



Research Paper

A chaos theory perspective on destination crisis management: Evidence from Mexico

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ABSTRACT

It is recognised that tourism destinations are vulnerable to some form of crisis or disaster. Consequently, attention has long been paid to the nature and consequences of tourism crises and disasters, whilst, more recently, a number of tourism crisis management models have been proposed in the literature. Such models may, however, be criticised for their structured, linear and prescriptive approach to the management of crises, which tend to be unpredictable in their occurrence and evolution. Therefore, identifying the limitations of contemporary crisis management models, this paper proposes an alternative, chaos theory-based approach to crisis management. This is then considered within the context of the AH1N1 influenza crisis in Mexico. The research revealing not only that the unfolding of the crisis followed many of the tenets of chaos theory, but also that chaos theory provides a viable framework for the management of tourism crises.

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1. Introduction

For tourism destinations, a key success factor is the ability to provide a safe, predictable and secure environment for visitors (Volo, 2007). Tourists are typically risk averse and, thus, any actual or perceived threat to their health, safety or security is likely to influence their decision to visit a particular destination (Sönmez & Graefe, 1998; Lepp & Gibson, 2003). Indeed, it has long been recognised that tourism is highly susceptible to political, environmental, economic and other influences. As Prideaux, Laws and Faulkner (2003, p. 475) note, tourism flows 'are subject to disruption by a range of events that may occur in the destination itself, in competing destinations, origin markets, or they may be remote from either.' Irrespective of the source of such events, however, the subsequent reduction in tourist arrivals may have significant economic and social consequences both for the destination and the wider economy (Santana, 2003; Ritchie, 2008).

Of course, the 'tourism crisis' is not a new phenomenon. The history of modern tourism is replete with well- (and lesser) known examples of natural disasters, economic downturns, political turmoil, health scares, terrorist activity and other events that have impacted negatively on the volume and direction of tourism flows. Moreover, as tourism has continued to grow in both scope and scale, such events appear, perhaps inevitably, to occur with increasing frequency, to the extent that 'tourism destinations in every corner of

the globe face the virtual certainty of experiencing a disaster of one form or another at some point in their history' (Faulkner, 2001, p. 142). It is not surprising, therefore, that the susceptibility of tourism destinations to crises and disasters is widely addressed within the literature, albeit with a predominant focus on economic and financial crises (Hall, 2010). At the same time, and following the publication of Faulkner's (2001) seminal work on the subject, increasing academic attention has been paid in particular to the management of tourism crises and disasters (for example, Glaesser, 2006; Hystad & Keller, 2008; Ritchie, 2004, 2009).

Nevertheless, despite the growing body of research related to tourism crisis management it has been observed that many tourism destinations and organisations remain unprepared for a crisis situation (Beirman, 2003; Ritchie, 2009). That is, there has been an apparent reluctance or failure on the part of the much of the tourism sector to adopt the crisis management models or strategies proposed in the literature. On the one hand, this may reflect a challenge facing the tourism academy more generally, namely, the need for a more effective articulation between tourism academic research and the needs of the tourism sector (Sharpley, 2011). On the other hand, and as this paper suggests, it may reflect the limitations of these proposed models and strategies as practical responses to potential or actual crises that tourism destinations may experience. In other words, the extent to which contemporary models of crisis management may deliver satisfactory solutions to the challenges presented by tourism crises or disasters remains questionable. Drawing as they do on theories of risk and crisis management within the business organisation, these models in general propose a linear, prescriptive framework from prediction through to post-event recovery as a

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universally applicable response to tourism crises and disasters. However, such is the variety of circumstances unique to each crisis or disaster that a 'one size fits all' model is unlikely to account for differences in the scale, intensity and impacts of crises, or in the availability skills and resources necessary to respond to them.

More specifically, and of particular relevance to this paper, crisis management models typically follow a logical, step-by-step format that is unable to embrace the complex and frequently chaotic characteristics of tourism crises and disasters which, by their very nature, often do not proceed as might be expected. Tourism has more generally been described as 'an inherently non-linear, complex and dynamic system that is well described within the chaos paradigm' (Faulkner & Russell, 1997; McKercher, 1999, p. 425; Zahra & Ryan, 2007). That is, in contrast to the widely-held perception that it is a linear, deterministic and predictable activity and, hence, amenable to planning and control, tourism is unpredictable, complex, difficult to manage effectively and, according to McKercher (1999), best considered from the perspective of chaos theory. Moreover, a crisis or disaster may be the trigger that tips the tourism system into chaos. Consequently, it has been suggested that 'chaos theory may provide some insights into crisis and disaster management for organisations in the tourism industry' (Ritchie, 2004, p. 672). However, its relevance to the effective management of tourism crises has yet to be fully explored.

The purpose of this paper is to address this gap in the literature. In particular, it considers tourism crisis and disaster management within the framework of chaos theory, in so doing proposing an alternative perspective on destination crisis management. Based upon research in Mexico, it then explores the limitations of extant models and the applicability of a chaos theory approach to destination crisis management in the context of the impacts of and responses to the 2009 AH1N1 influenza ('swine flu') crisis within the Mexican tourism sector. For this purpose, 'destination' refers to Mexico as a whole, rather than specific resorts. The first task, however, is to identify the limitations of contemporary models and to review briefly chaos theory as an alternative perspective on destination crisis management.

2. Managing tourism crises and disasters: Towards an alternative approach

Although there has been a marked increase in academic attention paid to tourism crisis and disaster management over the last decade or so, it is by no means a new field of study. As early as 1980, Arbel and Barur developed a planning model for crisis management within the tourism industry and, subsequently, a number of commentators explored a variety of related issues (D'Amore & Anuza, 1986; Lehrman, 1986; Scott, 1988; Pottorff & Neal, 1994; Drabek, 1995; Pizam & Mansfield, 1996; Sönmez, 1998). However, the publication of Faulkner's (2001) framework for tourism disaster management undoubtedly stimulated wider interest in the subject, whilst a number of major events in the early 2000s, including '9/11', the SARS outbreak, the Bali bombings, the Foot and Mouth Disease outbreak in the UK and the Indian Ocean tsunami, served as foci for research into the management of tourism crises and disasters.

A review of the relevant literature as a whole is beyond the scope of this paper (but, see Pforr, 2006). Generally, however, the literature comprises a dialogue that explores the nature of crises and disasters, why these events occur, the effects that such situations have upon the destination economy and society, and the methods that can be utilised to nullify the negative impacts before, during and after the event. Thus, a number of attempts have been made to develop models for the management of tourism crises and disasters. Key contributions are summarised in Fig. 1.

As noted above, Faulkner's (2001) framework was influential in the development of subsequent tourism crisis and disaster management models and has been applied to a number of tourism crises. These include the Bali night club bombings (Henderson, 2002), several crises affecting the Australian tourism sector (Prideaux, 2003) and the impact of SARS crisis on hotels in Singapore (Henderson & Ng, 2004). Moreover, a number of the models summarised in Fig. 1 build upon Faulkner's framework which, thus, may be considered to epitomise contemporary models of tourism crisis and disaster management.

Criticising the lack of theoretical and conceptual frameworks within the tourism crisis management field, Faulkner proposes a generic tourism disaster management framework in an attempt to provide guidance to tourism organisations. He identifies six phases in the disaster process or lifecycle, namely, pre-event, prodromal, emergency, intermediate, long-term (recovery) and resolution, with appropriate responses suggested for each phase. As a generic, linear and prescriptive approach, however, Faulkner's framework suffers a number of weaknesses, discussed in the following section, that apply equally to other, similar tourism crisis and disaster management models.

3. Contemporary crisis management models: Limitations

The purpose of crisis and disaster management models is, evidently, to provide guidance to destination and business managers and planners prior to, during and after a crisis event. In specific circumstances, this objective has been achieved. However, the extent to which these models more generally represent realistic, practical responses to crisis situations is limited by a number of factors.

3.1. The unpredictability of tourism crises and disasters

Pre-disaster preparedness is considered by many to be a vital ingredient of tourism crisis and disaster management. Being in a state of readiness can help reduce the impact of an event when it happens (Gonzalez-Herrero & Pratt, 1995; Heath, 1995). Consequently, preparation is a fundamental element of many contemporary tourism crisis management models, with an emphasis on not only planning but on staff training and organisational culture (Pforr & Hosie, 2007). Specifically, many models propose that risk assessments should be undertaken and that, on the basis of scenario analysis, contingency plans should be developed in accordance with those situations considered likely to occur. However, with exception of certain events, such as hurricanes in the Caribbean, tourism crises are unpredictable in their occurrence, evolution and impact. The identification of potential or predictable crises is problematic and, thus, scenario planning may be expensive, time consuming and, ultimately, fruitless (de Sausmarez, 2003). Indeed, it is suggested that contingency planning may lead to complacency and paralysis when an unexpected event occurs (Evans & Elphick, 2005). Thus, although broad categories of crisis, such as a terrorist attack, might be anticipated and established protocols need to be in place to deal with such events, the evidence suggests that risk assessment and scenario planning may ultimately be futile given the unpredictable nature of most crises.

3.2. Limitations of prescriptive/linear models

Many models are based on the assumption that a crisis passes through a number of consecutive phases, in essence following a lifecycle. In reality, however, crises and disasters often occur without warning and a destination can immediately enter the 'emergency' phase, by-passing the 'pre-event' and 'prodromal' phase and requiring a rapid reaction. Indeed, the alarm caused by the dramatic

Author(s)	Theme	Summary
Faulkner (2001)	Tourism disaster management framework	Identifies responses to each phase of the disaster process. A prescriptive approach with an emphasis on contingency planning, but does not account for organisational resources.
Henderson (2003)	Stages in airline crisis management	Compresses Faulkner's first three phases into one component, the 'event'. In so doing, recognises the difficulties posed by rigid planning.
Ritchie (2004)	A strategic and holistic management framework	Proposes responses to three main phases: prevention/planning, strategic implementation, evaluation/feedback, but emphasises risk analysis
De Sausmarez (2004)	Representation of the main steps in developing a national crisis management policy	Proactive approach involving the formation of a crisis plan which involves assessing value of the tourism sector, risk assessment, monitoring of indicators, and examining potential for regional cooperation.
Page et al (2006)	Potential crisis response model for an influenza pandemic	Consists of the actions and approaches to the pre-crisis, crisis and recovery stages, though emphasis on scenario planning.
Carlsen & Hughes (2007)	Crisis recovery marketing strategies	Compilation of guidelines from Beirman (2003) and issued from UNWTO (2005) and PATA (nd).
Hystad & Keller (2008)	Stakeholder roles within a destination tourism disaster management cycle	Suggests roles of emergency organisations, tourism organisations and tourism businesses throughout the stages of a disaster but implicitly assumes co-operation between stakeholders.
Tew et al. (2008)	Model of crisis management planning and implementation.	Incorporates public brand management and internal management with pre-crisis planning and response, though emphasis on pre-crisis planning

Fig. 1. Tourism crisis and disaster management models (Henderson, 2003).

suddenness of such events may lead to confusion and inappropriate decision making (Sellnow, Seeger, & Ulmer, 2002). Moreover, crises are also complex and chaotic in nature, with the situation continually evolving and changing. As noted by Farazmand (2009, p. 402) in a study of government reaction to Hurricane Katrina in 2005, 'crises scramble plans of action and surprise everyone in and out of the field, as the dynamics of crisis constantly change and unfold on daily and hourly basis, with unpredictable outcomes'. Thus, many crisis management models fail as they tend to offer 'a series of remedial steps' without appreciating the true complexity of the situation and the dynamic and complex network of relationships involved in the tourism system. In fact, such remedial steps may, in fact, be severely limiting in the case of a 'real' disaster. In a case study of a hotel chain affected by a food poisoning crisis, for example, Paraskevas (2006) found that the detailed crisis management plan that was in place was largely ineffective.

3.3. A 'one-size-fits-all' approach

As observed by Miller and Ritchie (2003) when applying Faulkner's model to the Foot and Mouth crisis in the UK, the

generic nature of the majority of tourism crisis models diminishes their capacity to directly relate to individual segments of the industry and the varying types of crises or disasters. Similarly, Zeng, Carter and de Lacy (2005) note how crises, such as human epidemics, animal epidemics, destructive weather conditions and other natural disasters, civil strife/violence, war or terrorism, all have different effects and recovery times and necessitate different recovery strategies, thus limiting the usefulness of one individual crisis model for all. Carlsen and Hughes (2007, p. 147) also observe that 'crises and disasters are variable in duration and scale. The flow-on and contagion effects depend very much upon the nature of the disaster (natural or man-made) and the corresponding change in public perception in response to media coverage and crisis communication.' In short, unique crises require a unique set of responses.

3.4. The cultural context

Not only are tourism crises variable, so too are the cultural contexts within which they occur. As Mistilis and Sheldon (2005, p. 11) observe, 'tourism is a multi-cultural industry, and when a

crisis occurs, the context differs by culture, organisational style and political structure'. Consequently, different approaches to crisis management will be evident in different cultural and geographic settings, thus limiting the applicability of models based on a particular worldview. For example, Pforr (2006) notes a preference for reactive as opposed to proactive management in South East Asian countries whilst de Sausmarez (2004) suggests that many Asian cultures are reluctant to admit to a crisis because of concerns over 'losing face', and that this reluctance can effect communication and information supply.

3.5. Realities of small businesses

Tourism crises that impact on destinations inevitably impact upon the multitude of small businesses that typically comprise the greatest proportion of the local tourism industry. Research has demonstrated that small tourism businesses possess neither the time nor resources to plan for crises (Cioccio & Michael, 2007). Moreover, Hystad and Keller (2008) found that many small businesses assumed that the responsibility for crisis planning and management lay elsewhere and, hence, their planning for crisis situations was non-existent. In other words, although the models presented in the literature may be of some value at the wider destination management level, they are of little relevance to the majority of local tourism businesses.

Beyond these specific limitations, however, perhaps the most significant challenge to contemporary tourism crisis management models is the argument, presented in the introduction to this paper, that the tourism system cannot be considered to be rational, predictable and stable. Rather, it may be thought of as a 'chaotic' system and, hence, best considered from a chaos theory perspective (McKercher, 1999; Zahra & Ryan, 2007). According to Faulkner and Russell (1997, p. 557), 'chaos describes a situation where a system is dislodged from its steady state condition by a triggering event which is as random and unpredictable as the outcome. It involves the regrouping of the elements of the system, from which a new order eventually emerges.' Evidently, a tourism crisis or disaster, itself unpredictable and 'chaotic', is one such triggering event and, therefore, as this paper now suggests, the management of crises is perhaps best considered from a chaos theory perspective.

4. Tourism crisis management and chaos theory

Simply stated, chaos theory 'proposes a broad set of loosely related theoretical and meta-theoretical orientations to the behaviour of complex non-linear systems' (Seeger, 2002, p. 329). Rejecting the Newtonian view that systems can be understood in terms of, or reduced to, their constituent elements and the predictable, linear relationships between those elements, chaos theory recognises the random, complex, unpredictable and dynamic nature of systems. However, although denying the predictability of systems, it does not suggest that they are inevitably random and disordered. Rather, it proposes that chaotic systems 'can self-organise and self-renew, with periods of order broken by sudden transformations whose direction has elements of chance and cannot be reversed' (Murphy, 1996, p. 96). In other words, chaotic systems, when viewed holistically and over time, demonstrate the ability to re-establish stability, structure and order (Seeger, 2002). As Levy (1994, p. 169) suggests, 'it is the promise of finding a fundamental order and structure behind complex events that probably explains the great interest chaos theory has generated in so many fields.'

Chaos theory embraces a number of concepts relevant to the understanding of and responses to tourism crises. These are

considered in detail elsewhere in the literature (Faulkner & Russell, 1997; Russell & Faulkner, 2004; Sellnow et al., 2002). However, a brief review here will inform an alternative, theory-based approach of tourism crisis management.

4.1. Edge of chaos

Instability and change are inherent characteristics of systems. Even if a system has enjoyed stability or equilibrium over a period of time, such equilibrium is tenuous. That is, there exists the ever-present danger of disruption. The system is always on the edge of chaos, when a trigger event may directly or indirectly induce a crisis. It is in this context that the so-called 'butterfly effect' is of relevance; an apparently trivial event may initiate a set events leading to a major crisis. The ash cloud resulting from the Eyjafjallajökull eruption in Iceland in 2010, for example, not only had a major impact on the global aviation industry, but caused significant disruption for individuals and businesses around the world dependent on international aviation (Guiver & Jain, 2011). Implicitly, therefore, systems will almost inevitably experience some form of trigger event which, in turn, implies that some kind of planning is wholly necessary.

According to Paraskevas (2006), organisations should strive to become resilient in the face of inevitable crises, whilst Levy (1994, p. 176) notes that 'long term forecasting is almost impossible for chaotic systems, and dramatic change can occur unexpectedly; as a result, flexibility and adaptiveness are essential for organisations to survive'. Others suggest that becoming a learning organisation, typically emphasised as part of the post-crisis reflective process (Blackman & Ritchie, 2007) is an essential ingredient of such adaptive management, more broadly described as 'the process of building resilience and coping with uncertainty through a continual process of experimenting, monitoring and social learning' (Farrell & Twining-Ward, 2003, p. 284).

The extent to which such organisational flexibility and resilience to change can be achieved at the destination level will inevitably vary from one context to another and may be determined by the nature of the destination (for example, the destination as a resort or wider region/country). Nevertheless, an organisational culture that expects and is responsive to change better reflects the unpredictability of crises and, thus, may be a more effective means of preparing for crises than scenario-planning. At the same time, the development of a strong destination brand, creating what is referred to in chaos theory as a 'lock-in effect' (that is, brand loyalty), may further enhance the resilience of a destination to crisis and disaster.

4.2. Bifurcation and cosmology

Bifurcation, according to Sellnow et al. (2002, p. 271) 'represents the flashpoints of change where a system's direction, character, and/or structure are fundamentally disrupted...Crisis events and behaviors...are often described in chaos theory as these points of system bifurcation.' Commensurate with Faulkner's emergency phase of a disaster lifecycle, it is at this moment that the system is thrown into chaos and disequilibrium, and the cosmology element of chaos theory becomes evident: 'A cosmology episode occurs when people suddenly and deeply feel that the universe is no longer a rational, orderly system. What makes such an incident so shattering is that both the sense of what is occurring and the means to rebuild that sense collapse together' (Weick, 1993, p. 634).

Key to a chaos theory perspective on crisis management is the ability to recognise the bifurcation stage for what it is and to be able to respond accordingly. According to Evans and Elphick (2005, p. 144), this is not the time for 'rushed decisions'; it is

better to focus on 'decisional, informational and communicational flows' and the key activity of crisis containment and communication flow. Sellnow et al. (2002, p. 274) concur, suggesting that truthfulness and accuracy is warranted as 'tenacious justifications' can be difficult to account for at a later stage. Similarly, Page, Yeoman, Munro, Connell, and Walker (2006) recommend that marketing activity is reduced or even suspended at this stage, as a continuation of normal marketing activities could be deemed insensitive and inappropriate; the situation has changed and demands a new approach.

4.3. Self-organisation and strange attractors

Self-organisation, one of the most provocative and controversial elements of chaos theory (Levy, 1994), is a 'natural process whereby order re-emerges out of a random and chaotic state' (Stewart, 1989, cited in Sellnow et al., 2002, p. 272), who further explain; 'through self-organisation, new forms, structures, procedures, hierarchies, and understanding emerge, giving a new form to the system, often at a higher level of order and complexity'.

Numerous examples exist of the ability of tourism to self-organise rapidly following a period of crisis, typically with no evidence of pre-planning for crisis management. As Wang (2008, p. 75) observes, 'the [tourism] industry has always managed to resume or exceed its former production values within a period of just one or two years'. However, self-organisation suggests that a return to normal is neither viable nor necessarily desirable. Bifurcation allows for the process of self-organisation and creativity which can bring improvements to individual businesses and the destination as a whole compared with its pre-crisis condition. At the same time, the concept of the 'strange attractor' points to techniques which may encourage order from chaos. Central to chaos theory is the idea that order will emerge from a chaotic state, but an 'island of stability' is needed in the prevailing chaos (Thietart & Forgues, 1995). This concept is noted by Sellnow et al. (2002) in the case of the Red River Valley flood in the United States, where the National Guard and the Federal Emergency Management agency brought an air of stability to a chaotic situation.

By providing communication platforms and encouraging co-operative relationships, managers themselves can become the 'strange attractors' which assist in bringing order from chaos and 'create the conditions for a new order to come' (Thietart & Forgues, 1995, p. 28). The key is to facilitate methods in which the system can work in unison towards its common goal of recovery. Sellnow et al. (2002) liken 'strange attractors' to the values, needs and assumptions that guide a social system towards relative stability following bifurcation, whilst Zahra and Ryan (2007, p. 855) explain them as being a 'common vision, sense of meaning, strategy or value system that drives people to achieve a common goal'.

At this stage, a number of responses to the crisis may be suggested. Effective and clear communication supports the role of managers as 'strange attractors', whilst Beirman (2003, p. 4) emphasises the need for 'urgent adaptation of marketing and operational policies to restore the confidence of employees, associated enterprises and consumers in the viability of the destination'. Such recovery marketing strategies can include reduced price vacations, value-added special offers, familiarisation trips for journalists and tour operators, and increased promotion to the domestic market (Beirman, 2003; Carlsen & Hughes, 2007). Equally, marketing activity can exploit any identified 'lock-in effect'. The self-organisation stage may also be an appropriate time for destination managers to seek government assistance or foreign aid. For example, de Sausmarez (2004, p. 168) suggests government measures may include 'incentives

to stimulate foreign investment, tax relief and extended credit to tourism businesses, increased funding to national tourism organisations, and the stimulation of domestic tourism in the absence of international visitors'.

As the recovery then proceeds, the importance of marketing and advertising continues. Ritchie (2009, p. 193) states that 'the main aim of the recovery marketing campaign is to reverse the negative destination image and increase tourist flows and demand' and suggests using such techniques as persuasive advertising, partnership marketing, trade shows and special events. Collaboration between public and private sector organisations and even regional alliances can help with expensive recovery marketing campaigns (Ritchie, 2009). Beirman (2003, p. 14) further reiterates this point as he explains how organisations such as 'airlines, hoteliers, resorts, museums and wholesale tour operators' who 'all depend on the successful selling and marketing of destinations which form all or part of their programs' initiate joint marketing campaigns in the recovery stage as it is palpably in all their interests to do so.

Thus, the above elements of chaos theory (edge of chaos, the butterfly effect, bifurcation and cosmology, self-organisation, strange attractors and the lock-in effect) represent events or opportunities within a chaotic tourism system (that is, during a tourism crisis) that may be responded to in the ways described above. The extent to which this represents a viable approach to the management of crises is the focus of the remainder of this paper. Specifically, the following sections identify the impacts and responses to the 2009 Mexican AH1N1 influenza, revealing the limitations of traditional crisis management models and exploring correspondence between the responses to the crisis and the proposed chaos theory approach. The case study is based upon research undertaken in Mexico during the summer and autumn of 2010. The principal method employed was semi-structured interviews with representatives of both public and private tourism organisations in Mexico, as well as two tourism academics. Specifically, representatives of key tourism organisations were identified and invited to participate in the research. A total of 12 interviews were completed, four with respondents from public sector bodies and three from the private sector, two with representatives of tourism trade bodies, two with tourism academics and one with a tourism consultant. All interviews were recorded, transcribed (and in the case of two, translated from the original Spanish) and thematically analysed. Additional data were collected from local on-line documentation relevant to the crisis, newspaper archives and other printed material provided by interview respondents.

5. The Mexican AH1N1 influenza crisis

'Aha... this was a surprise' (Sánchez, 2010).

Although the origins of the Mexican tourism can be traced back to the 1920s, it was government-led initiatives from the late 1960s, particularly the creation of five new resorts (Cancun, Ixtapa, Los Cabos, Loreto and Huatulco), that transformed the country into a major tourism destination (Brenner & Aguilar, 2002). International arrivals tripled between 1970 and 1990, reaching almost 20 million by 1998 (Clancy, 2001) and, despite a more variable performance from 2000 onwards, the number of tourists visiting Mexico continued to increase. Arrivals in 2008 (22.6 million) were 5.9% higher than the previous year, and 2009 started similarly.

However, on the 23rd April 2009, the Mexican Health Ministry announced that there had recently been an outbreak of severe respiratory infections in the country which had proved fatal in a number of cases. Almost immediately, the situation began to

dominate the world's media and, reflecting the impact of previous health scares on tourist flows (Lepp & Gibson, 2003), international visitor numbers to Mexico decreased rapidly with the news of the influenza outbreak. Several countries advised against travel to Mexico and many sent aircraft to repatriate tourists:

The initial impacts on the industry were of shock, as mainly the international side of the tourism industry went into paralysis... everything went down; the passengers, the hotels, the rooms. Everything in tourism went down (Pérez, 2010).

Within days of the announcement of the outbreak, numerous flights, holidays and cruise ship arrivals had been cancelled and, by 2nd May, it was reported that many hotels in Mexico were experiencing occupancy levels of between just 10% and 30%. The worst affected area was Cancun. In the first two weeks of May, hotel occupancy fell to 21.4% and 22.9% respectively, in comparison to the normal levels of 67.1% and 72.6% for the time of year (CEPAL, 2010). Many hotels were forced to close temporarily, resulting in numerous job losses.

When the first case of H1N1 was detected in Mexico, people stopped travelling to this country. We were having, in Cancun and Playa Del Carmen, one of the best years ever. January and February had been fantastic, despite the world financial crisis. Suddenly, when H1N1 began to be known as 'Mexican Influenza' everything changed. We passed from 90% occupancy to 10-15%. Many hotels, bars and restaurants had to close. Many flights were cancelled. It was the worst scenario since 9/11 (Dagri, 2011).

Other areas were less badly affected but, overall, international arrivals in Mexico in May 2009 were 32% lower than the previous year and, as shown in Table 1, it was October before international tourism returned to normal levels. During the period of the crisis, arrivals fell by a total of 1.552 million, costing the Mexican economy an estimated US\$1.1 billion (roughly 10% of annual international tourism receipts).

In an attempt to contain the spread of the virus, the immediate response to the AH1N1 outbreak on the part of the government was to close restaurants, bars, nightclubs and other recreational spaces in Mexico City, along with 175 museums and archaeological sites around the country (Monterrubio, 2010a). This 'shut-down' lasted five days during the first week of May. At the same time, SECTUR (Mexican Ministry of Tourism) announced the creation of an evaluation committee in conjunction with CPTM (Mexican Tourism Board) and FONATUR (National Trust Fund for Tourism Development) to monitor the impacts of the crisis on tourism and to develop a reactive strategy. In the meantime, all marketing activity was suspended.

On 8th May, CPTM released a three phase tourism crisis management plan (summarised below in Fig. 2). This focused, in the first emergency phase, on communication amongst all stakeholders. Normal international marketing activities were to be suspended and, during the second phase, attention focused on the domestic market, along with the formation or strengthening of strategic alliances with existing or potential partners and allies. A major international marketing campaign was planned for when the crisis 'officially' ended, focusing primarily on current, loyal

customers, chiefly from North America, but also on potential niche markets such as China, India, Russia and Brazil.

Consequently, on 25th May, Mexican President Felipe Calderon publicly announced the 'Vive Mexico' campaign, slightly different from the 'vas por Mexico' (Go Mexico!) campaign suggested in the management plan (Fig. 2). The aim of 'Vive Mexico' was to promote domestic tourism, seeking to stimulate a resurgence of national pride and to encourage Mexicans to travel within their own country. Various Mexican and international celebrities were invited to act as ambassadors for the country, and key stakeholders in the Mexican tourism industry were encouraged to work together under the same 'Vive Mexico' slogan, offering attractive deals to stimulate interior tourism flow. This was followed, on 17th June, by the launch of an international promotional campaign ('Welcome Back') in key source markets throughout the US and Canada.

By the end of May 2009, there was evidence that international tourists were beginning to return to the country and, as noted above, normal levels of tourist activity were achieved by October. In 2010, Mexico attracted a total of 22.6 million international tourists, the same as the 2008 figure. Thus, despite the initial severity of the crisis, tourism in Mexico proved to be resilient, returning to previous levels relatively rapidly. However, two questions must now be considered. Firstly, would contemporary tourism crisis management models have provided an effective framework for planning for and responding to the AH1N1 crisis in Mexico? And, secondly, does the case of the Mexican crisis suggest that the proposed chaos theory-based perspective offers a more realistic or appropriate approach to tourism crisis management?

6. The Mexican AH1N1 crisis: Limitations of contemporary models

As argued earlier in this paper (Section 3), contemporary (theoretical) tourism crisis management models display a number of weaknesses that may serve to limit their relevance to the reality of tourism crises and disasters. Such weaknesses are clearly evident in the context of the Mexican AH1N1 crisis and its impacts on the tourism sector.

6.1. The unpredictability of tourism crises and disasters

Whilst contemporary models propose the use of scenario and contingency planning, it was suggested that the unpredictability of crises and disasters militates against the value of such planning. In Mexico, given the country's susceptibility to natural disasters, contingency plans do indeed exist for events such as earthquakes and hurricanes. The research revealed that not only does SECTUR meet with individual state tourism organisations each year to discuss crisis management issues but also CPTM maintains an array of contingency communication plans and procedures in co-ordination with its public relations agencies in Mexico, North America and Europe. However, the research also revealed that tourism organisations in the Mexican public and private tourism did not have a specific health crisis management

Table 1
Monthly international arrivals in Mexico, 2008 and 2009 ('000).
Source: Adapted from CESOP (2010, p. 6).

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2008	1798	1743	2062	1864	1909	2040	2148	1773	1451	1502	1948	2398
2009	2055	1932	2050	1869	1289	1537	1914	1669	1360	1590	1765	2424

<p>Phase 1 – Immediate: Managing the crisis (no control)</p>	<ol style="list-style-type: none"> 1. Provide accurate information in co-ordination with the Federal government. 2. Information to be provided through official channels 3. Postpone international marketing 4. Provide daily reports and information <p>Target domestic market</p> <ol style="list-style-type: none"> 1. New national marketing campaign: ‘Vas por Mexico’ 2. Co-ordinate communication with tourism industry 3. Tailor made destination campaigns
<p>Phase 2 – June/July: Strengthen alliances; control, but not total</p>	<p>Alliances (North America)</p> <ol style="list-style-type: none"> 1. Strengthen strategic alliances. Co-ordinate the product being offered and communication with the market. 2. Witness testimony campaign. Use opinion leaders. Utilise social media. 3. Public relations campaign. Use traditional methods and virtual methods. Work in co-ordination with Federal Government, Ministry of Foreign Affairs, Ministry of Health.
<p>Phase 3 – July and onwards: High impacts international campaign, to be undertaken once the WHO announce that Mexico is a safe destination</p>	<p>Institutional campaign for the North American, National, European and Latin American markets.</p> <p>Tourism Board:</p> <ol style="list-style-type: none"> 1. National TV, cable, radio, businesses 2. Emphasis on Internet <p>Allies: trading partners, tour operators, hotels, virtual travel agents, airlines:</p> <ol style="list-style-type: none"> 1. Intensify public relations and familiarisation trips 2. Satellite media tours 3. Live press events in US and Canada 4. Universities (returning students to US) <p>Development of business plan to motivate consumers to return to Mexico</p>

Fig. 2. CPTM tourism crisis management plan.
 Source: Adapted from CPTM document: Betzano (2010) translated from Spanish original.

strategy to deal with the AH1N1 influenza crisis when it emerged in April 2009. It was simply not expected:

We have plans for natural disasters because we have experienced natural disasters, hurricanes particularly...but as far as health issues are concerned there was no plan...unfortunately it was the first experience we had had. It was the first situation we had had like that...serious...it couldn't have been predicted. (Sánchez, 2010).

I know that the AH1N1 took the tourism authorities off guard, as everybody else in Mexico, and I also know that they didn't have a plan at the national or local level to cope with such a crisis (Molinar, 2010).

In short, despite recent health-related tourism crises, such as the 2003 SARS outbreak, such an event was not envisaged in Mexico.

6.2. Limitations of prescriptive/linear models

Many contemporary models are based on the assumption that crises follow a phased lifecycle, and thus propose a linear set of prescriptive responses. However, it was argued that not only do crises frequent by-pass the so-called pre-event and prodromal phases but also, on a wider scale, the crisis may be at different stages and having varying impacts at different locations. That is, the situation can change unexpectedly and evolve at differing rates and outcomes at distinct, separate destinations within the same country.

In Mexico, the AH1N1 crisis emerged rapidly and unexpectedly at the ‘emergency phase’; there was no warning and, hence, no opportunity as proposed by conventional management models to prepare for it. Moreover, the country offers many distinct locations and experiences for domestic and international tourists. Consequently, it became apparent that individual destinations would be affected in different ways and at different levels by the crisis, thereby necessitating quite different responses and tactics. For example:

Cultural destinations such as Zacatecas and San Miguel have a lower number of visitors from outside and so were least affected. Destinations that receive local tourism were not so badly affected. The worst was Cancun because it is the number one destination for receiving international tourists (Pérez, 2010).

In other words, a linear, prescriptive approach was unsuited to the unfolding crisis in Mexico. Whereas as Cancun, the country's principal international resort, suffered a catastrophic fall in arrivals and depended upon the ‘Welcome Back’ international campaign to recover. Acapulco, which depends mainly on domestic visitors from Mexico City, experienced a more limited and short-lived downturn that was relieved by the domestic ‘Vive Mexico’ campaign.

6.3. A ‘one-size-fits-all’ approach

Crises and disasters are unique in location, form and evolution whilst Zeng et al. (2005, p. 318) suggest that ‘where the crisis includes a perception of risk, especially health, more

comprehensive strategies appear necessary. This includes management of the media, especially images displayed during the crises'. Thus, the AH1N1 crisis demanded a different set of responses to those following previous natural disasters in Mexico. For example, in comparison to the Hurricane Wilma disaster in 2005, which caused significant damage in Cancun,

...the Influenza crisis was different and required a very different strategy... The influenza crisis was more of a social crisis, and created a very difficult set of circumstances because you don't know how people are going to react or what will happen (Sánchez, 2010).

More specifically, one hotel group in Cancun developed a 'Flu Free Guarantee': 'we guaranteed that our Resorts were flu free. And we offered a free week at our Resorts for 3 consecutive years if a lab stated that a guest contracted the flu 14 days after his departure from one of our Hotels' (Dagri, 2011). In other words, intensive promotional campaigns were not required after Hurricane Wilma in 2005, particularly a domestic campaign such as 'Vive Mexico'; nor was it necessary for hotels in Cancun and surrounding areas to offer special 'guarantees' to their customers. The impacts of the two crises on tourists' perceptions differed considerably and each situation required a quite different response.

The 'one-size-fits-all' approach is also unable to account for the complexity and scope of the Mexican tourism industry. The research demonstrated that very different levels of organisation and competency exist within separate tourism destinations in Mexico.

The levels of organisation or readiness...widely differ among Mexican tourism organisations, according to the importance that the tourism industry has in the regional economy. You will find highly organised destinations like Cancun, the Mayan Riviera, Puerto Vallarta, Los Cabos, Guadalajara or Monterrey against destinations with secondary importance, like Manzanillo, Mazatlan, Ixtapa, Huatulco, etc., with diminished organisation capabilities (Trejo, 2010).

Thus, some destinations within Mexico are better equipped than to deal with a tourism crisis, whilst levels of management training and preparedness differ widely within the country. Moreover, many destinations appear to be seriously lacking in financial resources and staff capability:

Generally speaking, most of the tourism authorities in Mexico are improvised, without the knowledge, experience or preparation required to perform in an appropriate way as destination marketing organisation managers (Trejo, 2010).

6.4. The cultural context

Contemporary tourism crisis management models do not take into account the different cultural contexts in which a crisis may occur and which may influence the nature of response to that crisis. As Monterrubio (2010a, 2010b) asks, 'You can develop, say, a great model that may work in first world countries, but how can you be sure that they will work in developing countries where situations are different, people are different, and governments are different?'

According to Monterrubio, many Mexicans are sceptical of political issues as a result of past political controversies; moreover, their cynicism has been heightened by certain government actions during the influenza crisis, such as the five days shut-down and the release of scientifically unconfirmed information to the media. Therefore, it could be argued that SECTUR would, in all likelihood, have great difficulty convincing a future domestic

audience of the viability of tourism disaster management planning.

6.5. Realities of small business

The observation in Section 3.5 above that small businesses possess neither the resources nor the inclination to plan or prepare for crises was self-evident in the case of the Mexican AH1N1 crisis. Indeed, as previously noted, many such businesses were obliged to close down, albeit for just five days, although newspaper reports indicated that many small businesses did not survive the crisis. The research also revealed that as many as 40% of small and medium tourism businesses in Mexico are unregistered and, hence, received none of the financial aid offered by the government:

There was some government funding for enterprises...but I have to say that not all enterprises were helped or supported...there are certain companies that are not registered, particularly small companies, so how were they supposed to be helped by the government? There were hotel promotions, but only 4 star, 5 star hotels...but what about all those small enterprises that are the majority of tourism enterprises in this country? (Rojas, 2010).

To summarise, then, the case of the AH1N1 influenza outbreak in Mexico, and its subsequent transformation into a crisis for the tourism sector, demonstrates that such crises are often completely unpredictable, do not necessarily follow the suggested crisis 'life-cycle', and require different responses according to the specific character of the crisis and individual destinations. It also demonstrates how the uneven distribution of resources leads to diminished capabilities, how cultural issues change the complexion of the situation, and the fact that small businesses, which comprise a major part of the tourism industry, are usually not able or inclined to take a pro-active approach and are often left without any form of assistance. In short, the limitations of contemporary crisis management models are very much manifested in this particular case. As one respondent observed:

I think in a way they [tourism crisis management models] suggest things work automatically; if I do 'Z' then this happens...things do not work like that. I think they are quite simplistic in that they believe that things will automatically react in a certain way, in a certain direction...without taking into account that every crisis is unique different... (Betzano, 2010).

Therefore, the following section considers the extent to which the Mexican tourism crisis reflected the tenets of chaos theory and in particular, whether responses to the crisis correspond with, or may have been enhanced by, the chaos theory approach proposed in this paper.

7. The Mexican AH1N1 crisis: A chaos theory perspective

7.1. Edge of chaos

According to chaos theory, systems exist on the edge of chaos. Periods of stability are interrupted by an unpredictable and, frequently, apparently inconsequential trigger event which tips the system into chaos (the butterfly effect) before it subsequently self-organises back into stability. For Mexico, the trigger event was, of course, the outbreak of AH1N1 influenza. Its origins remain contested (Monterrubio, 2010a, 2010b), but it brought about a severe crisis for the Mexican tourism industry.

Recognising the inevitability of chaos/crisis, it is suggested that organisations should promote a culture conducive to flexibility, innovation, learning and change. However, the research

indicated that the principal public sector tourism bodies in Mexico do not display such characteristics. For example, one respondent stated:

I don't think that they are very flexible or innovative. I believe that they have a model of tourism operation and development that has been working and has been good for them, but maybe not for the whole country. The lack of flexibility and innovation has settled the Mexican tourism industry into stagnation (Molinar, 2010).

In other words, the Mexican tourism authorities began the crisis at a disadvantage. Not being flexible or adaptive, they were consequently unprepared for the sudden change brought about by the Influenza crisis and this may have delayed or affected their response:

Despite the knowledge of the SARS crisis impact, official communication and speeches stated that the Mexican travel industry would not be affected. There was complete inaction for over two weeks...it took over one month for the then Minister of Tourism... to travel to New York and have a press conference explaining the situation in Mexico (Trejo, 2010).

Regarding the specific marketing activities discussed in Section 2 above, it is evident that although plans were in place to respond to a natural disaster, no such plan existed for a health crisis. This perhaps led to controversial decisions made during the initial stages of the crisis, specifically the release of unconfirmed information to the media and the abrupt five-day nationwide shutdown. Nevertheless, other marketing strategies suggested above had been undertaken. Respondents from SECTUR and CPTM were quick to point out tourism product diversification strategies as outlined in the tourism development plan, whilst others noted the strong brand that Mexico enjoys as a destination: 'We have a strong brand, particularly in Cancun. People love it here' (Dagri, 2011). Undoubtedly, the country benefited from its strong brand in rebuilding tourism following the crisis.

Conversely, the press coverage during the crisis, particularly amongst economic and political media within Mexico, provided a negative and disproportionate version of events whilst, perhaps inevitably, Mexican tourism was significantly affected by negative reporting on a global scale:

There are [media] strategies, that's why there are media professionals...but in general I personally tend to think that the media is a reflection of society, what people like.... It's difficult because they have not only their own agenda... so from this point of view it's very hard. It can be done but it's hard...(Cardenas, 2010).

7.2. Bifurcation/cosmology

It is evident that the Mexican tourism system was severely affected by the sudden AH1N1 influenza crisis: 'The initial impacts on the industry were of shock; mainly the international side of the tourism industry went into paralysis in about a week or two' (Garcia, 2010). Not only did the crisis represent bifurcation in the tourism sector, but also cosmology episodes were evident in the nation's population as widespread confusion and fear spread rapidly due to the unknown potential of the virus: 'For a time everybody was very scared. It was like the end of Mexico' (Sánchez, 2010).

The confusion and fear in Mexico at this stage may have contributed towards several hastily made government actions, in particular the five-day nationwide 'shut-down' and the release of

scientifically unconfirmed information to the media, referred to above:

The figures were increasing and increasing in the media every single minute...the government should have controlled the media...they were reporting figures without any scientific confirmation (Monterrubio, 2010b).

During the bifurcation/cosmology stage, it is suggested that marketing activities should be either reduced or completely suspended, whilst a strategy of clear, truthful communication with stakeholders and the media should be upheld. The research demonstrated that, at least initially, all international marketing was immediately suspended and domestic marketing was reduced: 'It was not the time to show images of Mexico. We had to wait until people knew that the situation was improving' (Garcia, 2010). However, the 'Vive Mexico' campaign was put into effect very quickly. The general consensus amongst the respondents was that this campaign was perhaps the most impressive and effective measure put into place during the influenza crisis. Thus, a total suspension of marketing may not always be appropriate.

The research suggested that the information provided by the government at this stage was inaccurate and alarmist, perhaps contributing to the severity of the crisis: '...it seems that the way the global and national media reported alarmist information contributed significantly to a feeling of panic amongst potential and actual travellers to and inside Mexico. Additionally, the unconfirmed data reported by the federal government and the implemented measures based on such data enhanced panic among travellers' (Monterrubio, 2010a, p. 13).

7.3. Self-organisation and strange attractors

A key theme within chaos theory is the ability of chaotic system to self-organise into 'new communicative structures and relationships, understandings and procedures' (Sellnow et al., 2002, p. 274). The diversity and complexity of the tourism sector in Mexico is such that a detailed analysis is impossible. However, the fact that the majority of businesses/organisations survived the crisis (a notable exception being the airline Mexicana, the collapse of which was undoubtedly contributed to by the AH1N1 crisis) and the sector returned to relative normality within five months repeated a pattern of self-organisation experienced elsewhere following tourism crises. As one business owner observed:

It was a matter of looking at things in perspective and realising this month [May] was a loss but we could work on marketing, developing strategies, and improving our products and staff, so that when tourism started we could be ahead of competition in quality. We couldn't rely on government help so it was a matter of getting ourselves organised. I think most companies had this outlook. It has certainly made us more competitive. (Johnson, 2011).

However, this self-organisation was undoubtedly facilitated by the 'Vive México' campaign, which acted as a 'strange attractor', or a means of harnessing a 'common vision, sense of meaning, strategy or value system that drives people to achieve a common goal.' (Zahra & Ryan, 2007, p. 855).

During the self-organisation stage, the chaos theory-based management approach proposes marketing strategies focused on product diversification (for new markets), plus a focus on domestic customers and alliances, joint marketing campaigns and targeted offers to exploit the 'lock-in' effect. Certainly, diversification was explicit within SECTUR's 2007 tourism plan (SECTUR, 2006), whilst the 'Vive México' campaign, introduced during the

bifurcation stage, successfully stimulated the domestic market with tailor-made destination campaigns and special offers, such reduced-price vacations and two-for-one offers. At the same time, SECTUR and the CPTM joined with Mexicana airlines to promote 'Vive México' and other alliances were also undertaken with tour operators, hotels (in particular, the Grupo Posadas chain) and so on. Moreover, the North American promotional campaign was begun, assisted by various strategic alliances with other government ministries (health, finance, agriculture, communication and transport, education, foreign affairs) consulates, embassies (particularly the Mexican embassy in Washington) and the foreign offices of the CPTM and Promexico (a government agency designed to strengthen Mexico's economic position). The CPTM intensified their public relations campaign, particularly in the US and Canada, with a number of press events and familiarisation trips for journalists.

As part of the recovery process, SECTUR and the CPTM focused on new customers and niche markets, in particular those of Russia, Brazil, India and China, and changes were introduced to immigration policy in order to minimise visa waiting times. Both the domestic 'Vive México' campaign and the international 'Welcome Back' campaign were designed to motivate new customers as well as those who already frequently travel within and to Mexico.

In addition, several government initiatives were also announced, including: a new Tourism Act which would enhance the Ministry of Tourism's power and influence; more resources to be given to individual states, with an emphasis on cultural and nature tourism; diversification of tourism, with special emphasis on medical tourism; and, a new development in Sinaloa, the largest tourism project in Mexico in 25 years. In short, the marketing and communication strategies proposed in the chaos theory approach were largely reflected in the responses of the Mexican tourism authorities.

7.4. Reflection

Finally, as do other contemporary tourism crisis management models, the chaos theory approach proposes a period of reflection and learning. The implications of the AN1N1 crisis are neatly summarised by one respondent:

Hurricane Wilma gave us many experiences to learn from, and this influenza crisis has given us many, many more experiences. Communication between institutions was tested in this crisis. We must know who the main players are during a crisis, the main people who can give information 24 hours a day. This was not always available during the influenza crisis. Different segments of tourism – hotels, restaurants, small businesses, big businesses – must work in a more coordinated way through their chambers and organisations to react faster and to help each other. (Sánchez, 2010).

8. Conclusion

The purpose of this paper was to consider the extent to which a chaos theory-based perspective on crisis management might represent a more viable framework for destinations to respond to crises. More specifically, drawing on research into the evolution of and responses to the impacts on the tourism sector of the 2009 Mexican AH1N1 influenza outbreak, it set out to identify whether the proposed limitations of contemporary tourism crisis management models are manifested in practice and whether an alternative approach, following the tenets of chaos theory, was

reflected in or might have facilitated the response of the Mexican tourism authorities to the crisis.

Although further research, exploring the relevance of chaos theory to other tourism crises, is required to validate the outcomes of this research, two broad conclusions can be drawn here. Firstly, the suggested limitations of contemporary models were clearly evident in the Mexican case, calling into question their potential effectiveness as a crisis management plan. In particular, their generic, linear and prescriptive approach was appropriate to neither the unpredictability of the crisis, its rapid evolution, scale and impact, nor the political/cultural context within which it occurred. Secondly, the research suggested that the unfolding and consequences of the AH1N1 outbreak reflected the tenets of chaos theory and, moreover, the responses of the Mexican tourism authorities largely mirrored the actions proposed in the alternative, chaos theory-based approach to crisis management. Indeed, only two divergences were identified. Primarily, the organisations comprising the Mexican tourism authorities could clearly not claim to have embraced a flexible, adaptive and learning culture; as organisations, they were culturally unprepared for the crisis. More positively, however, they did implement the 'Vive México' strategy at an earlier stage than the model proposes, perhaps stimulating as well as supporting the 'self-organisation' phase of the crisis.

Of course, the marketing and communication strategies proposed in this alternative approach are by no means novel or innovative. They are suggested throughout the tourism crisis management literature and, thus, traditional models and a chaos theory perspective are not mutually exclusive. What is novel, however, is the locating of a tourism crisis within chaos theory, and the research suggests that recognising the tourism system as potentially chaotic – that prescriptive, rigid management plans attempt to manage the unmanageable – presents destination managers with a more valid framework for anticipating and responding appropriately to crises.

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