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Revisiting the 2001 Foot and Mouth Tourism Crisis from a Complexity Theory Perspective

Abstract

The crisis that occurred in the British tourism industry due to the outbreak of Foot and Mouth disease in 2001 was adopted as a case study for an investigation with two specific objectives. The first of these was to challenge contemporary tourism crisis and disaster management models by identifying several of their weaknesses and examining the extent to which they would have limited the management of the crisis had they been utilised. The second objective was to consider whether complexity theory would have provided a more appropriate framework from which to manage the crisis. A qualitative approach was employed, with data being collected by means of semi-structured interviews with key players from the industry and business owners from affected areas, and also from documental evidence. The investigation served to demonstrate the limitations of contemporary models, the presence of complexity theory elements, and concluded that, in theory, a complexity theory approach to the management of this crisis would have improved the response. The study serves to offer insight into the viability of using complexity theory as a means of crisis preparation and response. It supports the notion that a destination which adopts a 'learning destination' type of structure (thus incorporating the tenets associated with complexity theory) would be better prepared for crisis and disasters and capable of a much improved response.

Keywords: *Tourism crisis, Foot and mouth disease, Complexity theory, Learning destination, Tourism crisis models.*

JEL Clasifications: H12; L83; O20

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1. Introduction

A successful destination must continue to build upon its economic, social, cultural, political, technological and environmental strengths (Ritchie & Crouch, 2003). It is also important that it is able to provide a safe environment for visitors (Volo, 2007); however, this is problematic for any destination, as tourism is vulnerable to numerous manifestations of crises and disasters which cause significant economic, social and environmental disruption for the destination concerned. While the tourism crisis is not a new phenomenon (Pforr & Hosie, 2007), the continued spread of tourism, along with the increased interconnectivity of the world in general, has meant that 'shocks' of one form or another are now more common. Furthermore, the growth in twenty four-hour news coverage and social media has brought about a situation whereby virtually every incident is reported, serving to fuel negative perceptions amongst potential tourists. Recognising the growing number of incidents, Faulkner (2001) presented the tourism disaster management framework, a mixture of crisis management theory and disaster management strategy, which aimed to motivate tourism managers to prepare for such crises in advance and provide a stage-by-stage guide to the management of such events. Nonetheless, despite the successful application of the model to Australia's Katherine Flood (Faulkner & Vikulov, 2001), other attempts to apply the model have exposed various limitations (Henderson, 2003; Henderson & Ng, 2004; Miller & Ritchie, 2003; Prideaux, 2003; Scott et al., 2007).

Speakman and Sharpley (2012) later proposed a number of weaknesses that ultimately compromise the suitability of contemporary tourism crisis management models in general and suggested complexity theory as an alternative framework for managing tourism crises. A subsequent case study of the 2009 Mexican H1N1 Influenza crisis supported these claims, leading the authors to conclude that management strategies based on complexity theory would have provided a more viable response to the circumstances of that particular crisis, although they stress that more research is required before such a conclusion can be validated and generalised.

Recently, Gurtner (2016) criticised the manner in which contemporary models neglect the social, economic and environmental complexity of a destination, which demonstrates that contemporary tourism crisis management discourse still remains dominated by the somewhat limited theoretical rationale of models which originate from the organisational management literature. Consequently, Gurtner's (2016) confirmation that the situation has not changed serves as a timely reminder to once again contemplate these issues and resume the academic debate. As such, the overall aim of the study is to identify whether the limitations associated with contemporary tourism crisis and disaster are demonstrated in practice and to consider if a complexity-based perspective on tourism crisis and disaster management represents a more viable framework for managers of tourism destinations preparing for and responding to crises.

In order to achieve such aims, the 2001 Foot and Mouth outbreak in the UK was chosen as the focus for this study. This event, provoked by the British Government's response to what they deemed first and foremost an agricultural crisis, ultimately led to a tourism crisis of startling complexity, the uniqueness of which provides a particularly interesting case study in a setting that geographically and culturally contrasts with Speakman & Sharpley's (2001) research in Mexico. Consequently, it offers a fresh perspective from which to explore the following specific research objectives:

- (i) Consider the limitations of contemporary tourism crisis management models within the contextual setting of the crisis.
- (ii) Seek evidence relating to the appearance of complexity theory.
- (iii) Contemplate whether complexity theory would have provided a viable framework for the management of this particular crisis.

2. Literature Review

A comprehensive review relating tourism crisis management planning and the theory and concepts from which they draw from is beyond the scope of this paper; one is available in Speakman (2014). There were sporadic publications in the field of tourism crisis and disaster management throughout the 80's and 90's (Arbel & Bagur, 1980; Cassedy, 1991; Pizam & Mansfield, 1996), but it was the coincidental convergence of Faulkner's (2001) seminal publication and an upsurge in tourism crises, such as the Foot and Mouth crisis, the terrorist attacks in the US, the Bali bombings and the Indian Ocean Tsunami, that provoked a sudden interest in the topic and an increase in publications. Various scholars applied Faulkner's model (see Henderson, 2002a; Miller & Ritchie, 2003; Peters & Pikeemaat, 2005; Prideaux, 2003; Scott et al., 2007) while others constructed alternate, but fundamentally similar, models (Armstrong, 2008; Hystad & Keller, 2008; Ritchie, 2004). Despite the undoubted influence of Faulkner's (2001) model it has only been successfully applied to two natural tourism disasters (Faulkner & Vikulov, 2001; Peters & Pikeemaat, 2005), whilst weaknesses were evident when attempting to employ it on larger, more complex crises, thus prompting the need to specifically identify the several limitations listed below.

2.1 Limitations of contemporary tourism crisis and disaster models

The uniqueness of a tourism destination – The first weakness lies in the manner in which the models borrow various concepts from business, or organisational, crisis management theory, suggesting that there is a parallel between a business organisation and a tourism destination when, in reality, the two entities are very different. A business organisation is generally homogenous, whereas a tourism destination involves many competing agents involved in a myriad of complex relationships. Thus, directives which depend upon a collective strategy, acceptable in a business organisation, may be inappropriate in a destination where stakeholders often view the situation from opposing perspectives.

The unpredictable manner in which crises and disasters occur, develop and impact upon a destination – It is highly unlikely that the risk assessments, scenario planning, and contingency exercises proposed by Faulkner (2001) could be sufficiently precise to predict the exact type, path and consequences of a crisis. Indeed, this could potentially lead to complacency as organisations relax in the assumption that they are prepared (Evans & Elphick, 2005). Later, they are taken by surprise when an unidentified situation occurs, or a situation fails to develop as they would expect, resulting in 'paralysis' and inaction which may, of course, impede recovery, as noted by Paraskevas (2006).

The limitations of linear, prescriptive models – The models tend to be rigid and overly prescriptive, presuming that each crisis or disaster passes through a number of linear phases, in essence following a lifecycle, thereby offering the opportunity to present a step-by-step guide to crisis management. Problems may emerge, however, when a crisis evolves in an erratic manner or does not follow an expected pattern, leaving managers confused and unsure of how to continue.

One-size-fits-all approach – The models propose a broad, generic, orthodox framework that fails to consider the differences in size and scope of crises and disasters and also the uniqueness of each destination. In reality, complex crises and disasters require an exclusive, sophisticated response appropriate to particular sets of circumstances and the place in which they are occurring.

Coordination issues – A pre-requisite of Faulkner's (2001) framework is the need for coordination, consultation and commitment; unfortunately, however, coordination problems are often apparent during tourism crises, thus severely compromising the response effort. In other words, it is assumed that the coordination efforts between stakeholders will fall into place without much difficulty but, in reality, this is rarely the case.

2.2 Complexity theory

Various commentators regard complexity theory as a useful means of approaching the study of tourism (Baggio, 2008; Farrell & Twining-Ward, 2003; Faulkner & Russell, 1997; McDonald, 2009; McKercher, 1999; Stevenson et al., 2009; Zahra & Ryan, 2007). It allows for a destination to be viewed as a complex adaptive system, a system which is complex, naturally chaotic but able to adapt to change as and when it occurs. Complex adaptive systems contain a number of elements which will be briefly described below that explain how the system functions. These same elements also provide an alternative perspective for understanding the causes of crises and disasters and the path that they take, suggesting concepts which provide ideas to diminish the negative features and encourage the positive aspects which are often apparent following such a situation. Despite its apparent potential, research has not been forthcoming and, consequently, the application of complexity theory to tourism remains limited.

Edge of chaos – Complex adaptive systems which exist in a state between stability and chaos are said to be at their most innovative and productive. It likewise follows that a tourism destination (itself being a complex adaptive system) would be more competitive and resilient if it is situated in this state, known as the edge of chaos. A tourism destination can attempt to enter the edge of chaos zone by becoming a learning tourism destination, which can be achieved if the destination management organisation, government agencies and industry associations act as intermediaries to facilitate the generation, sharing, storage and processing of knowledge among the destination's stakeholders so that the destination ultimately consists of a myriad of interconnected businesses which exhibit the characteristics associated with creativity and robustness.

Butterfly effect – This concept emphasises the unpredictability of a complex system, as small changes can prove a catalyst to significant change, often negative, but also positive. Tourism crises and disasters are often the result of butterfly effects emanating from a destination's internal or external environment and their existence reinforces the view that a destination needs to be prepared for the seemingly inevitable.

Bifurcation and cosmology – Bifurcation refers to the point when the system changes, often as a result of the butterfly effect. This change could result in the demise of the system or it could lead to an improved level of performance. Crises are points of system bifurcation and they are regularly accompanied by episodes of cosmology, which refers to the panic which is often evident among the system's agents at this stage. A destination that is able to cultivate an innate 'crisis culture' is much more adept at adapting to bifurcation and minimising episodes of cosmology.

Self-organisation, emergence and strange attractors – The ability of a system to emerge from bifurcation depends on its capacity for self-organisation, which occurs when a system's agents self-organise so as to facilitate novel procedures that enable the system to adapt to its new environment. The process is known as emergence and it is evident in the appearance of new improved configurations to the system which have been developed without outside interference. The force which enables this to happen is called a strange attractor. Strange attractors characterise the notion of order within chaos, as they 'pull' the agents in a particular direction, to lead the system away from chaos to a new emergent state of being.

3. Methodology

3.1 Data collection and sampling

A qualitative case study research method is adopted, as this approach is particularly suited to the exploration of phenomena in their real life context. The case study was constructed by use of the information gained from semi-structured interviews and document analysis. Interview participants were selected by purposive sampling, with potential participants identified by

noting the names mentioned in official documents, publications and academic articles and attempting to contact them by email or telephone. Due to the amount of time that had passed between the crisis in 2001 and this investigation in 2013 it was moderately difficult to find participants; that is, many of those deemed suitable had retired or were similarly unavailable. Nonetheless, several key figures were willing to be interviewed. Meanwhile, a large number of tourism business owners in affected areas were identified from an internet search. They were also contacted by email and telephone and asked if they would like to participate in the study. Many failed to respond or they politely declined due to the fact that they had not been in business in 2001; however, crucially, several did agree to an interview. In total, ten interviews were conducted at various locations throughout the United Kingdom during January and February of 2013.

3.2 Questionnaire development

The interview questions were designed specifically for each individual with the objective being to gather information regarding the causes and impacts of the crisis and the subsequent response and recovery and to answer the research questions presented in the introduction. Table 1 below demonstrates the process by showing how several question samples were prepared with a specific objective in mind, such as obtaining information regarding the limitations of contemporary models or to identify complexity theory elements.

Table 1: Research questions and their objectives.

Objective of research question	Research questions
To assess whether the limitations were manifested during the FMD crisis, in this case the edge of chaos and co-ordination.	<ol style="list-style-type: none"> 1. It has been suggested that the government appeared to favour the agricultural industry over the tourism industry, evident by the enforced closure of the countryside and by the amount of funding given to the agricultural industry compared to the tourism industry. Did this severely limit the tourism recovery effort in Cumbria? 2. Were there problems of coordination with other agencies involved in the crisis, such as MAFF or the health services?
To assess whether elements of complexity theory could be identified in the FMD crisis, in this case the butterfly effect and self-organisation.	<ol style="list-style-type: none"> 1. Did the government also play a part in creating a crisis for the tourism industry by closing down the countryside? 2. What action did you take when the crisis was at its peak to ensure the survival of your business?
To assess whether a complexity theory based perspective offers a more appropriate approach to the management of the FMD crisis than the use of contemporary models.	<ol style="list-style-type: none"> 1. It has been suggested that the best means to prepare a destination for a crisis is by attempting to 'transform' the destination into a 'learning tourism area' or 'region'. The idea is

	to form partnerships, networks and clusters to nurture innovativeness, autonomy and flexibility which ultimately can shape a 'mind-set' and a certain resilience which caters for planned and unplanned change (crises and disasters) as a natural organisational process. Can this be done in real life or will underlying issues such as competition, mistrust and lethargy throw an inevitable spanner in the works?
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3.3 Data analysis

Thematic patterns were identified from the data. Occasionally, this involved the procedure of allocating data to pre-set codes, while on occasions it involved the recognition of a new element or concept vital to the research, a search for comparisons and the assignment of new, emergent 'grounded' categories and themes. The same process was replicated numerous times as 'core' categories were established and others discarded. The established themes were consequently used to fulfil the research objectives and answer the research questions.

Meanwhile, a number of documents were used as a means of supporting the primary data gained in the interviews. Some were official documents available on the internet, such as The Select Committee of Culture, Media and Sport's Fourth Report (2001) and Anderson's Foot and Mouth Disease, 2001: Lessons to be Learned Inquiry (2002), while others were internal documents offered during interview such as the BTA's FMD PR Response and Recovery Programme' (2002). These were analysed using the same process as for the interviews.

4. Results

4.1 The Case Study: The Foot and Mouth Tourism Crisis

On the evening of the 20th February 2001, the British Government's Ministry of Agriculture, Fisheries and Food (MAFF) confirmed that there had been an outbreak of Foot and Mouth disease in various locations throughout the country (Butler & Airey, 2005). In an attempt to control the disease and limit the effects on the agricultural industry, the government embarked upon a stringent disease eradication policy which included restrictions on livestock movement and the culling of infected and suspected infected livestock; however, two measures in particular- the disposal of carcasses by incineration rather than burial and the closure of countryside footpaths and bridleways- described as 'myopic' (Williams & Ferguson, 2006: 160), and 'kneejerk' (Butler & Airey, 2005: 2002)- served to transform an agricultural crisis into a tourism crisis as domestic and international tourists avoided countryside areas. Commentators have subsequently alluded that this reaction was influenced by an underlying political agenda related to the upcoming general election (Miller & Ritchie, 2003; Sharpley & Craven, 2001) and the government's relationship with the National Farmers' Union (McConnell & Stark, 2002: 680).

Two weeks after the initial outbreak, the English Tourism Council (ETC) contacted the government to inform them of the negative impact these measures were having on the tourism industry. Unfortunately, the initial reaction was one of indifference and the crisis now affecting the tourism industry was not acknowledged until the Rural Task Force compiled a report that highlighted the issue (Anderson, 2002). Now realising that the economic and social impacts befalling the tourism industry could no longer be ignored, the government radically

shifted its strategy and policy was directed towards re-attracting visitors to the countryside. The ETC, despite being a new organisation and having limited resources, was given responsibility for the domestic recovery, while the more experienced British Tourism Authority (BTA) was to provide the international response. Unfortunately, neither organisation had a suitable crisis management plan, which ultimately affected recovery efforts (Ritchie et al., 2003), but at least initial funding of £3.8 million for the ETC (of which £1.4 million was passed to the regional tourist boards) and £2.2 million for the BTA meant that the respective recovery campaigns could begin.

Following receipt of the initial funding, the BTA prepared a bid for a further £22 million, of which they were awarded £12 million in May and £20 million a few months later following the terrorist attacks in the USA. Meanwhile, the ETC submitted a funding application for £35.5 million, yet the funding was refused, a contentious decision when considering that the agricultural industry received £898 million from the Department for Environment, Food and Rural Affairs (DEFRA) (Butler and Airey, 2005) and when comparing the respective contributions to the British economy of the tourism industry and the agricultural industry (Sharpley & Craven, 2001), of which tourism is far the higher.

Therefore, despite provoking the tourism crisis by their original crisis response, the funding awarded to the tourism organisations, particularly the ETC, and also the business support measures offered by the government, described as ‘confusing and insubstantial’ by Sharpley and Craven (2001: 533), suggested that the government did not value the tourism industry as it did the agricultural industry.

Along with the conflicting messages emanating from the government, communication from tourism organisations, local authorities and the agricultural industry also served to confuse rather than illuminate potential tourists. For example, Ritchie et al., (2003) note that in one region the district council and the county council were offering contradictory advice regarding countryside accessibility. Meanwhile, one particularly damaging episode served to thwart the BTA’s recovery strategy:

“It’s calming down a bit and we can breathe, or whatever, and Tony Blair goes on walkabout in a kind of biological warfare space suit; I mean that picture went global and it told the world that it was obviously incredibly dangerous to walk outside in the UK...” (Participant 4, personal communication, London, February 1, 2013).

The FMD outbreak developed into a very complex crisis for the tourism industry. The fact that the disease had already spread throughout the country before the initial diagnosis was made meant that it evolved at differing rates in different places, thus hampering marketing responses.

“It’s a completely moving thing, it’s incredibly difficult and just when you thought something was dying down you would then hear there’s another outbreak somewhere else.” (Participant 4, personal communication, London, February 1, 2013).

The epidemic was eventually brought under control with the last reported case occurring on the 30th of September, 2001, by which time the terrorist attacks in the USA had provoked another tourism crisis for the industry. The FMD outbreak came at a huge cost to the tourism industry with losses of between £2.7 and £3.2 billion due to postponed or cancelled trips, while losses to the agricultural industry were estimated to be £600 million (Franks et al., 2003).

In summary, what began as a farming crisis rapidly turned into a tourism crisis, primarily as a result of the actions of the government and the reaction of the media. The situation was particularly exacerbated by the fragile nature of a British tourism industry lacking in structure and guidance and the complex nature of a crisis which trod a long unpredictable path in a

geographically large area. Over-shadowed by a more powerful agricultural industry, the tourism authorities struggled to make themselves heard, and it was only following the recommendations of the Rural Task Force that the government modified its policy and began to assist the tourism industry. Even so, the government was criticised for not providing sufficient funding to the ETC and adequate assistance to tourism businesses.

The following section provides the results which arose from the research, demonstrating that all of the limitations were apparent to some degree. It will establish that many of the models' presumptions are fragile; that is, in a real-life situation, such as the FMD crisis, various suppositions appear to be unrealistic. For example, the presumed homogenous response does not cater for differences in stakeholder perspective, apparent when various business owners reacted differently to the crisis depending on how it affected them personally. Meanwhile, the element of unpredictability (possibly *the* major weakness of contemporary theory which encompasses three limitations) was conspicuous throughout, which would have undermined attempts to implement contingency plans, follow the guidelines of a rigid plan, and, furthermore, make use of models which assume to cater for all. Also, contemporary models tend to presume that coordination is a bygone conclusion, yet the FMD crisis demonstrates numerous coordination issues.

Meanwhile, the section will also lay claim to the manifestation of complexity theory elements throughout the crisis. For example, the theorised resilience to be gained when a destination is situated at the 'edge of chaos' is noticeable by its very absence, as the British tourism industry was exposed as being fragmented and structurally limited; bifurcation occurred in the tourism industry due to the Government's reaction to the agricultural crisis; episodes of cosmology were evident during bifurcation; strange attractors were apparent; and, finally, there was evidence of widespread, independently led self-organisation and emergence.

4.2 Limitations of contemporary tourism crisis and disaster management models and frameworks

Use of organisational crisis management theory – It cannot be assumed that all the actors within a tourism destination will readily embrace calls for mutual support during a crisis as it may not be in their interest to do so. This was evident during the FMD crisis, as tourism businesses within the same sector and sharing the same location were often affected differently. Some individual businesses saw an increase in business during the FMD crisis, and were consequently less enthusiastic about achieving rapid recovery than other businesses who were suffering severe financial impacts.

"We had a very busy foot and mouth period. The authorities booked all our rooms, en-block, and sent a succession of herdsmen and vets assistants to stay with us. The rooms were paid for even if they were unused. Please can we have another epidemic?" (Participant 5, personal communication, Kendal, 5 February, 2013).

While it was in the interest of this hotelier that his region did eventually make a full recovery, it was initially advantageous to him in a financial sense that the recovery was relatively protracted. On the contrary, other tourism businesses in the vicinity were suffering negative impacts and in need of a rapid recovery. Therefore, the problem lies in how to manage this array of conflicting stakeholders, who are in many respects interconnected and mutually dependent but also have varying interests depending on the situation.

The unpredictability of crises and disasters – It was not the occurrence of FMD that was the unpredictable feature of the 2001 crisis; rather, it was the detrimental impact that it had on the tourism industry. That is, FMD had always been considered an agricultural matter; therefore, a potential outbreak was not considered by the tourism authorities as a specific threat to the industry.

“When the media started talking about the outbreak of foot and mouth, I think everybody, including the tourism sector, thought of it as an agricultural issue ...the expectation was that it might be a couple of weeks to isolate the problem so let the scientists take care of it.” (Participant 3, personal communication, Kenilworth, January 23, 2013).

Perhaps the most unpredictable nature of the situation was the extent to which the government disregarded the potential impacts of their eradication policy on tourism. For example, the Northumberland Report, published following the 1967 outbreak of FMD, had recommended that carcasses be buried as opposed to incineration, and so it could have been reasonably predicted that the government would follow this advice. Instead, however, it was decided to burn the carcasses, which served to damage the ‘appeal and image’ of Britain as a tourist destination (Miller & Ritchie, 2003: 161).

Moreover, it is not only the arrival of a crisis or disaster that is unpredictable, but also open to irregularity is the course, or path of the crisis. This was evident during the FMD crisis as different stages of the crisis lifecycle were happening at the same time in different locations.

“Just when you thought something was dying down you would then hear there’s another outbreak somewhere else.” (Participant 4, personal communication, London, February 1, 2013).

The limitations of prescriptive models – Contemporary tourism crisis management models tend to presume that a crisis passes through several, sequential phases to form what is called a crisis lifecycle. The first phase is labelled the ‘pre-event phase’, in which action can be taken and plans formed to mitigate the effects of potential, future crises. However, there was little evidence of crisis management planning in the British tourism industry before the outbreak.

“There was no formal structure anywhere in tourism. When I say there was no crisis plan I mean it, it was dark ages, you know, when I think about it now it really was the dark ages.” (Participant 3, personal communication, Kenilworth, January 23, 2013).

Even though there was still arguably time for the ETC and the BTA to prepare a response within the prodromal phase (when a crisis appears probable) neither organisation did. In fact, according to Ritchie et al., (2003: 209): ‘Both the BTA and industry at the national and local level only accepted the implications of the outbreak at the emergency stage and reacted only due to negative publicity’.

At the same time, because of the nature of the crisis and the severity of this particular outbreak, different regions appeared to be either totally unaffected, lingering in the prodromal state, suffering an emergency, or even entering the recovery stage all at the same time (Miller & Ritchie, 2003), thus making it difficult to identify in which stage the crisis was situated. Consequently, a national DMO, such as the BTA or the ETC would have had great difficulty in following and administering the step-by-step approach of contemporary models and frameworks.

One size fits all approach – According to one participant:

“The complexity came about because of the variable impact around the country.” (Participant 3, personal communication, Kenilworth, January 23, 2013).

This was due to the tourism authorities having to contend with a crisis which covered a wide geographical stretching from Scotland to the South of England. Some individual regions, such as Cumbria and Devon, suffered particularly damaging impacts, while other areas were barely affected and may even have benefitted from displaced trade. London, meanwhile, suffered from a significant drop in international tourists, despite not experiencing one case of FMD.

As has been noted, even individual businesses within affected areas were impacted differently. For example, one participant commented:

"I think it's difficult to generalise because certain aspects of the industry bounced back relatively quickly; they all of a sudden had hotels full of DEFRA officials or army officials, all sorts of people trying to resolve the problem, so basically they were booked up for weeks on end making seriously good money so certain sectors or certain places seemed to get a benefit instantly, perversely, and others perhaps further afield, such as a farm based tourism attraction, were absolutely left high and dry" (Participant 6, personal communication, Staveley, January 21, 2013).

The nature of the epidemic also provided the added complication of regular new cases which would exacerbate the difficulties of responding to a crisis which had no definitive end.

"Every day there seemed to be something different... There was a time when we thought, you know, are we ever going to get on top of this?" (Participant 4, personal communication, London, February 1, 2013).

Coordination issues – Several interagency groups were set up to improve coordination during the FMD crisis. These included the Rural Economy Task Force, the FMD Tourism Summit, the ETC Tourism Cabinet and the BTA British Tourism Development Committee. Nonetheless, despite the establishment of these groups, coordination problems were a major issue during the FMD tourism crisis.

"No matter how much you communicated it was never enough. It was also at every level; the individual businesses were critical of the regional tourist boards, the regional tourist boards were critical of the ETC and BTA, the government departments felt that the BTA and ETC were not going quickly enough. So yes, frustrating time, coordination was the massive crisis." (Participant 3, personal communication, Kenilworth, January 23, 2013).

For example, there was little coordination within the tourism industry. Lyon & Worton (2007) note how the tourism industry struggled to speak with a cohesive voice during the FMD crisis while Ritchie et al., (2003) criticise the initial lack of coordination between local and regional level agencies. Moreover, one participant referred to competition between the ETC and the BTA and the individual regions as a factor which impeded coordination:

"There are egos involved and this slightly new upstart organisation [the ETC] was getting a lot of air time and it started to be a bit of an issue with the BTA who were kind of 'what do you mean you're doing all these interviews- that's our job'; just a slight bit of that and so you started to get almost a slight sense of competition." (Participant 3, personal communication, Kenilworth, January 23, 2013).

The inability to speak with a unified voice and the lack of coordination and competition were weaknesses which had been present before the crisis began; the FMD crisis simply served to expose these weaknesses and make apparent the need for cultural change within the industry. The different balancing of interests within the various groups affected by and responding to the crisis unsurprisingly led to significant difficulties relating to coordination and cooperation. Each group had its own agenda and understandably sought to further its own cause. While Faulkner (2001) and particularly Ritchie (2004) are aware of this, the frameworks that they offer fail to address the problem.

4.3 Elements of complexity theory in the Foot and Mouth crisis

Edge of Chaos – The British tourism industry of 2001 did not exist within the edge of chaos zone associated with the organisational management literature. That is, the positive concepts that are generated by existing in the edge of chaos were not evident in the British tourism

industry leading up to the FMD outbreak due to the lack of cohesion in the tourism industry on a local and national scale. Instead, worrying signs of stagnation manifested in a recent reduction in international and domestic visitor numbers point towards the industry being in a somewhat delicate state and not at all prepared for the oncoming crisis. Consequently, when the FMD outbreak emerged, the industry was slow to react and generally provided an unsatisfactory response.

Butterfly effect – Miller & Ritchie (2003) regard the origin of the agricultural crisis (at a pig finishing unit at Burnside Farm in Northumberland (DEFRA, 2002)) as the triggering event of the tourism crisis. However, it is suggested that, in this instance, the trigger for the actual tourism crisis was the government reaction to the outbreak, rather than the arrival of FMD itself.

Bifurcation and cosmology – The agricultural industry, the government and MAFF were in a state of bifurcation (crisis) following the outbreak of FMD, as described in the Anderson Inquiry: ‘A sense of panic appeared, communications became erratic and orderly processes started to breakdown.’ (Anderson, 2002: 1). MAFF were given responsibility to deal with the crisis, yet Williams & Ferguson (2005: 163) describe the situation as one of ‘confusion and disorder’. Furthermore, the decision to limit countryside access and incinerate carcasses was due to cosmology episodes triggered by the crisis.

“The government over-reacted and I think there is a thing around crisis where people will over-manage it or try to, you know, and they made some false moves.”

(Participant 4, personal communication, London, February 1, 2013).

Governmental decisions thus triggered the bifurcation for the tourism industry which led to further episodes of cosmology specifically related to the tourism industry, ranging from the ETC and BTA to smaller, individual businesses, as stakeholders found themselves in an unfamiliar and uncertain position. In the words of one participant:

“I think it’s fair to describe it as chaos...after a while I became aware of some people showing signs of stress and so on and bursting into tears, that kind of thing.” Participant 3, personal communication, Kenilworth, January 23, 2013).

Self-organisation, emergence and strange attractors – It has been suggested that if the destination functions as an evolving complex adaptive system then it naturally facilitates the process of self-organisation. This can be achieved by transforming the destination, in this case Britain, into a tourism learning area or region. As this had not been done in February 2001, it could be argued that the conditions were not in place to encourage forms of self-organisation. Nonetheless, there were numerous examples of the concept of self-organisation during the FMD crisis. For example:

- (i) The Wales Tourism Board affected a novel marketing strategy:

“I came up with this idea that we would run live ads- we would run for the first time ever live ads from Wales, featuring tourists in Wales... We had 3 satellite film crews going around Wales, filming visitors in Wales that day. We sent pictures by satellite to a studio in London. It had never been done before, it was a world first in terms of filming adds in the day and broadcasting them that evening...because it was so innovative and different it gave the industry a real confidence boost...” (Participant 9, personal communication, Cardiff, January 25, 2013).

- (ii) Business owners socially discussed their plight on a regular basis:

“There’s a lot of us born, bred and work here and we are all in the same industry, particularly with the hotels and we all socialise together, and obviously we talked about it a lot and we had a chat about how to do things, yes. But that was only friends in the same industry; there was no real government steerage.” (Participant 8, personal communication, Grasmere, February 19, 2013).

Many tourism businesses underwent a process of self-organisation on an almost individual basis and there was evidence of small- and medium-sized tourism organisations spontaneously adopting community wide strategies of self-organisation. Furthermore, knowledge and information were often being transmitted on a social basis, which will have assisted the process. This can be linked to the concept of strange attractor as businesses managed themselves towards the common goal of destination recovery. On a broader level, the FMD tourism crisis also acted as a strange attractor in that it served to pull the British tourism industry away from possible stagnation to an improved state of being. Overall, the resilience generated by self-organisation resulted in the majority of individual businesses and the British tourism industry in general emerging from the crisis in an improved form, which corresponds with the complexity principle of emergence and opportunity arising from crisis.

"I think the whole communication structure, the setting up of the TIER [tourism industry emergency response group] group, the lessons we learned about the need to integrate between the national, the regional and the businesses; that was very useful. As an industry we forged some connections with government departments which we hadn't previously had and so I think we got a better hearing. Even though the government machine was critical of the tourism industry at least we started talking to them and things like being recognised as being able to speak for a large number of small businesses, all those things were positives that came out of it. On the ground in the regions I think the good regional tourist boards got a much better relationship with their individual businesses." (Participant 3, personal communication, Kenilworth, January 23, 2013).

It demonstrated that the system (the British tourism destination) was capable of organising and re-emerging to a certain extent without outside interference; nonetheless, it also suggests that had a specific structure originally been in place to facilitate the self-organisation and emergence process then recovery would have been more rapid and effective.

5. Conclusion, Implications and Limitations

The limitations of contemporary tourism crisis models were found to be present during the FMD crisis. Firstly, differences in stakeholder preferences served to demonstrate the unsuitability of models which fail to cater for the basic differences between a business organisation and a tourism destination. Meanwhile, the ability to consider the element of unpredictability would have no doubt caused problematic issues due to the particularly unexpected nature of the government reaction and the erratic manner in which the crisis evolved. Those managers attempting to follow the strict guidelines of a contemporary tourism plan would have been confused by the changeable path which the crisis took, while fears of deviating from the plan could have stifled the innovation and self-organisation evident during the crisis. Meanwhile, these models tend to take coordination for granted yet the case study noted numerous coordination difficulties, suggesting that unless the destination is specifically structured to facilitate the processes of coordination and collaboration then it will remain a major drawback to tourism crisis management plans.

The elements of complexity theory were also found to be present. For instance, it was noted that the British tourism industry of 2001 did not exist within the edge of chaos. The absence of this element served to demonstrate its importance as the industry's lack of innovation and cohesiveness resulted in a structurally fragile destination that was unprepared to deal with an event on the scale of the FMD crisis.

It was suggested that the butterfly effect for the FMD tourism crisis came in the form of the government's disease eradication measures, rather than the origin of the disease which, instead, was the butterfly effect for the agricultural crisis. This is because the government

measures were the actual trigger for the tourism crisis; they were the catalyst which culminated in the FMD outbreak not only causing a crisis for the agricultural industry but also for the tourism industry.

Meanwhile, the FMD outbreak led to bifurcation for the agricultural industry, while the subsequent government reaction (arguably provoked by cosmology) provoked a state of bifurcation and resultant cosmology episodes for the tourism industry.

On a positive note, it was clear that examples of self-organisation did occur throughout the tourism industry without outside intervention, as various tourism organisations and businesses instinctively adopted methods of self-organisation which led towards emergence. Meanwhile, the common goal of crisis recovery can be referred to as the strange attractor which pulled the destination in crisis towards recovery, just as the crisis itself was a strange attractor which pulled a stagnant destination towards crisis, but ultimately towards emergence and an improved state of being.

It was, therefore, verified that the limitations of contemporary models and complexity theory elements introduced were manifested during the case studies. This leads to the final objective, which was to establish whether complexity theory would have provided a viable framework for the management of the FMD tourism crisis.

This can be considered by envisaging how the British tourism industry might have coped with the FMD outbreak *had* it been structured as a learning tourism region, thus naturally incorporating complexity principles into its overall daily operations and in its crisis response.

Firstly, a national Destination Management Organisation (DMO) would have been previously established to transform the British tourism industry into a fully functioning complex adaptive system. The focus would have been on transforming Britain into a learning destination by adopting policies that attempt to foster the learning and adaptation processes advocated by Schianetz et al., (2007).

As a result of this initiative, Britain's major destinations would have been transformed into learning regions (or tourism cluster). Furthermore, the DMO would also have synchronised inter-destination communication and collaboration so that not only is each major destination considered a learning region but the country as a whole functions as though it is one whole learning destination; as such 'it follows that together they form a co-evolving supra-system that creates and learns its way into the future' (Stacey, 1996: 10).

In the specific context of tourism crisis and disaster management, each destination would have established a number of teams made up of stakeholders – 'heterogeneous teams of diverse people with sufficient mutual respect that they maintain dense interaction with one another' (Weick, 1988: 313). For example, loosely following McMillan's (2003) concept of a fractal web, each destination would have a risk team whose role would be to assess hazards from both the internal and external environment and to determine the extent and implications of any perceived menace. A media team would harness a good relationship with the media, a learning team would initiate activities related to innovative crisis management strategies and an experiences team would reflect on issues learned from past crises and how this knowledge can be used in the future. Crucially, the knowledge gained from these exercises would form a loose plan which could be stored on databases and manuals accessible to all throughout the industry, in accordance with Mistilis & Sheldon (2005) and Racherla & Hu (2009), ready to be disseminated at the first sign of crisis. In view of the limitations associated with prescriptive plans and employing a one size fits all strategy, the loose plan simply details responsibilities, such as listing the members of the crisis project teams, and includes contact details from government departments and emergency organisations. As has been established, detailed, prescriptive planning can be counter-productive, although past crisis experiences will have been considered as an ingredient of the crisis learning activities which have been taking place. Essentially, the conditions will have been harnessed in each destination and the

country as a whole to allow 'the agents to self-organize at local level according to the particular conditions of the crisis' (Paraskevas, 2006: 903).

Local and global knowledge collected from the environment is transmitted throughout the tourism system by means of formal and informal systems which ensures that all stakeholders are informed about what is happening and are able to find relevant information. This assists the process of rapid communication throughout the industry even when developments are occurring at a fast, unpredictable rate, which would help to reduce incidences of cosmology and confusion as guidance, support and information are readily available at all times. Businesses are encouraged to collaborate in order to find solutions to their particular problems, working autonomously under general principles to self-organise and discover novel resolutions. The principles, which could be, for example, innovation, flexibility, adaptability, knowledge sharing and learning, function as the strange attractors which pull not just individual businesses, but the whole destination towards emergence.

Therefore, it is proposed if the British tourism industry been structured and operating in this way prior to the arrival of FMD, then the overall response to the crisis would have been improved. Importantly, a 'crisis culture' would have evolved as a result of the set of beliefs and attitudes instilled into the destination and through regular inter-regional conventions and workshops which discuss crisis and disaster issues. The adoption of this crisis culture would have changed the manner in which Britain's tourism organisations and enterprises perceived crises and disasters. Consequently, the delayed reaction of the tourism authorities to the onset of the FMD crisis would have been avoided and a suitable crisis strategy would have been employed much earlier. Also, the cosmology episodes which were apparent during the emergency phase of the crisis would simply not have appeared, as the tourism organisations would have recognised bifurcation for what it is and responded to it in an assured manner. Meanwhile, even though self-organisation, strange attractors and emergence were manifested in the crisis, the situation would have been improved upon if the destination had been operating as a complex adaptive system on the edge of chaos, as it would have provided the environment for organisations and enterprises to form a collaborative and coordinated response guided by a common sense of purpose.

Of course, care must be taken before expressing the conclusion that a complexity theory based approach to tourism crisis management provides a dependable solution to tourism crises in general. There are theoretical and practical arguments against complexity theory which deter many academics from adopting it (Speakman, 2016) and, so far, there is little evidence of the approach being successfully applied to tourism. While this paper adds to the evidence in favour of a complexity theory approach to tourism crisis management, further research is vital to improve understanding of this complex, but potentially illuminating, theoretical perspective.

Nonetheless, this paper, along with Speakman & Sharpley's (2012) investigation into the H1N1 Influenza crisis, has demonstrated the existence of complexity theory elements in tourism destinations and in crisis situations and has also determined the factors that would limit the application of contemporary models, concluding that if these particular destinations (Britain and Mexico) had been operating as learning destinations at the time of their respective crises, incorporating the tenets of complexity theory, then the crisis response would, in theory, have been improved.

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