism. In: Lyttelton, A. (Ed.), *Liberal and Fascist Italy 1900–1945*. Oxford University Press, p. Oxford.
- Kendrick, T.D., 1956. *The Lisbon Earthquake*. London, Methuen.
- Kennedy, F., 2001. Sicilians pray as technology fails to stop lava. *Independent (London)* 10 July 30.
- King, R., 1973. *Sicily*. Newton Abbot, David and Charles.
- Kircher, A., 1665. In: Janssonium, J., Weyerstraten, E. (Eds.), *Mundus subterraneus, in xii libros digestus*. Apud Joannem Janssonium à Waesberge & Filios. Amstelodami.
- Kirsch, J.P., 1907–14. *Agatha*. In: Hebermann, C.B., Pallen, C.B., Shahan, T.J., Wynn, J.J. (Eds.), *Catholic Encyclopedia: An International Work of Reference on the Catholic Church*, vol. 1. The Encyclopedia Press, New York, pp. 203–204.
- Lancaster, J., 2005. *In the shadow of Vesuvius: a cultural history of Naples*. I.B. London, Tauris.
- Leibniz, G.W. von, 1712. *Essais de Théodicée sur la bonté de Dieu, a la liberté de l’homme et l’origine du mal*. Microfilm Research Publications, New Haven (1973).
- Leibniz, G.W. von, 1952. In: Farrer, Austin (Ed.), *Theodicy*, Routledge and Kegan Paul, London. English translation, E.M. Huggard.
- Leone, F., Gaillard, J.-C., 1999. Analysis of the institutional and social responses to the eruption and the lahars of Mount Pinatubo volcano from 1991 to 1998 (Central Luzon, Philippines). *GeoJournal* 49, 223–238.
- Lewis, C.S., 1944. *The Problem of Pain*. London, Bles.
- Lewis, N., 1978. *Naples’ 44: An intelligence Officer in the Italian Labyrinth*. London, Eland.
- Lirer, L., Chiroasca, M.C., Munno, R., Petrosino, P., Grimaldi, M., 2005. *Il Vesuvio ieri, oggi, domani*. Napoli, Regione Campania.
- Logan, O., 2002. The clericals and disaster: polemic and solidarism in liberal Italy. In: Dickie, J., Foot, J., Snowden, F.M. (Eds.), *Disastro! Disasters in Italy since 1860: Culture, Politics and Society*. Palgrave, Houndmills, Hampshire, pp. 98–112.
- Lyell, C., 1835. 4th edition. *Principles of Geology*, vol. 3. John Murray and Co., London.

- Mack-Smith, D., 1983. Mussolini. London, Paladin.
- Maniscalco, L., 2005. The prehistoric settlement near the Salinelle di San Marco (Paterno, Catania Province, Sicily). In: Balmuth, M.S., Chester, D.K., Johnston, P.A. (Eds.), *Cultural Responses to Volcanic Landscape. Colloquia and Conference Papers*, 8. Archaeological Institute of America, Boston, pp. 127–142.
- Marchisio, R., Pisati, M., 1999. Belonging without believing: Catholics in contemporary Italy. *Journal of Modern Italian Studies* 4 (2), 236–255.
- Mc Mahon, B., 2005. No blood, sweat or tears. *Guardian Unlimited*. October 6.
- Mersham, F., 1907–14. Rogation days. In: Hebermann, C.B., Pallen, C.B., Shahan, T.J., Wynn, J.J. (Eds.), *Catholic Encyclopedia: An International Work of Reference on the Catholic Church*, vol. 13. The Encyclopedia Press, New York, pp. 110–111.
- Moe, N., 2002. *The View from Vesuvius: Italian Culture and the Southern Question*. Berkeley, University of California Press.
- Monter, W., 1986. Review of: *Vescovi popolo e magia nel sud*. By Gabriele de Rosa. Guida Editore, Naples. *Journal of Modern History* 58 (1), 340–341.
- Owen, R., 2001. Villagers in Etna lava's path pray to virgin. *The Times*. July 30 (overseas news).
- Pailin, D.A., 1983. Enlightenment. In: Richardson, A., Bowden, J. (Eds.), *A New Dictionary of Christian Theology*. SCM, London, pp. 179–180.
- Palumbo, B., 2004. "The war of the saints": religion, politics, and the poetics of time in a Sicilian town. *Comparative Studies in Society and History* 46 (1), 4–34.
- Perret, F.A., 1924. *The Vesuvius Eruption of 1906: Study of a Volcanic Cycle*. Carnegie Institution, Washington DC. Publication 339.
- Perry, R.W., Greene, M.R., 1983. *Citizen Response to Volcanic Eruptions*. New York, Irvington.
- Philips, J., 1869. *Vesuvius*. Oxford, Oxford University Press.
- Pinkerton, H., 2006. Personal Communication. 2 June 2006.
- Plantinga, A., 1974. *God, Freedom and Evil*. New York, Harper and Row.
- Possek, A.K., 1999. *Living with the Unexpected*. Springer, Berlin.
- Recupero, G., 1815. *Storia naturale e generale dell' Etna*. Catania Università.
- Riall, L., 2001. Review of: *darkest Italy* by John Dickie. *English Historical Review* 116 (467), 749–750.
- Rodwell, G.F., 1878. *Etna: A History of the Mountain and Its Eruption*. Kegan Paul, London.
- Saaren, T.F., Sell, J.L., 1987. *Warning and response to the Mount St. Helens eruption*. Albany, State University of New York Press.
- Scarth, A., Tanguy, J.-C., 2001. *Volcanoes of Europe*. Terra Publishing, Harpenden.
- Schlehe, J., 1996. Reinterpretation of mystical traditions — explanations of a volcanic eruption in Java. *Anthropos* 91 (4–6), 391–409.
- Sigurdsson, H., 1999. *Melting the Earth*. Oxford and New York, Oxford University Press.
- Smolenaars, J.J.L., 2005. Earthquakes and volcanic eruptions in Latin literature. In: Balmuth, M.S., Chester, D.K., Johnston, P.A. (Eds.), *Cultural Response to Volcanic Landscape: The Mediterranean and Beyond. Colloquia and Conference Papers*, vol. 8. Archaeological Institute of America, Boston, pp. 311–329.
- Steinberg, T., 2000. *Acts of God: The Unnatural History of Natural Disaster in America*. New York, Oxford University Press.
- Thurston, H., 1907–14. Processions. In: Hebermann, C.B., Pallen, C.B., Shahan, T.J., Wynn, J.J. (Eds.), *Catholic Encyclopedia: An International Work of Reference on the Catholic Church*, vol. 12. The Encyclopedia Press, New York, pp. 446–448.
- Tiedemann, H., 1992. *Earthquakes and Volcanic Eruptions*. Zurich, Swiss Reinsurance Company.
- United Nations, 1995. *Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation*. United Nations, Geneva.
- United Nations, 1999. *International Decade for Natural Disaster Reduction: Successor Arrangement*. United Nations, New York.
- United Nations, 2002. *Living with Risk*. United Nations, Geneva.
- United Nations, 2005. *Report on the World Conference on Disaster Reduction, Kobe, Hyogo, Japan, 18–22 January 2005*. United Nations, Geneva. GE.05-61029.
- Vatican, 2001. *Directory on Popular Piety and the Liturgy: Principles and Guidelines*. Vatican, Vatican City (<http://www.catholicculture.org/library/view.cfm?id=4620&repos=1&subrepos=&searchid=151381>). Accessed 08/01/08.
- Vidler, A., 1971. *The Church in the Age of Revolution: 1789 to the Present Day*. Harmondsworth, Penguin.
- Vulliamy, E., 1992. Eyewitness: Easter in the teeth of the volcano God. *The Guardian*, p. 11. April 18.
- Wesley, J., 1812. In: Gragg, G.R. (Ed.), *Works*, vol. 11. Clarendon Press, Oxford, pp. 403–496.
- White, G.F., 1973. Natural hazards research. In: Chorley, R.J. (Ed.), *Directions in Geography*. Methuen, London, pp. 193–312.
- Whitney, B., 2003. Theodicy. *New Catholic Encyclopedia*, vol. 13. Thompson Gale and the Catholic University of America, Washington DC., pp. 867–869.
- Whyte, W.F., 1944. Sicilian peasant society. *American Anthropologist* 46 (1), 65–74.