T1.3.1 SCIENTIFIC TOURISM PRODUCT MODEL

Academic discussions and approaches to pre-, during- and post-trip experiences

Traditionally, the tourist experience has been defined as a linear and temporal process (Craig-Smith and French, 1994; Jennings, 2006) divided into three phases, namely the pre-trip, during-trip and post-trip phases (Gretzel, et al., 2006; Kim and Fesenmaier, 2017; Leung et al., 2013), and each of these phases is characterized by their own functions.

During the pre-trip or anticipatory phase, tourists are preparing, planning, booking, making decisions, expecting, anticipating, hoping, looking at Instagram posts regarding the up-coming journey or excursion (Huang, et al., 2010; Tussyadiah, et al., 2011). Future tourists are picturing possibilities of every sites to be visited. This phase of the tourist experience involves personal and reflective intricacies as well as emotional and mental expectations (Botterill and Crampton 1996; Urry 1990). To support the notion of the importance of the psychological dimension in the pre-trip phase of the tourist experience, the French philosopher Henri Bergson ([1889] 2001, p. 11) wrote that "the idea of the future, pregnant with an infinity of possibilities, is thus more fruitful than the future itself, and this is why we find more charm in hope than in possession, in dreams than in reality". In other words, anticipations, apprehensions, representations, hopes and fears about a future (tourist) experience are more decisive, and significant than the future itself. Indeed, when preparing the journey, tourists elaborate several scenarios and might expect to experience a wide range of landscapes, weather, food, etc., but often, all the expectations and desires felt before the trip are not met when visiting the destination, which therefore, can lead to disappointment and feelings of frustration.

These expectations developed during the pre-trip phase can therefore, affect positively or negatively the experience on site. Indeed, Larsen (2007, p. 9) analyzed that expectations are fashioned by several elements "such as motivation, value systems and attitudes, personality traits, self-esteem and states of affect (mood and emotions)", that will all have significant influence on the during-trip tourist experience. A popular example in the Arctic is tourists traveling to Lapland, hoping and dreaming about observing northern lights every single nights of their stay in the

North, but due to bad weather conditions, they cannot see anything. In this example, the expectations and hopes of the pre-trip phase were more fruitful than the actual experience, when on site, which can lead to disappointment or frustrations.

The during-trip or experiential phase naturally refers to the time spent at the site of the vacation, during which tourists take part in activities, taste new food, visit sights, take photographs, shop, or engage with local communities (Cohen, 1979; Wang, et al., 2012). In the post-trip or reflective phase, tourists are documenting, reminiscing and sharing their trip with relatives or on social media (Pan, et al., 2007), which will potentially be used by other tourists planning a trip to the same destination (Kim and Fesenmaier, 2017).

Nevertheless, some scholars (Botterill and Crompton, 1996; Jennings and Weiler, 2006; Uriely, 2005; Urry, 1990) have argued that the tourist experience is more complex than a simple temporal process due to the inherently personal and reflective character of the experience. However, the linear process still represents the basic structure of the tourist experience. In addition, although "sharing" has been traditionally associated with the post-trip phase of the tourist experience, the growing use of smartphones, as well as the development of technologies and available Wi-Fi services, allows users to post their photographs while still on-site (Wang, et al., 2012). New technologies and new functions of social media applications tend to modify and reshape the basic structure of the tourist experience, and now one can share his or her own experience in both the during-phase and the post-phase of the trip (Gretzel, 2010).

The three phases of the tourist experience applied to Scitour and scientific tourism

In line with this, the pre-, during- and post- temporal framework of the tourist experience, can also be applied and adapted to the learning experience, and thus dividing the learning process into three phases.

The anticipatory phase in the learning experience would be devoted to the preparation. This could refer to various types of briefing meetings, depending on the

product. For example, before a whale safari, security and safety measures; before a northern lights tour, photography and optics facts and tips, etc. Other types of meetings could also aim at knowing other participants, by sharing potential past experiences or by discussing their respective motivations, for example. This pre-learning phase could also refer to readings related to the theme of the product, that would be provided beforehand by the organizers. This phase could also include some psychological preparation in order to avoid the potential disappointment and frustrations raised by Bergson (1889) if the product doesn't meet participants' expectations.

The experiential phase in the learning experience would refer to all in-situ activities that have an educational purpose. It includes all forms of products from a few hours to several days-long products, and all scientific disciplines (astronomy, geology, archeology, anthropology, biogeography, marine biology, etc.).

The reflective phase in the learning experience would be dedicated to the time following the in-situ learning. In this specific phase are included both learning and reflective dimensions. In the former, participants keep learning with potential "to go further" readings and the sources of the references used to build the product, which could be shared by the organizer for example. As such, the learning experience would not be locked to the in-situ part of the product, but would transcend it with a more holistic approach. Thus, the boundaries, between pre-trip and during-trip, and between during-trip and post-trip, would be more porous, following the critics raised by Botterill and Crompton (1996), Jennings and Weiler (2006), Uriely (2005) and Urry (1990), and also supporting the inherently personal and reflective character of the tourist experience. In the reflective dimension of the post-learning phase, participants could be invited to think about the trip, activities or products they took part in. This could be organized as de-briefing meetings, where participants would reflect on the impacts they had on local environments and societies (when applicable) for example. Another solution would be to seek ways to compensate the carbon footprint they generated (when applicable too). This very last example could also be supported by the organizers that could verify, monitor and look at what was done afterwards by the participants.
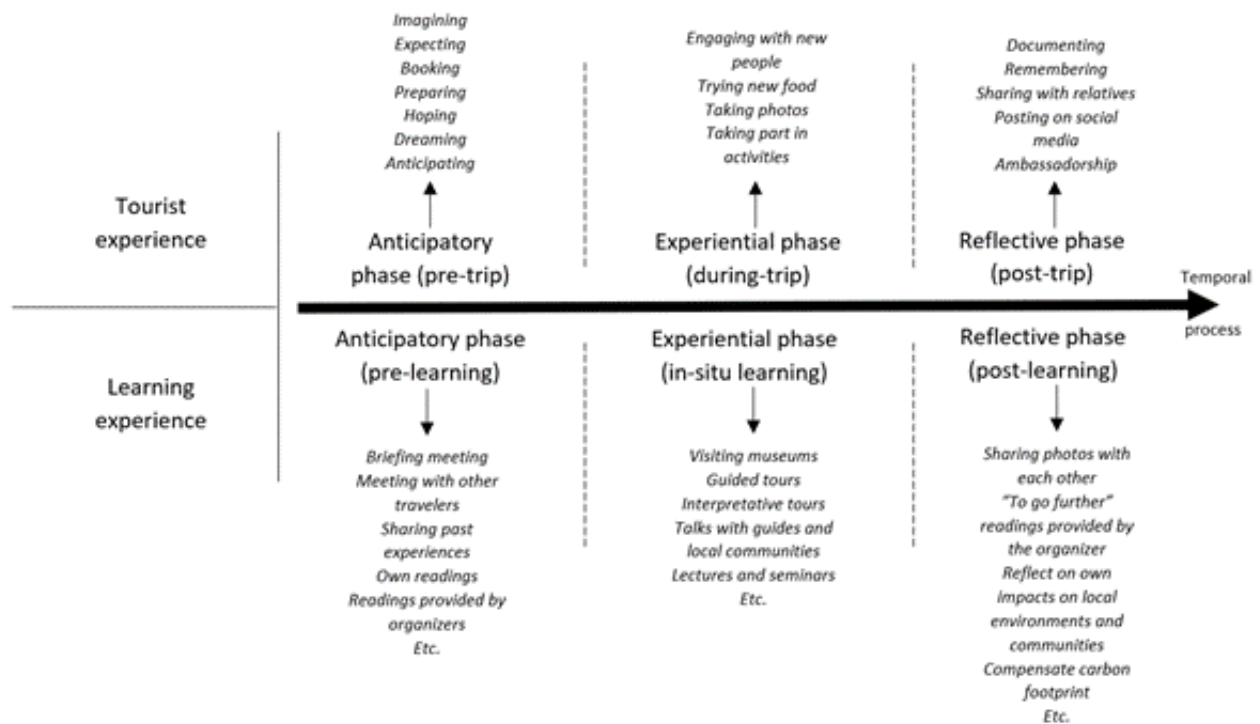
Figure 1. The three phases of the tourist experience applied to scientific tourism products. Cdts: Alix Varnajot.

Scientific tourism models based on duration

Obviously, the type of activities offered in 'pre' and 'post' phases are highly dependent on the length of the tourism product, and therefore, they need to be adapted to what constitute the core (during-trip phase or in-situ learning) of the tourism product. Basically, the longer the core of the tourism product is, the longer can be these 'pre' and 'post' phases. Below are some examples (more examples can be found in the figure above), based on product duration. They are not meant to be exhaustive. Rather, they are leads to be followed by tourism entrepreneurs that can adapt the length and the contents of those phases. Indeed, more than anybody else, tourism entrepreneurs and guides are the one in contact with tourists, they know the best their clientele, what they want and sometimes even their backgrounds.

A few hours long product

These relatively short tourism products could typically refer to a self-guided visit to a museum, or a national park with interpretative boards, etc. For such products, 'pre' and 'post' learning phases could be optional. Nevertheless, extra information could be available on museums' websites, whether freely available, or available on a private webpage one could access after paying extra money. 'Post' learning contents could typically be 'to go further' literature to be provided to those tourists curious to learn more.

A full day long product

For a full day long scientific tourism product, the 'pre' and 'post' phases can be more elaborated. At the beginning of the day, tourism entrepreneurs and guides could organize briefing meetings, including safety discussions, introductory presentation of what is expected to be done/observed (e.g., about the physics of northern lights, the biology of some animals, climate change, history of the place, etc.) during which extra documents such as scientific articles could be given to the participants.

A few days long product

In a few days long scientific tourism product, pre-learning phase can begin to last several hours, and up to a full day. Both contents and activities can be similar to the shorter products described above.

A whole week long (or more) product

In this type of products, the pre-trip phase could be a couple of days long itself. For example, for a ten days long northern light photography tour across Lapland, a couple of days could be needed in order to learn about night photography techniques. In these couple of days, could also be included seminars during which participants would also learn about the physics of northern lights, with lecturers coming from a local university. This would contribute to better collaborations between scientists and general public. Post-trip phases could go deeper in terms of 'to go further' literatures, but also in terms of reflections on the impact such trips might have on local ecosystem and societies. Tourism entrepreneurs organizing

these types of products could even go further and suggest associations and organizations to which participants could donate in order to compensate their carbon footprint.

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