

The Construction of Festival Spatial Order: A Complex Adaptive Systems Perspective to Improve Festival Organization Adaptive Capacity

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Abstract: This paper contributes to the understanding process of construction of festival spatial order and adaptive capacity of festival organizations over time. Taking the Guangzhou International Light Festival (GZILF) as an example, and combining with the theory of complex adaptive systems (CAS), we point out that the festival is a complex adaptive system. Through the collection of Weibo data and interviews with relevant persons in charge of festival organizers (government and enterprises), we specifically elaborate on the problems and order characteristics of the festival space at different stages, as well as the adaptive behaviors adopted by the festival organizers at each development stage. From the emergence of the problems of festival spatial order to outbreak, and then the rational construction of festival spatial order, the results show the adaptability of the festival organizers has gradually improved over time. Although speculative, these ideas are ground in observation and research, and this paper may contribute to broaden the discussion on the complex system and provide insight into the sustainable development of festivals.

1. Introduction

The pursuit of order and truth is an instinct of the human spirit [1]. Hayek elaborated on the idea of order construction in his famous book *Law, Legislation and Freedom*. He criticized Francis Bacon, Thomas Hobbs, Jeremy Bentham, John Austin's rationalist constructivism, and evolutionary rationalism represented by Bernard Mandeville, Montesquieu, David Hume, Adam Ferguson, and Adam Smith, and proposed two sources of order: a made order and a grown order. The made order is an exogenous order or arrangement or may describe as construction, while the grown order is referred to as a self-generating or endogenous order and it is commonly described as a spontaneous order [2]. There are many constructive orders in contemporary society, for example, the festival as a planned event [3], which is a purposeful design or conscious organizational behavior based on group rationality, is a constructive order formed by people through design, guidance, and the establishment of rules. Therefore, it provides a research perspective to study the construction process of the festival spatial order.

Festivals play an essential role in tourism destinations including attracting tourists, contributing to place marketing, and fill the void in the tourism off-season[4]. Festivals are important topic in tourism research [5-8]. Studies have proved how festivals may stimulate economic development [9-11], may improve destination image [12-15], and may raise cultural awareness and national identity [16-18]. As a complex social phenomenon, at once in rich significance and fully embodied practices, it requires various ways to accommodate the multi-faceted nature of the festival [19]. Nevertheless, festival research has usually adopted a reductionist approach, without considering the festival as a complex phenomenon [20]. Getz argues that the planning and management of the festival include many stakeholders such as the government, enterprises, participants, volunteers, media, sponsors, residents, etc. [3], which is an overall, comprehensive, and policy-oriented system project. As far as festival space is concerned, it often involves the allocation of urban space resource elements, such as transportation, accommodation, catering, leisure, entertainment, etc., which disrupts local residents' existing order of production and life as well as causes many complex problems during the festival. Therefore, it needs a systematic approach to analyze the complexity of the festival system and understand the logic of constructing the order of festival space.

The Complex Adaptive System (CAS) theory, which emerged at the end of the 20th century, puts forward the viewpoint of adaptability based on the science of complex systems [21], emphasizing the adaptability of agents promoting the complexity of the system [22]. The insight is used in this paper to conceptualize the festival as a complex system that has the potential to be adaptive [23]. The capacity to adapt is an essential attribute to develop such a method to thrive with the continuous changeable context e.g. epidemics COVID-19, natural disasters, economic fluctuations, tourist's behavior, and many other factors that affect how festival organizers construct the spatial order [24]. Adaptation of the festival organizers can be understood as the process of changing the structure and function of the system as a means to deal with the changing circumstance and to improve the order of the festival space [25]. The underlying idea is that the adaptive capacity of festival organizers contributes to the festival system to avoid chaos and/or conflicts and develop in order and sustainable way.

In recent years, the theory of complex adaptive theory has been brought into tourism research by some scholars, which means to explore the adaptation of the tourism areas [23-29]. Whereas the theory is widely applied in evolutionary biology [30,31], language[32,33], economic development [34,35], as well as urban planning [36,37], it has not been paid much attention to the field of tourism [25], especially in festivals. The theory of a complex adaptive system can help to further theorize the mechanisms of the construction of festival spatial order, to improve the adaptive capacity of the festival organization in times of change.

Thus, to address the knowledge gap, this paper adopts a complex adaptive system perspective as the approach to construct order so that to examine the adaptive capacity of festival organizers over time. To achieve this goal, we first define that a festival is an actual complex adaptive system, describing how complexity science can be used to explain the connection with the festival spatial order by festival organizers and their adaptive capacity. Next, the study case and data collection are delineated. We then prove that the continuous improvement of the adaptability of the organizers in the process of constructing the festival spatial order over time. Finally, we put forward four methods and suggestions for the issues of festival spatial order construction related to improving festival organization adaptability.

2. A Complexity Theory Perspective on Festival System

2.1. Festival as the Complex Adaptive System

The core idea of CAS theory is that a complex adaptive system is composed of interacting agents described by rules who have adaptability, which means these agents can adapt to the circumstances by continuously learning and changing their behavior as experience accumulates [21]. In CAS environment, any given adaptive agent consists of other adaptive agents, so that the effort at the adaptation of any agent is adapting other adaptive agents [21]. Thus, the driving force of the evolution of a complex system comes from the adaptability of each agent. Furthermore, Holland proposes seven basic characteristics in common CAS, they are aggregation, nonlinearity flows, diversity, tagging, internal model, and building blocks. The first four are the properties and the latter three are mechanisms in CAS [21].

A system consists of many interrelated elements, agents, sectors, and their actions that are tied closely to each other's [38]. Getz and Page [3] recognize that the scope of event design relates to the environment, catering, content, production, service, setting, consumables, theme, and program, and it needs interdisciplinary theories to take full account of the complex festival landscape. Røling and Pedersen [39] point out that the festival comprises interaction with various members, such as diverse industries, numerous actors, multiple stakeholders, different programs, special contexts, et.al. Similarly, Larson [40] argues that festival management involves marketing, finance, and composing the program. From anthropology, Frost [19] also sees festivals as complex, multiple, and dynamic. Although festival appears to be a complex topic, there is relatively small and disparate research on this subject [41].

Thus, according to the basic characteristics of the CAS theory, this paper theoretically considers the festival as a complex adaptive system formed by multiple interacting adaptive agents. The complexity of the festival system can be divided into festival attractions (various kinds of festivals, e.g. music festivals, traditional folk customs, World Expos, Olympics, etc.), agent system (different stakeholders, such as governments, companies, participants, residents, media, sponsors, volunteers, non-governmental organizations, etc.), service facility subsystem (transportation, catering, accommodation, services, etc.), and external environment subsystem (involving natural, social, cultural, and marketing environment, etc.) (Figure 1) [22]. Festival attractions are the leading system of the festival system, as the agent system exchanges information, energy, and materials with the festival attractions, service facility subsystem, and external environment subsystem are to promote the development of the festival system.

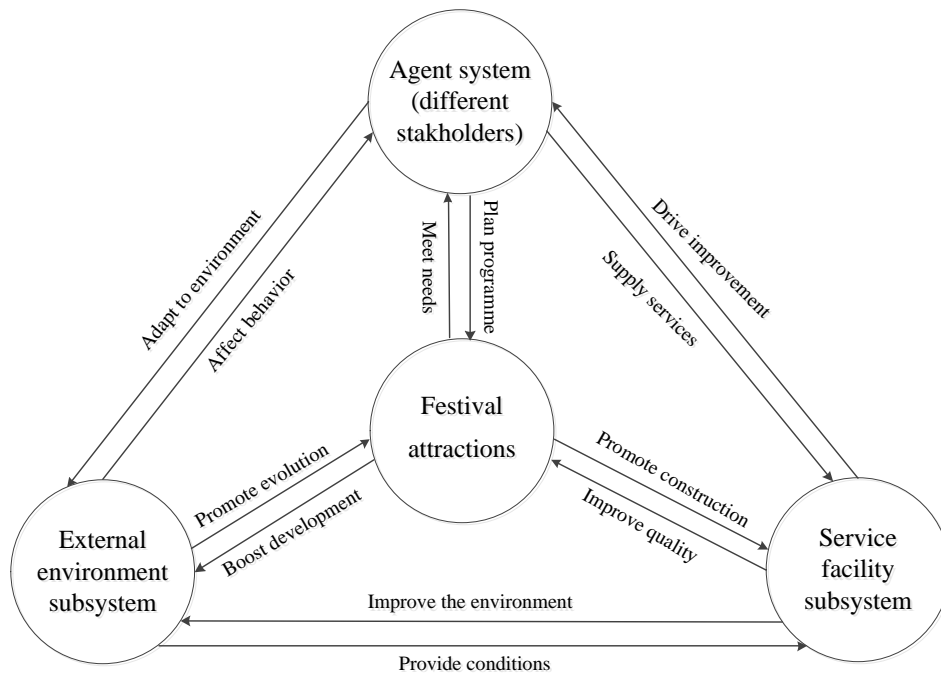


Figure 1: The complexity of the festival system (adapted from [22]).

2.2. Construction of Festival Spatial Order

Order is an indispensable concept for the discussion of all complex phenomena [2]. In broad terms, spatial order brings together all categories of order (social, economic, environmental, and spatial) and stands for the criteria of social rationality [42]. Spatial order then is explained as a status of maintaining diverse structures which enable the optimal operation of economy and society, likewise reduce the conflicts between various agents in the spatial environment [42]. The significance of spatial order has been explained in various ways: in terms of urban spatial order [43-47], in terms of social-spatial order [48-50], in terms of the economic system [51-53], in terms of political spatial space [54-56], in terms of moral spatial order [57-59], and terms of biological ecosystems [60,61]. Despite the apparent diversity in those fields, there is a dearth of research on the spatial order of events and festivals.

As a kind of planned event, the management level of festival organizations determines the result of festival spatial order for the reason that festivals can attract large numbers of visitors in a short time, which might be easy to cause various problems, such as, crowded people, traffic chaos, prices rising, safety accidents, and others when the festival is not well organized. These situations are important considerations since the management strategies used by festival organizers depend on these possible problems [62]. Theoretically, space has become a key concept for the study of an organization [63], and festival organizers creating the festival space [64]. The planning of festival space includes the distribution of various resource elements. In practice, the disorder and chaos of festival space will impede the sustainable development of festivals, while the construction of festival spatial order provides a standard to measure the adaptation of festival organizers to the complex system of festivals. In this paper, we argue that the festival spatial order refers to how various elements can be well distributed, to ensure the safety and order of festival participants, coordinate the relationship between different stakeholders, and to present a state of harmony and order during the festival.

2.3. Examining the Adaptive Capacity of Festival Organizations

The adaptive capacity is central to the behavior of complex systems [24]. Adaption involves a gradual, stepwise, and iterative process that may require a series of adjustments before the system is changed [65]. The process of adaption is an individual agent and its actions that are aiming to improving the performance or better situation, considering the environment and systems properties [24]. In the highly competitive environment and host challenge [66], it's important to improve the adaptive capacity of festival organizations. The growth and diversity of festivals have added the complexity of management and placed pressure on festival organizations [66]. As Morgan [67] points out that ‘the first and most fundamental success factor is operational and administrative efficiency. Effective management policies, processes, measurements, and practices contribute to festival organizations in achieving operational efficiency [66]. Festival spatial order which is constructed by festival organizations is inherent in the management of festival complex system and is critical for improving adaptive capacity.

From a managerial point of view, Frisby and Getz [62] argue that many festivals are unsophisticated. Festival management relates to an entire ecosystem of managing different stakeholders and numerous participants [68]. In the complex context, the level of management with festival organizations has a direct bearing on the shaping of festival space as well as the behavior of different festival participants [46]. Adaptive capacity is required for the system to remain dynamic and functioning [69]. The constructive order of festival space is required to maintain current complex systems development and to create new structures following system crashes [69], which means festival activities may be unavailable without the spatial order. The essential role played by festival organizations in sustainable planning for festivals managements [70] consists of adopting instruments and measurements in terms of policies, which can contribute to the order and sustainable development of festivals [71]. Holland [21] argued that the adaptive agents follow the “stimulus-response” rule. Thus, this paper contends that the construction of festival spatial order is a better understanding of the adaptive capacity of festival organizations (Figure 2).

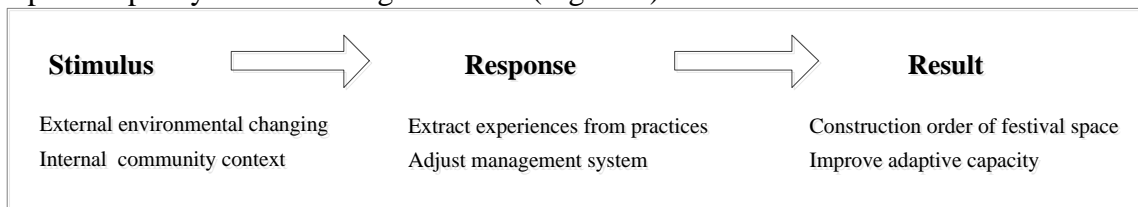


Figure 2: The adaptive capacity of the festival organization from the perspective of constructive order.

3. Case Study

This paper chooses Guangzhou International Light Festival (hereinafter ‘GZILF’) as the case study. GZILF is selected for four main reasons that make it relevant to all festivals with similar managing problems. First, GZILF adapts the operating model of “government provides support and services to enterprises”(Zheng Fu Da Tai, Qi Ye Chang Xi), which means the festival organizations are composed of local government and enterprises. The way of operation and management in GZILF is in line with many types of festivals in China. Second, the GZILF has been held in November since 2011 and despite the COVID-19 on the 10th GZILF in 2020, there remained more than 2000,000 visitors. As a newly grown festival, the order of GZILF space has gone through the process of chaos and order. Festival organizations are used to encounter different problems or situations during the festival, and they have adopted a variety of measurements to keep the order of the festival space and

then accumulated some experience in ten years. Third, the GZILF is usually held in late November every year lasting about half a month, which has become one of the most important festivals in Guangzhou and has attracted over 65 million attendees in total during ten years. The GZILF has already become one of the city’s hallmark events. Forth, the main venue of the GZILF is located in Huacheng Square and Haixinsha Park, which are the core nodes of Zhujiang New Town where is the core venue of Guangzhou. Considering the main venue located in the center of the city, the spatial planning and management involve diverse agents, various resources, elements, facilities, and complex stakeholders’ benefits. It is a challenging issue for festival organizations to make planning, execute management in the space as well as to achieve the sustainable development of order construction.

4. Research Method

To obtain overall data about the development of the festival in ten years, we adopt a double way. (1) Online data collection, includes news and media reports from festival organizations official website, government documents, and social media Weibo (like Twitter, China’s premiere microblogging website [72]) which aims to understand the operation, scale, content, participants’ evaluation, measurements by festival organizations of each light festival during the ten consecutive years. First, using ‘Guangzhou international light festival’ as the keyword is collected festival attendees’ post contents during January 2011 and June 2021, and a total of 6,255 Weibo posts were obtained. Second, we thoroughly clean the data to delete posts irrelevant to our research. Finally, after cleaning the data, we amassed a dataset of 6,255 posts of festival attendees’ contents (code as WB?-? for example, the first post of 10th GZILF code as WB10-1) (Figure 2). (2) Semi-structured interview was conducted with 9 middle or senior festival organizers in December 2020 and August 2021, 3 of who are from the government (code as G) and 6 from enterprises (code as E). Each interviewer participated in festival management at least 3 times, especially one of which participated 10 times (G), and another 9 times (E, for the company, officially start to join the organizing committee at the 2nd GZILF).

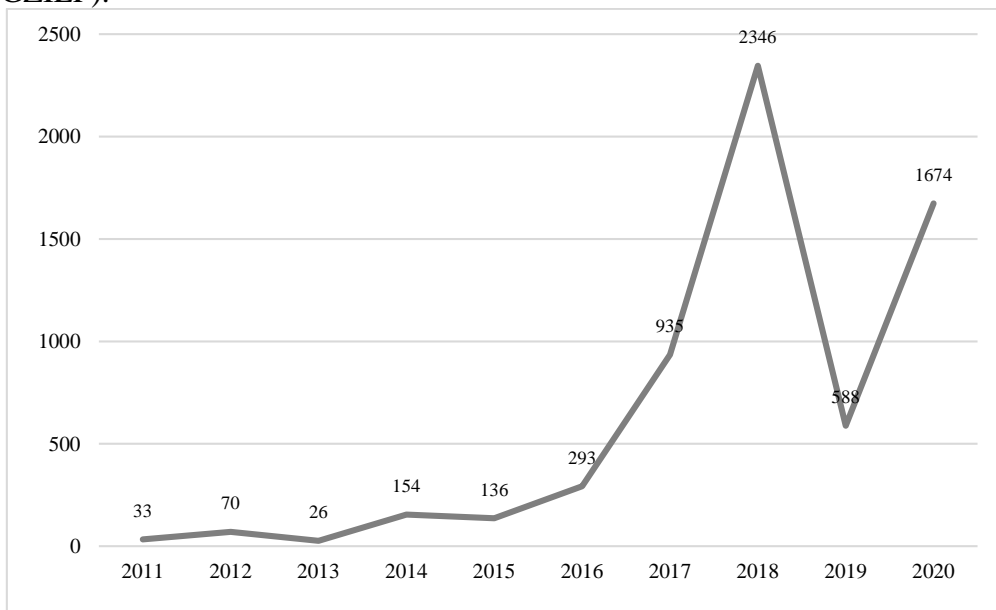


Figure 3: Number of posts during ten years on Weibo.

5. The Construction of Festival Spatial Order from CAS Perspective

The GZILF undergoes a few key changes as it develops: the establishment of the festival in 2011, the special recommendation activity of the UNESCO ‘International Year of Light’ in 2015, the first application of reservation system in 2018 (also with the highest number of Weibo posts) and the movement of the main venue to the Haixinsha park. So, the development of GZILF can be divided into three stages: (1) the initial and exploratory period (the first edition in 2011 to the fourth edition in 2014), (2) the emergence and expansion period (the fifth edition in 2015 to the eighth edition in 2018); (3) the period of innovation and improvement (the ninth edition in 2019 to the tenth edition in 2020)(Figure 3). From the perspective of CAS theory, festival spatial order problems along with policies and measurements are taken by festival organizations in ten years will be discussed as follows.

5.1. Stage 1: The Emergence of Festival Spatial Order Problems (2011-2014)

The 1st GZILF was led by Guangzhou local government, which provided free support for venues and policies, and three enterprises were responsible for the venue design, works production, and investment separately. ‘The first GZILF was more like an exhibition ’(G01). To realize the standardized and professional management of the second GZILF, the Guangzhou local government decided to select the enterprises through external investment in the second edition in 2012. Guangzhou Ruifeng Audio Technology Corporation Ltd. won the first five-year cooperation plan, and the subsidiary Guangzhou Ruifeng Culture & Communication Co., Ltd (hereinafter ‘RFCC’) was in charge of the planning, design, and exhibition from then on. Quite different from the first one, this edition held various programs, such as urban lighting design competitions, photography contests, New Year's Day countdown activities, and attracted a large number of visitors which cause the excessive passenger flow at Zhujiang New Town metro station. In 2013, the festival organizations planned a sub venue in the old urban area of Guangzhou for the first time to relieve a large amount of passenger and visitor flow at both the metro station and Huacheng Square.

Through blog posts and comments, it is found that many participants expressed more about the introduction and love of lighting works in GZILF, because after the first three years, RFCC began to pay more attention to festival works. The measures include introducing foreign professional teams with large-scale event organization and management, learning advanced experience from safety management, people flow design, risk control, and other aspects of festivals, and inviting foreign designers to join the creation of the festival, which contributed to the management and the international reputation of the festival. ‘At the same time, we invite the main creative personnel of the opening and closing ceremonies of large-scale events such as the Beijing Olympics, Guangzhou Asian Games, Nanjing Youth Olympics, and other large-scale events to join, to enhance the professional level of the lighting festival (E01)’.

In addition, the venue of the fourth edition festival was extended to nine bridges across the Pearl River for the first time. However, excessive visitors and traffic pressure became the main problems of this festival. ‘Guangzhou International Light Festival of Lights was packed with people (WB4-66)’ and ‘The opening ceremony of the 2014 Guangzhou International Light Festival was full of heavy traffic (WB4-104)’. Facing this situation, the festival organizers coordinated with the transportation department to take measures such as a metro ‘flying station’ to cope with the pressure of passenger flow. “Guangzhou Metro will adjust transportation plan, focusing on the increase of Line 3 and APM lines during the peak periods at night. If necessary, individual stations may be ‘fly stations’ (WB4-143)”. While the measures of “fly stations” will especially affect the normal order of local office workers.

Therefore, in the first stage of GZILF, it experienced a process from creation to exploration, from initiation to professionalism, and from home to abroad. With the increase of lighting works and the

promotion of the festival brand, it attracted a large number of tourists. After four years of development, the problem of festival space contradiction in this period was the traffic problem caused by the pressure of people flow. Considering the increasing number of participants, festival organizers have taken measures such as traffic adjustment, crowd control, and subway flight stations, which have had a negative impact on local residents, indicating that the adaptability level of festival organizations is relatively low at this stage (Table 1).

Table 1: Examples of adaptive behaviors and spatial order conformed in the festival (2011-2014).

Festival organizers	Adjustments	Example	Contributing to (+)/ counteracting (-) spatial order	Level of adaption
Government	Operation mode	The government provides support and services to enterprises	+	Low
	Setting	Add branch venue	+	
	Transportation	Flying station	-	
Enterprises	Process	Learn advanced management	+	
	Management system	Invite foreign designers	+	

5.2. Stage 2: The Outbreak of Festival Spatial Order Problems (2015-2018)

In 2015, the GZILF was selected as a special recommended activity for UNESCO’s “International Year of Light”. The number of tourists increased as the festival brand promotion was quite successful. In response to this situation, actions were taken to relieve the crowded people including that transportation department adopted the measurement of ‘flying station’ in advance, festival organizers even turned off some lights, which caused dissatisfaction among the participants. After gaining experience of crowd control and visitor diversion, the 5th edition in Huacheng Square relieved a larger flow and the 6th edition also set up other three branch venues on 7 bridges in the front channel of the Pearl River, 14 corridors of Zhujiang New Town, and the Shawan ancient town respectively. At the same time, it paid more attention to the cooperation with foreign countries in festival management.

However, due to the large number of participants at the 7th GZILF, the organizers took measures to turn off the lights once again, to a larger degree. ‘The scene of the festival is so beautiful to attract more and more people, and the traffic is blocked so much that the organizing committee had to turn off the lights in advance last night’ (WB7-39). The 8th GZILF added the Huangpu venue consistent with the previous ones. In the opening ceremony, unmanned aerial vehicles (UAVs) were integrated into lighting performance for the first time, which attracted about 370,000 visitors only one night, and it became the greatest number of visitors ever. As the semi-closed model was adopted in Huacheng square to participate in the festival, a gathering of overload tourists, congestion of traffic, and inconvenience of residents and communities caused severe influence. “There are so many people that I cannot breathe” (WB8-43). ‘It took a full 30 minutes to get on the metro in Zhujiang New Town tonight!’(WB8-60). ‘I feel very annoyed. The road is closed in the morning and there is no way to go for a run’ (WB8-66). Therefore, facing such an unexpected situation, the festival organizers had to cancel the two-day light show and timely adopt the reservation system on the fourth day. ‘We considered having an appointment system in 2017, which was just an idea at the time, but with so many people in 2018, we had to cancel the two-day lighting activities and put out this appointment

system function in a relatively short time’ (G02). That is, visitors need to make an appointment in advance to participate in the festival, to reduce excessive people and traffic. This measurement contributes to reducing the negative impacts on other stakeholders and ensures the safe and orderly progress of the light festival.

All in all, the second stage of the Guangzhou International Lighting Festival was of rapid development, and it was also a period when problems and contradictions broke out. The diversity and richness of lighting works did attract a large number of visitors to participate, consequently, faced with the increase of huge visitors, the organizers set up branch venues to relieve the excessive flow of people in the main venue, and turned off the lights a bit violently. Thus, measures taken by organizers did not achieve good results, indicating that the festival organization and management were insufficient. The problems of spatial order in previous editions were not solved so that the outbreak of the problem in 2018 occurred. The negative impact was reduced by organizers launching an appointment system in time to promote the spatial order, and these adjustments show that the adaptability of festival organizers is gradually improved (Table 2).

Table 2: Examples of adaptive behaviors and spatial order conformed in the festival (2015-2018).

Festival organizers	Adjustments	Example	Contributing to (+)/ counteracting (-) spatial order	Level of adaption
Government	Lighting works	Turn off the lights partially or wholly	-	Low→ Gradually improve
	Transportation	Flying station	-	
	Management	Appointment system	+	
	Setting	Adopt a semi-closed mode	-	
Enterprises	Promotion	Promote activity information with different media	+	
	Hold forum	Experience exchange and discussion with experts	+	

5.3. Stage 2: The Outbreak of Festival Spatial Order Problems (2015-2018)

After experiencing the 8th GZILF “mixed reputation”, the festival organizers began to think about how to organize the festival in an orderly manner that can not only ensure the normal participation of visitors but also reduce the traffic problems caused by the excessive number of people. Therefore, starting from the 9th GZILF, a different form was adopted. First, in terms of space selection, Huacheng Square was no longer the main display area of the works, which means the number of works was relatively reduced in Huacheng Square, and most of the works were moved to Haixinsha Park. From the view of the display area, the ‘1+9 city-wide linkage’ model was innovatively adopted for the first time, including 1 main venue (Haixinsha Park and Huacheng Square) and 9 branch venues which are set in different areas of Guangzhou. Second, in terms of the way to enter the festival, the appointment system was fully implemented. Those who enter the Haixinsha Park needed to make an appointment in advance while those who enter the Huacheng Square and other branch venues did not. Third, because of the light show of Canton Tower (Guangzhou landmark building) as a great attraction to the festival visitors, organizers decided to cancel the light show of Canton Tower to avoid too many people. Although such measures effectively alleviated the negative impacts on the tourists

and local citizens, there came to a new problem, that was, it was difficult to make an appointment in the appointment system.

The 10th GZILF is in a special period of the COVID-19. Facing the challenges of the external circumstance, namely, in the context of the normalization of national epidemic control, the government finally decided to hold the 10th GZILF after many considerations and hoped to tell the visitors, citizens especially, Guangzhou was safe, and Guangzhou needed a big event to make the city alive again. Although the festival had some problems, it became one of the annual large-scale events and the residents are full of expectations for it. “Past in 9 years, citizens will receive a gift that belongs to the night every winter in Guangzhou, which is the ‘Guangzhou International Lighting Festival’” (WB10-23). In fact, through the development of the 9 years, the organizers and managers could already manage details and services comprehensively, so the 10th festival was extended 2 days compared to the originally planned performance, which never happened before. Traffic congestion reduced along with the difficulty in making an online appointment. In addition, due to the impact of the epidemic, to allow more citizens to participate in the festival, the ‘Cloud Watching Light Festival’ activity is launched for the first time. ‘At the 9th festival in 2019, we studied and discussed the tourists’ route for several months, because we not only have a route to improve the utilization of Haixinsha Park but also facing the challenge of the security team of the organizing committee. After changing many times, we designed a tourists’ route that is the almost perfect way in this place, and this route is positively appraised by the organizing committee, so we continued to use this way in 2020. It can be said that the festival in 2020 is relatively successful, which come from our previous experience especially in 2019.’ (E03).

Overall, it was a stage of innovation, reflection, and improvement in the third stage of the Guangzhou International Lighting Festival. In the face of the problems that existed in the previous editions, especially the problems that broke out in the 8th festival, festival organizers made great adjustments in terms of the space layout and lighting design, traffic diversion, security services, environmental facilities, and other aspects in 9th edition festival, which provided the experience for the 10th festival and made it order even with the challenge of the epidemic situation. However, a newly emerging problem of making an appointment prevented some visitors from entering the main venue, which may be problem future festival organizers need to pay attention to (Table 3).

Table 3: Examples of adaptive behaviors and spatial order conformed in the festival (2019-2020).

Festival organizers	Adjustments	Example	Contributing to (+)/ counteracting (-) spatial order	Level of adaption
Government	Setting	Change the main venue and add various and virtual space	+	Gradually improve →High
	Information	Timely release activity news	+	
	Process	Coordinate relationships with other stakeholders	+	
	Management	Appointment system in the main venue	+	
Enterprises	Planning	Design new visitors’ route with reasonably	+	
	Management	Guide the flow of people with performance	+	
	Product	Launched the online ‘Cloud Watching Lights’	+	

6. Conclusions

The theory of complex adaptive systems provides a theoretical perspective for explaining complex social phenomena, scholars pay less attention to related research. Based on this theory, this paper argues that the festival is a complex adaptive system. Unlike other types of tourism, festivals can attract a large number of visitors in a short time. Therefore, the order of the festival space is required and important. As the festival organizers in the complex system of festivals, the process of constructing the order of the festival space reflects its adaptive behavior. Through the collection of second-hand data on Weibo and the first-hand data from interviews with relevant festival organizers (government and enterprise) of the GZILF, we divided the development of the festival into three-stage: (1) the initial and exploratory period (the first edition in 2011 to the fourth edition in 2014); (2) the emergence and expansion period (the fifth edition in 2015 to the eighth edition in 2018); (3) the period of innovation and improvement (the ninth edition in 2019 to the tenth edition in 2020). It specifically elaborates on the problems and order characteristics of the festival space at different stages, as well as the adaptive behaviors adopted by the festival organizers in the construction of the festival spatial order at each development stage. From a longitudinal perspective, it reveals that the development of the GZILF has gone through a process from nothing to something. From the emergence of the problems of festival spatial order to outbreak, and then the rational construction of festival spatial order, reflecting that the adaptability of festival organizers has gradually improved over time.

While this paper attempts to explore the construction of festival spatial order and adaptive capacity of festival organizations over time, which has rarely been discussed before, there also exist some limitations. First, this paper only considers the adaptability of the festival organizers and does not consider other adaptive agents. In the future, it can attempt to analyze the role of different adaptive agents in the construction of the festival spatial order. Second, the festival organization is composed of the government and the enterprise. Due to the different powers, the two different adaptive agents play different roles in the construction of spatial order. In the future, we can reveal the relationships between the two agents from the aspects of power and decision-making in the festival space. Finally, future studies can introduce the quantitative methods to establish a nonlinear model of the festival space to calculate the interactions and effects of festival organizer's policy, spatial location, and the flow of people, etc. Through a more accurate and intuitive way to understand the order characteristics and rules of the festival space, provide useful theoretical guidance and practical models for the design and management of the festival space. This paper can contribute to broadening the discussion on the complex adaptive system and the adaptive capacity of festival organizations: what can be done on the particular situation and what priorities to enhance their adaptive capacity over time and promote sustainable development of the festival.

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