



Exploring the Relationship between Human and Non-human actors in Cycling Tour of Flores Island

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Abstract

Objectives: Research aimed to recognize the model contestation between human and non-human actors at the arena of cycling tour in the eastern part of Indonesia in Flores Island.

Methods: The research was socio-technical paper, qualitative descriptive method was used to follow the contestation value between cycling tourist and its technical actors during the journey. researchers observed and participated on cycling touring at Flores Island. All participants were Jakarta residents that had different variety of age, gender, occupation and living arrangements. variety of participants ranged in age from 44 to 52 years old. total of 1 woman and 4 men were interviewed.

Results: findings indicated three stages [Pre-departure cycling tour, En route cycling, and Post-cycling tour] that constructed the field of Actor-Network Theory [ANT], contested human and non-human actors, assemblage of the actors and semiotics were performed in this finding. The use of bicycle as main non-human actors to follow by cycling tourist creating the dynamic and interaction between human actors during cycling.

Conclusions: research identifies human and non-human relations within cycling tour, then how the process of relation between actors construct tourism product such as cycling tours. The phrases of human and non-human agents, and sociotechnical were employed to investigate semiotics in their relationship. Values of their experiences and their style in cycling related to motives and type of bicycle. ANT approach described cycling in Flores Island, from departure– to destination or during enroute cycling till finish line, and flying back to their home country.

Keywords: bicycle, cycling tour, actor-network theory.

اكتشاف العلاقة بين الجهات البشرية وغير البشرية الفاعلة في جولة ركوب الدراجات في جزيرة فلوريس

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ملخص

الأهداف: يهدف البحث لاكتشاف طريق جديدة وصعبة لركوب الدراجات في الجزء الشرقي من إندونيسيا، بهدف التعرف على نموذج التنافس بين العوامل البشرية وغير البشرية في ساحة ركوب الدراجات في جزيرة فلوريس.

المنهجية: يعد البحث دراسة اجتماعية تقنية، حيث استخدمت منهجية وصفية نوعية لمتابعة القيم المتنازع عليها بين السياح الركاب على الدراجات والعوامل التقنية خلال رحلتهم. قام الباحثون بمراقبة ومشاركة آخرين في جولات ركوب الدراجات في جزيرة فلوريس. كان جميع المشاركين من سكان جاكرتا وكان لديهم تنوع في الأعمار والجنس والمهن وظروف العيش. تتراوح أعمار المشاركين بين 44 و52 عامًا، وتم إجراء مقابلات مع مجموعة من 4 رجال وامرأة واحدة. أظهرت النتائج وجود ثلاث مراحل [جولة ركوب الدراجات قبل الرحيل، رحلة الركوب، وبعد رحلة الركوب] التي بنت حفل نظرية شبكة الأفراف المؤثرة [ANT]. واستخدمت العوامل البشرية وغير البشرية المتنافسة وتجميع العوامل والدلالات في النتائج. استخدام الدراجة كعامل غير بشري رئيسي يتبعها السياح الركابون لخلق تفاعل ديناميكي بين العوامل البشرية أثناء ركوب الدراجات.

الخلاصة: كان البحث محاولة لتحديد العلاقات الإنسانية وغير الإنسانية في جولة ركوب الدراجات، ثم كيف قامت عملية العلاقة بين الجهات الفاعلة ببناء منتج سياحي مثل جولات ركوب الدراجات. تم توظيف عبارات الفاعلين من البشر وغير البشر، وعبارات اجتماعية-تقنية من أجل التحقيق في العلاقة السيميائية بينهما. ترتبط قيم تجاربهم وأسلوبهم في ركوب الدراجات بالدوافع ونوع الدراجة التي يركبونها. وصف نهج ANT جولة ركوب الدراجات في جزيرة فلوريس، بدءًا من مغادرة وطنهم - نمط السفر إلى الوجهة أو أثناء ركوب الدراجات حتى خط النهاية، ثم العودة إلى موطنهم الأصلي.

الكلمات الدالة: الدراجة، جولة الدراجات الهوائية، نظرية شبكة الممثل.

Introduction

Bicycle is a product of assemblage since the 19th century in England and its production impacted on history, politics, and economy of the country, shaped a social construction between bicycle as an artifact, sellers, buyers, government and bicycle producers (Norcliffe, 2016; Norcliff, 2011) and even held the biggest international bicycle trade show in Taipeh in the 20th century (Andreae, Hsu, & Norcliffe, 2013). Enjoyment of moving became the reason people love to ride a bicycle (Xing, Volker, & Handy, 2018). Bicycle as an alternative mode commuter transportation created other aspects of psychology of enjoyment, liking at childhood, young age, and adult, from a basic daily transportation into liking behavior (Handy, 2020) and it is necessary to understand the attitude and behavior of cycling for safety reasons (Janke & Handy, 2019).

The works of Norcliffe (2011) in China described a transformation in function and physics as a commuter transportation, from the tricycle green non-polluted transportation, and in western part of the world, bike facilities, infrastructure, regulation, and safety procedures of helmet are provided by local authorities and it is demanded by local community (Hoye, 2018).

Utilization of bicycle for enjoyment (Handy, 2020), generated by the use of bicycle for tourism activities include six types: 1) away from home; 2) the period of a day trip or multi days; 3) not for competition; 4) cycling is the main goal of activities; 5) active participants, not only as spectators; and 6) holiday seekers (Han, Meng, & Kim, 2017). Most people joined the trip in a tour package which is guided by daily tour itineraries (Wong & McKercher, 2012). As a fact of matter, there were two International Events of Tour de Flores Race in 2016 and 2017, two times of Kompas Bike Cycling Tour Event in 2016 and 2017, and at least four international bike packing tourists explored Flores Island.

Research topics on sport and tourism have been overviewed by scholars, however, it has not been conducted in networking between human and non-human actors. There is an affect and an anxiety in relationship between human-non-human actors (Stinson & Grimwood, 2018; Kaghan, 2001) between these three actors in this research (bicycle as an artifact, sport as a concept of bicycle utility, and cycling tourism), and it was even questioned about the similarity between human and non-human agents (Sayes, 2013), that it has not been reviewed by previous research in cycling tourism. The purpose of this study was to look at the relationship between human and non-human actors which was the novelty of the research.

Literature review

Actor-network theory

There is a contestation between human and non-human actors at the arena of cycling tour in Flores Island. Actor-Network Theory (ANT) described as a conceptual frame for exploring collective *sociotechnical* processes, particular attention to science and technologic activity (Van der Duim, 2007). ANT does not differentiate between science (knowledge), technology or artifact (Ren, 2011), and equality between human and non human actors (Ren, Johannesson, & Van der Duim, 2012; Van der Duim, Ren, & Johannesson, 2013). It assumed that nothing has a reality or a form outside the enactment of those relations.

The studies explored and characterized the webs and the practices that carried them. Like other material-semiotic approaches (Law, 2009), the actor-network approach thus describes the materials and non-materials heterogeneous relations that produce and reshuffle all kinds of actors including microcosmos and macrocosmics of the universe (Van der Duim, & Caalders, 2008; Stinson & Grimwood, 2018; Johannesson & Baerenholdt, 2020). In this research, bicycle as a product of technology as an artifact, non-human actor, and it is employed as roots of ontology cycling tour where an alternative and special occasion, not a mass tourism activities presented by a man, a group of cyclists in an international, national or regional racing event.

Relationship between human and non-human in sport (Kerr, 2016), creating a network and it is easily to understand by Actor-Network Theory technology and reshaped the nature of adventure sport activities (Berger & Greenspay, 2008), and transformation in functions, from basic mode land transportation to sport utilities and leisure (Lamont, 2009). The use of bicycle for tourist activities performed into a cycling tour or sport tourism package tour at tourist destination (Shipway, King, Lee, & Brown, 2016), and relation between artifact and tourism (Johannesson, Ren & Van der Duim, 2016;

Jorgenson, 2017; Paget, Dimanche, Mounet, 2010), and as a special interest tourism (Wen & Wu, 2020). The contested ANT in this research indicate three stages cycling tour (pre-departure arrangement – en-route cycling - post-cycling tour).

Cycling tour

This research was a geographical cycling routing consideration (Hall, 2013) and travel condition in cycling tourism (Buning & Gibson, 2016). Flores offers lots of attractive sites, both natural and cultural ones towards perception and towards cycling tourism (Bull & Lovell, 2007; Bull, 2006)). It describes Flores Island as one of the cycling destinations, where an international bicycle racing event was held (Newland & Aicher, 2018; Shipway, King, Lee & Brown, 2016) in 2016 and 2017, so called '*Tour de Flores*', as promoting and destination readiness by local government authority and tour operators (Kennely & Toohey, 2014).

First stage on pre-departure arrangements, where cycling tourists made a physical well-trained, bicycle technical preparations, discussion of planned itinerary, and financial things for cost cycling tour (Whitehead & Wicker, 2018; Downward, Lumsdon, & Weston, 2009; Kulczycki & Halpenny (2014)), to have a 650 km distance during the tour in Flores Island. Cycling tour related to travel activities which is undertaking holiday time for duration of more than 24 hours and eat least staying a night at the destination (Han, Meng, & Kim, 2017). Cycling becomes a global trend and sport tourism (Weed, 2009a) and constructed by variety of services as a tour product in long haul or three-day track with tent accommodation (Lamont, 2009). Sport tourists selected a destination that might be influenced by sport characteristics and behaviors (Humphreys, 2014), sport event invitation (Snelgrove & Wood, 2010), sports and tourism seasonality (Higham & Hinch, 2002), and promotion of cycling events (Berridge, 2012; Derom & Ramshaw, 2016). Second stage is the route to the destinations were a mixed transportation mode, between modern technology and very high and complex airplane technology, cycling route within the bordered region (Stoffelen, 2018), and flying for hours from origin to destination. The second stage also contested en-route during the trip between human actors (cycling tourist, and local community at the destination and non-human actors (bicycle, accommodation, bike way, supporting car, GPS, and Smartphone). Touring on a bicycle is categorized as a 'Special Interest Tourism' (Wen & Wu, 2020), included cycling tour in Flores Island. Third stage was the end of cycling tour at different towns, both rural and urban areas (Tribby & Tharp, 2019), while there was a transition period from a cycling tourist reversed not being as a cycling tourist at home country. When the cycling tourists experienced the itinerary, it is documented electronically, using GPS, Strava, and geotag then shared live posting through social media on their Smartphone (Hochmair, Bardin, & Ahmouda, 2019; Permatasari, Qohar, & Rachman, 2020; Habibi, Razak, Yusup, Mukminin, & Yaqin, 2020).

The main purpose of cycling tour in Flores Island is to enjoy the sight while maintaining body fitness and interacting closely with the local residents as life experience and meaning, thus their identity and belonging of the cyclist as participants of event and also as a spectators (Shipway, King, Lee, & Brown, 2016), motivation for sport exploration (Newland & Aicher, 2018), motivation for tourist attraction comparison (Wathanaklang, Ratanavaraha, Chatphattananan, & Jomnonkwao, 2016), and gaining sport tourist loyalty development (Chen, 2006).

Methodology

The overview theory showed this research was a socio-technical writing, a qualitative participatory method was used to identify contestation value (Rachman & Tekol, 2020), between cycling tourists and its technical actors during the journey. It is necessary to follow the contested social and technical values on the journey and destination because social and technical values were the object of research where they had similar and equal positions. The relation between human and non-human actors in sport and tourism research is also as the answer of Weed's (2009b) argument on maturity research on sport and tourism.

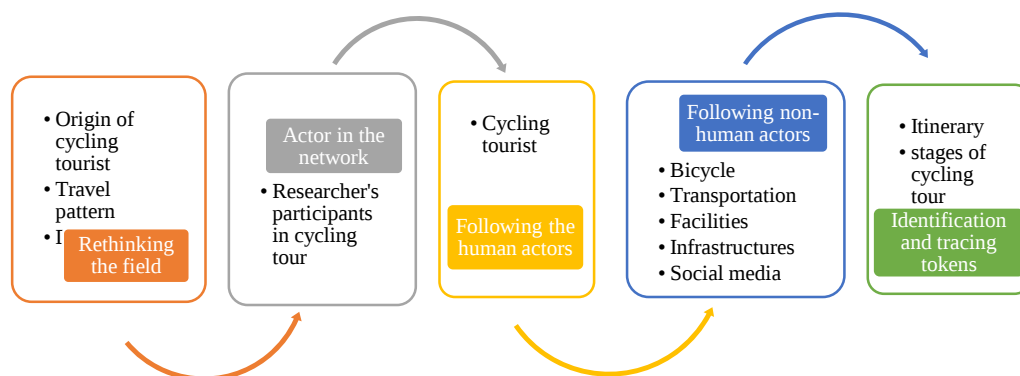
The researchers had observed and participated with other participants on cycling touring at Flores Island. All participants were Jakarta residents that had a different variety of age, gender, occupation and living arrangements. A variety of participants ranged in age from 44 to 52 years old. A total of 1 woman and 4 men were interviewed. Biographical profiles can be seen in Table 1. It is necessary to examine individuals of cycling participants in a different cycling experience, occupation and bicycle description (Shipway, King, Lee, & Brown, 2016).

Table 1. Participants' interview profile

No.	Respondents (Pseudonym in name)	Duration Observation and Interview
P1	Nina/ Female/50 years old/ limited cycling experience/tourist guide/ Linskey Road bike	7 days trip/00:45:15
P2	Pascal/male/44 years old/ very experienced cyclist/ tourism education/Giant SLR2 MTB Touring	7 days trip/01:00:30
P3	Theo/male/ 40 years old/ very experienced cyclist/director/Moots Cyclocross	7 days trip/01:05:30
P4	Endy/male/52 years old/ very experienced cyclist/director/ Giant SLR2 MTB Touring	7 days trip/01:10:13
P5	Black/male/44 years old/ very experienced cyclist/travel industry/Federal MTB Touring	7 days trip/00:50:10

An in-depth semi-structured interview guide was designed and participants were individually requested open-ended question, based on the review of literature during before departure to cycling destination, during cycling and post cycling on Flores Island. It defines that qualitative research is used to address a number of different types of objectives in the research process, and some participants conducted in a small number, and sometimes it is in informal situation (Habibi, Razak, Yusup, Mukminin, & Yaqin, 2020).

Figure 1 described trajectories of ANT research used descriptive data collection of the contested actors and it also used the account of 'tale from the field', introduced ANT thinking in tourism to five traits as a fieldwork (Beard, Scarles & Tribe, 2016; Van der Duim, Ren & Johansson, 2017):

**Figure 1: A model for data collection cycling tour through ANT perspective (Beard, Scarles & Tribe, 2016).**

The ANT research used inductive descriptive method to analyze the contested actors and it also used the account of 'tale from the field', introduced ANT thinking in tourism to five traits as a fieldwork; (1) Rethinking 'the field', (2) Acting in the network, (3) Following the human actors, (4) Following the non-human participants, and (5) Identification and tracing of 'tokens' (Beard, Scarles, & Tribe, 2016).

Findings

The findings indicated three stages of cycling tour that constructed the field of ANT, contested human and non-human actors, assemblage of the actors and semiotics were performed in this finding. The use of bicycle as main non-human actors to follow by cycling tourist creating the dynamic and interaction between human actors during the cycling. Infrastructures en-route Flores cycling tour were less provided. This lack of cycling lanes and cycling routes on Google Map is typical of developing countries, especially in Indonesia, however a country such as Malaysia, Singapore and Thailand (Top 5 most visiting foreign tourists in South East Asian Country) are well-informed both on social media and infrastructure for cycling tourism.

First stage: Pre-departure cycling tour

The information about cycling destination of Flores Island (how to get there, duration, distance, do and don'ts, facilities, connectivity and places of interest) were easily collected by cycling tourists through information technology (Kerr, 2016) such as website, social media of Facebook, Instagram, Youtube, Google map and Strava (Hochmair, Bardin, & Ahmouda, 2019). By searching through Google map of Flores Island, cycling tourists knew that the geographical routings (Hall, 2013) are mountainous area, meaning that they had to prepare significant physical training. Theo (P3) expressed his own impression after they had the information about geographical of Flores Island and its elevation:

“It is a tough challenge to cycle in Flores Island while we have limitation in cycling experience through mountain area. By using google map and other information technology I will get the information of the road, length, duration and rest area”

When the cycling tourists booked return flight tickets, and the size of bicycle box baggage and flight connectivity, when checking in at terminal 3 Jakarta Airport, large baggage (such as a bicycle box) would be directed to a specific conveyor belt. That's why participants flew with Garuda Airways because it provided free of charge facilities for sports equipment carried by passengers without having to pay extra expenses. Hopefully, the airlines treated their bicycles properly to protect from damages such as abrasions or even broken bicycle frames. Nina (P1) responded about flight arrangement for the passenger and bicycle box for long flight (more than an hour):

“It is better to have premium airlines to guarantee my flight ticket and my bicycle box. My bicycle is Linskey touring bike, I do not want my bike being broken. The sport utility is included in the tariff, no more payment as an excess baggage. We do have a meals onboard, nice services from cabin crew, direct flight to Labuan Bajo and. However, the ticket price is more expensive than other airlines”.

The bicycle boxes also varied in shape, some were hardcase models, there were also a soft case model used by Endy and others. Unloading the bicycle and then packed to have the accuracy of installing and dismantling the components. Usually before taking a bicycle trip with a distance of hundreds of kilometers, their bikes were tuned up and indeed there were certain component replacements. For example, brake pad disc sometimes has to be replaced if it's thin. It equipped with L keys, pumps, spare tires and lights. On this trip, they were lucky to have one of the participants as an expert in bicycle repair. They immediately unpacked the boxes and prepared the bikes for tomorrow's trip. Each bicycle which is as a non-human actor was installed by a man as a human actor (Beard, Scarles, & Tribe, 2016; Van der Duim, Ren, & Johansson, 2017). Endy's (P4) opinion about being a cycling tourist and bicycle technician:

“I like to have cycling tour. I often find the trip the cycling destination make me to put the bicycle inside the bicycle box as baggage in an airplane. I have to make sure my bicycle is safe inside the box. I have to dismantle some parts of the bicycle first, put it in the box then wrapped it. After arrived at hotel, I request a small hall to install all the bicycle, well actually every cycling tourist they know how to set up the bike. I ride Giant MTB-touring bike in Flores trip.”

Second stage: En route cycling

According to Google map, the route would cover a distance of approximately 100 km via Labuan Bajo-Lembor-Southern Coastal line of Flores Island, however, there was no provision of bike lane (Hamman & Peek-Asa, 2013; Duarte, Procopiuck & Fujioka, 2014), and Google map for cycling in here, however Strava application assisted participants in finding the tracks (Hochmair, Bardin, & Ahmouda, 2019). The terrain of Flores island is quite challenging for the participants, they rode as far as 30 km of uninterrupted climbs, starting from a gradient of 10% to 15%. They rode till the elevation of 28 meters to 911 meters above sea level and encountered long slopes of up to 1 km as well as winding roads. Pascal (P2) loved to ride together at every event of cycling, describe routings between Labuan Bajo to Lembor:

“We always ride bicycle together, we are not alone, there other friends that live surrounding my housing settlement in Jakarta. Cycling in Flores was amazing, we find the routes from Google map, it is clearly informed but there is no bicycle tracking on the Google map, not only for Flores Island, but it is also all over Indonesia. I had experiences cycling in Indonesia, and it is provided bicycle track on Google map. We took a ride slowly but sure, convince that we will finish till the destination. Cycling exercise had was necessary to make the trip enjoyable.

The participants continued to climb from a height of 450 meters above sea level until finally reaching its peak at an

altitude of 911 meters above sea level (Hall, 2013). They had the chance to get thigh cramps after riding for 45 minutes from the first rest area at Watu Api Peak. Pascal's right thigh felt numb and a little painful when pedaling (Eichner, 2008). He made an effort to stop the cramps by still pedaling with the appropriate rpm and while dousing water from the bottle. It was usually cramps appeared if cyclist drank less or resisted to pee. After fifteen minutes of cramp, it then disappeared. The journey continued to Lembor. From the peak at an altitude of 911 meters above sea level with a gradient of 10%, he finally got a bonus on the downhill road going towards Lembor.

"Cycling has its own technique to ride on flat area, uphill or downhill. The cyclist shall manage their cadence, breath and power. We usually manage uphill and steep terrain in slower speed, it is around 10 – 15 km/hour to make comfort cycling. Cramps is usually happened on uphill terrain, because of cadence is too high than legs muscle performance. A flat terrain will be in faster speed (20-25 km/hour). However, downhill speed is actually more dangerous than uphill and flat terrain because the cyclist think faster is better, it is a risky decision if we do not control the speed with good handle care on the bar and good technical breaking system".

The route was small gravel, sometimes offered obstacles (Bordelon & Ferreira, 2019). With Moots Cyclo cross bikes, Theo enjoyed the off road route through the southern coast even though it was slippery and wet, full of large rocks. With bike weighing only 10 kg, Theo was comfortably pedaled his bicycle on a flat and uphill road (Buning, Cole & McNamee, 2016). The rear gear and oval front gear designed for off road routes made it easy for him to explore the area. Broken bridges and large rivers have caused villagers to build emergency bridges. They used this opportunity to take pictures and enjoyed the clean and cool mountain water. With the same type of bicycle as mine (Giant Though road 29 ") equipped with shock breaker Manitou, Endy's bike was very suitable for this route. Bicycle equipped with music speakers always accompanied his ride, providing entertainment while pedaling so it was not boring and burdensome when facing climbing road and long distances, Endy and Theo enjoyed gravel terrain during the trip:

"We easily blocked the off road route even without a shock breaker. Good handling needed and I did not hesitate to cross the small shallow creek filled with coral. The kind and size of the tire made me easy to face the off road arena. Moreover, the rack load and bicycle panniers did not affect my balance on this track".

Nina and Black would be proud when their names were included in the record of people who had cycled on this route through Strava (cycling application). There are also some Indonesian names and they were cycling colleagues from Kompas Bike, who had held bicycle trip twice on Flores Island. The strategy of using gear is very helpful so that endurance is maintained and avoids cramps in the calves and thighs. The use of the Samsung Health application is quite helpful to regulate cycling speed, so that every one kilometer is always informed of the distance traveled, the remaining distance, the duration of the bike and the average speed. Theo, Endy, Nina and Black used Garmin for speed, altitude and other measurements to make it more accurate. After pedaling, usually Endy and Theo immediately updated their roaming results using Strava and Relive (Hochmair, Bardin & Ahmouda, 2019):

"Today's information technology in cycling drive us to make such a digital cycling planning before we commence the trip. Prediction on percentage of distance, up hill, flat and down hill terrain are to seek in the application. This technology really assist us to have cycling not only in regional, even national and international routes".

Third stage: Post-cycling tour

Member of whatsapp group of cycling made a lot of activities regarding Flores cycling tours in this apps by sending pictures, terrain information, distances, cycling technical coaching by the expert, and even making a lot of jokes commentaries. Those all cycling participants felt one purposes to enjoy cycling together. This social media made a new bend of cycling although this is not a championship. This was only a group of people that looked for enjoyment of cycling, gaining health in the time they were supported by their wealth, not being a champion. Black (P5) confirmed the benefit to join the cycling tour:

"Cycling as a hobby is able to create a new social construction between cyclist with different background of sex, education, age, occupation, income, ethnics, and others, even they make a group of social media such as Whatsapp group for the purposes of togetherness in cycling. Whatsapp as a product of information technology could invite all social actors."

Flores Island has enormous potentials as a tourist destination in Eastern Indonesia. The natural charms of its scenic coasts and mountains, combined with the cultural beauty make the island of Flores attractive to foreign and domestic tourists. For those traveling by bicycle, the natural and cultural attractions of this island are of particular interest. This needs to be called special because to enjoy the trip, you ride on bicycle, which is indeed perceived as having a different interaction with nature and society throughout the trip. All participants (P1-P5) expressed the dream of tourism development (Berridge, 2012; Kennely & Toohey, 2014) through sport event (Dawson & Jons, 2018) at the island:

“The cycling tour event can promote tourism destination. Labuan Bajo and Komodo Island are the new emerging icon tourism development in eastern region of Indonesia, however other region has attractiveness in tourism, from west region of the island to the eastern area. Cycling tour is one of effort to promote the destination beyond Labuan Bajo and Komodo Island.”

Discussion

Figures below described ANT model of contested social actors (cyclists), and technical actors (bicycle, and road infrastructures) on pre-departure information, during cycling tour, and post-cycling tour in Flores Island.

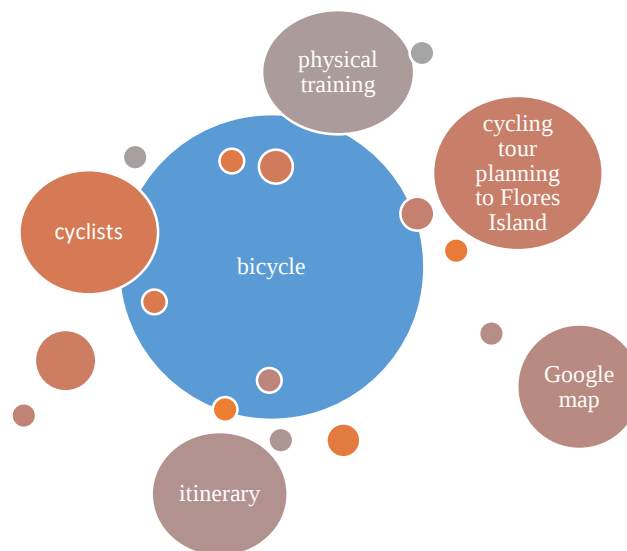


Figure 2: ANT model on pre-departure cycling tour in Flores Island

Figure 2 is a networking of pre-departure cycling tour, included cyclists and bicycle, physical training, cycling tour preparation, itinerary, and Google map. The network was created after the action of cyclist and their group member planned a cycling tour to Flores Island. A convergence milestone between cyclist, and availability of bicycle created the needs to travel in Flores Island by different type of transportation. Social actors (cyclists) tried to find out the best cycling schedule, financial, searching the best routes from Google, and physical preparation. The main technical actor is bicycle, and it is a meant of transportation was set up to adjust to the routes in Flores Island. The best type of bicycle is a touring bicycle with racks and pannier, where personal and technical gears put in it. Most cycling touring is a self-supported travel which cyclists took their own tents as their accommodation. Whilst, bicycle is contested as an actant which is dominating the structure of networking. Bicycle as a technical product shaped the motives of cyclist to make a cycling tour. Without bicycle, there is no cycling tour to Flores Island. Pre-departure cycling tour ANT model was a first step for cyclist to prepare the bicycle. The translation of bicycle as an artifact is not only as a mode of transportation and sport utilities, however it has more meanings for cycling tourism. This cycling tourism translated into special interest tourism because only certain tourist (cyclists) travel to Flores Island by cycling. The relationship between actors were intermediated by cycling tour planning (McLeod, Babb, & Barlow, 2020). The planning was written on paper which is called as an itinerary. Detailed information on date, days, routing, distance, and duration were put in the itinerary. The itinerary connected cyclists to cycling schedules

during days and targeted destination.

The cycling tour planning field ranges from simple technology artifact (a gravel road) and asphalt street in Flores into airplane at the airport (both in Jakarta, Labuhan Bajo and Maumere), reservation, ticketing, boarding pass printing process till boarding to the airline, it is a very high technology (Sayes, 2013; Law & Urry, 2004), and facilities, infrastructure and amenities at the destination (Beard, Scarles & Tribe, 2016; Van der Duim, Ren & Johansson, 2017). The itinerary and three stages of cycling tour (pre-departure arrangement – en route – post-cycling tour) were the tokens which had been identified and traced. The itinerary was made on a piece of paper that contain date and day, duration of cycling, name of program, place to eat, where to stay overnight, how to get to destination and possibilities of contingency planning just in case last minutes changes happened. For certain nomadic cycling tourist that en route for years around the world, they did not have a specific and tight schedule. A cycling tour is a product tour. The three stages shaped social and technical actors, and valued all semiotics interaction between both actors (Law, 2009; Johansson & Baerenholdt, 2020).

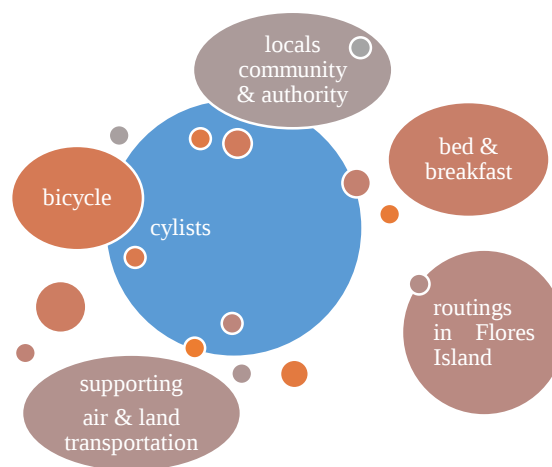


Figure 3: ANT model enroute during cycling tour in Flores Island

Figure 3 is a networking between actors during cycling tour, included cyclists, locals community and authority (social actors) and bicycle, supporting air and land transportation, airport, bed and breakfast, cycling tour preparation, itinerary, and Google map routings in Flores Island (technical actors). Actors interaction between cycling tourist, cycling tourist to airlines staff, ground handling staff at the airport, hotel and restaurant staff, local community en route cycling in Flores constructed temporary social institution because of motives between the human actors. A semiotic of arrival a group of tourists cycling to locals community was symbolized as a pride because their culture and region were explored by the cyclist. More formal interactions were between cycling tourist to local tourism industry, it had a symbol of profit oriented in service industry. Technical actors interaction on bicycle are the preferences of bicycle selection type, group set, tire selection, the use of *Shimano Pedal Dynamics* (SPD), hands glove, helmet, sunglasses, digital speedometer and heart rate, front and rear racks, panniers are technical matters. A synthesized of concepts in daily itinerary and integrated action of pedaling, handling the bar between cyclist and bicycle is the arena of contested cycling tour and ANT. Whilst, cyclist is contested as an actant which is dominating the structure of networking. Most dominant human actors (cyclists) in the research, those they were the social agent in ANT as a people migrated from their origin of their home country to the destination (Van der Duim, Ren & Johansson, 2017). En route the journey, those cycling tourist made a relationship and communication even shared power relation to person whose served the cycling tourist.

The translations of cycling tour during cycling tour were constructed between social actors (relation cycling tourist to tour industry supplier and between technical actors (relation bicycle to airlines, supporting cars, hotel rooms, restaurant and road provision en route). ANT shared power relation between in human and non-human network. As performing participatory research, the researchers taking a part preparation before departure through cycling exercises to mountainous

up hill area, briefing and counting financial, applying permission to campus, en route cycling in Flores island and informal interview in depth with selected participants.

The relationship between actors are intermediated by infrastructures and facilities (Pritchard, Bucher & Froyen, 2019), bike lane is a simple lane with (usually) white color, painted on the road to recognized by cyclist and other users mean of transportation (Pulugurtha & Thakur, 2015), understand roadway characteristics (Morrison, Thompson, Kondo & Beck, 2019), it is a built environment (Sarjala, 2019). Bike line in a simple of road technology signage, it has a demarcation function between cyclist arena and non-cyclist scope of road. The line has a power to protect cyclist from non-cyclist intervention along the road. However, in the work of Duarte, Procopiuck & Fujioka (2014), city of Curitiba did not provide commuter cyclist by bicycle lane and it is a similar condition with no bike lane provision en route cycling tour in Flores Island for 650 km, distance from the west part area to the eastern part of the island.

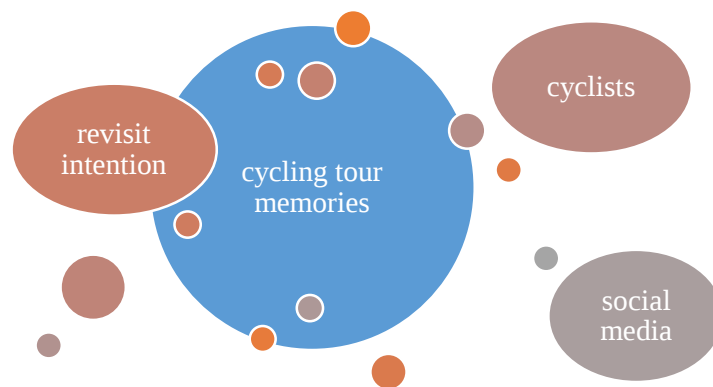


Figure 4. ANT model post-cycling tour in Flores Island

Figure 4 is a networking between actors on post-cycling tour, included revisit intention, cycling tour memories, cyclists (social actors) and social media (technical actors). There is a significant different model that bicycle as a technical actor was not in the model. It is because this post-cycling tour already shifted the existing bicycle into photograph and film in social media as a form of memorable tour. Cyclists are the social actors that gain memorable cycling tour in Flores Island. Memorable tour. Cycling tourist, as human actor, with their cognitives, values, motives, and affective make tours planning and it is written on a paper. This piece of paper (non-human actor) conducted cycling tour through the provision of field of cycling, duration, programs, last minute changes, special requests, and challenging during the trip. Cycling tourist characters are necessary to be recognized in a demographic, sociology and anthropology point of view. For example, the opportunity to join the trip, a cyclist should consider their capability in finance, physical readiness, and availability of leisure time (Buning, Cole & McNamee, 2016). Bicycle, car for bicycle loading, airplane to transfer to Flores Island, accommodations, restaurants, places of interest at destination, souvenirs provided are technical actors. A type of bicycle has semiotic meaning to the cyclist. Bike touring specification with racks and pannier (rear and front), not for a race purpose, it is more useful to carry a lot of daily needs than for speeding, and it took traveling time for months.

Whilst, cycling tour memories were contested as an actant which is dominating the structure of networking. Cycling tourist satisfaction would be expressed in behavioral intentions to cycling destination. Cycling tourists had also their behavioral/revisit intention on cycling activities wherever they went just because of challenging to conquer new destinations (Moularde & Weaver, 2016). The translation of ANT on this cycling tour was the use of social media as an artifact of information and technology actors (Kerr, 2016.p30; Norcliff, 2020), while it was used for documentation on digitalization (Teles & Joia, 2011; Permatasari, Qohar, & Rachman, 2020) on social media, such as Facebook or Instagram or even sport software and application for cycling Strava application and Relief application even sport software and application for cycling. The relationships between actors were intermediated by revisiting the intention as a special interest product. It was constructed by social (human actors) and technical ones as non-human actors (Griffith & Dougherty, 2001) in ANT

approach. The enjoyment of moving by cycling while feeling direct fresh air, wind, pedaling downhill or uphill during cycling in Flores Island was as part of attractiveness and memorable life experience.

Conclusion

This research was an effort to identify relation human and non-human relations within a cycling tour, then how the process of relation between actors constructed a tourism product such as a cycling tour. The phrase of human and non-human actors or agents, and sociotechnical (Griffith & Dougherty, 2001) were employed in this research in order to investigate a semiotics in their relationship. Values of their experiences and their style in cycling related to motives and type of bicycle they rode on it. ANT approach described cycling tour in Flores Island, from departure in their home country – travel pattern to destination or during enroute cycling till finish line, and flying back to their home country.

Bicycle as a mean of transportation is very useful for a sustainable paradigm in certain cities. Many cities in the world put bicycle as an alternative transportation in order to reduce level of air pollution for commuters. Development of urban area seeks more sport and tourism for building environment bike infrastructure, such as bike lane, signage, and public shared bike (Castillo-Manzano, Lopez-Vaspuelta & Sanchez-Braza, 2016). This built environment should be supported by social actors in terms of local bicycle community to campaign the goodness of bicycle (Sarjala, 2019). This social actors get together between cyclist to make an organization such as worldwide Bike 2 Work (Bike to Work) community. The development of cycling and recreation area development is mostly initiated by local community.

This research has some practical implications on socio-technic arena (Griffith & Dougherty, 2001) in cycling tour, both packaged and nomadic tours. This research performed cycling tourists (as a human actors) in cycling tours planning and operation, and employed technical actors such bicycles, the bicycle boxes, and luggage regulations. Planning cycling tour is a special arrangement, because it is a distinctive social construction and technology than common mass tourism. Physical training, cycling technique, health and safety, finance condition and leisure time consideration are social matters.

Whilst it would be suggested that the finding of this reserhis limited through its too wide and heterogenous actors on origin of cycling tourist, travel patterns, and destination in tourism system. Further research should be more focus on relations and shared power when the cyclists were on the second stage only (en route cycling) in Flores Island. There is a social determination when cyclists ride on a touring bike for several days, feeling enjoyment on bike, internalization human body with bicycles on every pedaling movement on the front gear, conquer uphill, flat and downhill terrain, sunburnt and tanning on the legs and hands, get wet when it's raining and documentation moments in social media.

The technological determination attracted the cyclist to set up which bicycle would be fit the human body size, selection of different bicycle types and every bicycle has its own price. The study highlighted the convergence of human and non-human actor relations to construct a cycling tour phenomenon within a good planning and nice operation during the trip, whilst it is necessary to conduct travel management.

REFERENCES

- Andreae, M., Hsu, J., & Norcliffe, G. (2013). Performing the trade show: The case of the Taipeh International Cycle Show. *Geoforum*, 193-201.
- Beard, L., Scarles, C., & Tribe, J. (2016). Mess and method: Using ANT in tourism research . *Annals of Tourism Research*, 97-110.
- Berger, I. E., & Greenspay, I. (2008). High (on) Technology: Producing Tourist Identities through Technologized Adventure. *Journal of Sport & Tourism*, 89-114.
- Berridge, G. (2012). The promotion of cycling in London: The impact of 2007 Tour de France Grand Depart on the image and provision of the cycling in the capital. *Journal of Sport & Tourism*, 43-61.
- Bordelon, L. A., & Ferreira, S. L. (2019). Mountain Biking (white, wealthy, middle-aged) men: the Cape Epic mpuntain bike race. *Journal of Sport & Tourism*, 41-59.
- Bull, C., & Lovell, J. (2007). The Impact of Hosting Major Sporting Event on Local Residents: an Analysis of the View and

Perception of the Canterbury Residents in Relation to the Tour de France 2007. *Journal of Sport & Tourism*, 229-248.

Bull, C. (2006). Racing Cyclists as Sports Tourists: The experiences and behaviours of a case Study Group of Cyclist in East Kent, England. *Journal of Sport & Tourism*, 259-274.

Buning, R. J., & Gibson, H. J. (2016). The role of travel conditions in cycling tourism: implications for destination and event management. *Journal of Sport & Tourism*, 1-19.

Buning, R. J., Cole, Z. D., & McNamee, J. B. (2016). Visitor expenditure within mountain bike event portfolio: Determinants, outcomes and variations. *Journal of Sport & Tourism*, 103-122.

Castillo-Manzano, J. I., Lopez-Vaspuelta, L., & Sanchez-Braza, A. (2016). Going a long way? On your bike! Comparing the distances for which public bicycle sharing system and private bicycles are used. *Applied Geography*, 95-105.

Chen, P.J. (2006). Sport Tourist' Loyalty: A Conceptual Model. *Journal of Sport & Tourism*, 201-237.

Dawson, J., & Jons, H. (2018). Unravelling legacy: a triadic actor-network theory approach to understanding the outcomes of mega events. *Journal of Sport & Tourism*, 43-65.

Derom, I., & Ramshaw, G. (2016). Leveraging sport heritage to promote tourism destinations: the case of Tour de Flanders Cyclo Event. *Journal of Sport and Tourism*, 1-21.

Downward, P., Lumsdon, L., & Weston, R. (2009). Visitor Expenditure: The Case of Cycle Recreation and Tourism. *Journal of Sport and Tourism*, 25-42.

Duarte, F., Procopiuck, M., & Fujioka, K. (2014). 'No bicycle lanes!' Shouted the cyclist. A controversial bicycle project in Curitiba, Brazil. *Transport Policy*, 180-185.

Eichner, E. R. (2008). Heat Cramps in Sport. *Current Sports Medicine Reports*, 178-179.

Griffith, T. L., & Dougherty, D. J. (2001). Beyond socio-technical systems: introduction to the special issue . *Journal of Engineering and Technology Management*, 207-218.

Habibi, A., Razak, A. R., Yusup, F. D., Mukminin, A., & Yaqin, L. N. (2020). Actors Affecting ICT Integration During Teaching Practices: A Multiple Case Study of Three Indonesian Universities. *The Qualitative Report*, 1127-1144.

Hall, M. (2013). Framing Tourism Geography. *Annals of Tourism Research*, 43, 601-623.

Hamman, C., & Peek-Asa, C. (2013). On-road bicycle facilities and bicycle crashes in Iowa, 2007-2010. *Accident Analysis and Prevention*, 103-109.

Han, H., Meng, B., & Kim, W. (2017). Bike-traveling as a growing phenomenon: Role of attributes, value, satisfaction, desire, and gender in developing loyalty. *Tourism Management*, 91-103.

Handy, S., & Lee, A. E. (2020). What is it about bicycling? Evidence from Davis, California. *Travel Behaviour and Society*, 348-357.

Higham, J., & Hinch, T. (2002). Tourism, sport and seasons: the challenges and potential of the overcoming seasonality in the sport and tourism sectors. *Tourism Management*, 175-185.

Hochmair, H. H., Bardin, E., & Ahmouda, A. (2019). Estimating bicycle trip volume for Miami-Dade county from Strava tracking data. *Journal of Transport Geography*, 58-69.

Hoye, A. (2018). Bicycle helmet - To wear or no to wear? A meta-analysis of the effects of bicycle helmet on injuries. *Accident Analysis and Prevention*, 85-97.

Humphreys, C. (2014). Understanding how sporting characteristics and behaviours influence destination selection: a grounded theory study of golf tourism. *Journal of Sport & Tourism*, 1-26.

Janke, J., & Handy, S. (2019). How life course event trigger changes in bicycling attitudes and behaviour: Insight into causality. *Travel Behaviour and Society*, 31-41.

Johannesson, G. T., & Baerenholdt, J. O. (2020). Actor-Network Theory. *International Encyclopedia of Human Geography*, 33-40.

Johannesson, G. T. (2005). Tourism Translation Actor-Network Theory and tourism research. *Tourist studies*, 133-150.

Johannesson, G. T. (2010). Emerging Vikings The Social Ordering of Tourism Innovation. *Event Management*, 261-274.

Jorgensen, M. T. (2017). Reframing tourism distribution - Activity Theory and Actor-Network Theory. *Tourism Management*,

312-321.

Kaghan, W. N., & Bowker, G. C. (2001). Out of machine age?: complexity, socitechnical system and actor network theory. *Journal of Engineering and Technical Management*, 253-269.

Kennelly, M., & Toohey, K. (2014). Strategic alliances in sport tourism: National sport organisations and sport tour operators. *Sport management review*, 17(4), 407-418. , <http://dx.doi.org/10.1016/j.smr.2014.01.001>.

Kerr, R. (2016). *Sport & technology*. Manchester: Manchester University Press.

Kulczycki, C., & Halpenny, E. A. (2014). Sport cycling tourists' setting preferences, appraisal and attachments. *Journal Sport & Tourism*, 169-197.

Lamont, M. (2009). Reinventing the wheel: A definitional discussion of Bicycle Tourism. *Journal of Sport & Tourism*, 5-23.

Law, J., & Singleton, V. (2013). ANT and Politics working in and on the world. *Qual Socio*, 485-502.

Law, J., & Urry, J. (2004). Enacting the Social. *Economy and Society*, 390-410.

Law, J., & Singleton, V. (2005). Object Lesson. *Organization*, 331-355.

Law, J. (2009). Actor-Network Theory and Material Semiotics. In B. S. Turner, *The New Blackwell Companion to Social Theory* (pp. 141-158). Oxford: Blackwell Publishing Ltd.

Latour, B. (2020). Composing the New Body Politics from Bits and Pieces. In B. Latour, S. Schaffer, & P. Gagliardi, *A Book of Body Politic Connecting Biology, Politics and Social Theory (San Giorgio Dialogue 2017)* (pp. 19-38). Venezia: Fondazione Giorgio Cini.

McLeod, S., Babb, C., & Barlow, S. (2020). How to 'do' a bike plan: Collating best practices to synthesise a Maturity Model of planning for cycling. *Transportation Research Interdisciplinary Perspectives*, 100-130.

Morrison, C. N., Thompson, J., Kondo, M. C., & Beck, B. (2019). On-road bicycle line types, roadway characteristics, and risks for bicycle crashes. *Accidents Analysis and Prevention*, 123-131.

Moularde, J., & Weaver, A. (2016). Seriuos about leisure, serious about destination: mountain bikers and destination attractiveness. *Journal of Sport & Tourism*, 1-19.

Newland, B. L., & Aicher, T. J. (2018). Exploring Sport Participants' event and destination choices. *Journal of Sport & Tourism*, 1-19.

Newsome, D., Stender, K., Annear, R., & Smith, A. (2016). Park management response to mountain bike trail demand in South Western Australia. *Journal of Outdoor Recreation and Tourism*, 15, 26-34. <http://dx.doi.org/10.1016/j.jort.2016.07.001>.

Norcliffe, G. (2011). Neoliberal mobility and its discontents: Working tricycles in China's cities. *City, Culture and Society*, 235-242.

Norcliffe, G. (2016). *Critical Geographies of Cycling: History, Political Economy and Culture*. New York: Routledge.

Paget, E., Dimanche, F., & Mounet, J.-P. (2010). A Tourism Innovation Case: An Actor-Network Approach. *Annals of Tourism*, 828-847.

Permatasari, P. A., Qohar, A. A., & Rachman, A. F. (2020). From WEB 1.0 to WEB 4.0: The Digital Heritage Platforms for UNESCO'S Heritage Properties in Indonesia. *Virtual Archaeology Review*, 75-93.

Pritchard, R., Bucher, D., & Froyen, Y. (2019). Does new bicycle infrastructure result in new or rerouted bicyclist? A longitudinal GPS Study in Oslo. *Journal of Transportation and Geography*, 113-125.

Pulugurtha, S. S., & Thakur, V. (2015). Evaluating the effectiveness of on-street bicycle lane and assessing risk to bicyclist in Charlotte, North Carolina. *Accident Analysis and Prevention*, 34-41.

Rachman, A. F., & Tekol, Y. C. (2020). Cultural Transformation into Tourist Attraction. *Journal of Indonesian Tourism and Development Studies*, 14-24.

Ren, C. (2011). Non-Human Agency, Radical Ontology and Tourism Realities. *Annals of Tourism Research*, 858-881.

Ren, C., Johansson, G. T., & van der Duim, R. (2012). How ANT works. In R. van der Duim, C. Ren, & G. T. Johannessen, *Actor-Network Theory and Tourism: Ordering, materiality and multiplicity* (p. 13). Oxon: Routledge.

Sarjala, S. (2019). Built environment determinants of pedestrians' and bicyclists' route choices on commute trips: Applying a new grid-based method for measuring the built environment along the route. *Journal of Transport Geography*, 56-69.

- Sayes, E. (2014). Actor-Network Theory and methodology: Just what does it mean to say that nonhumans have a agency? *Social Studies of Science*, 134-149.
- Shipway, R., King, K., Lee, I. S., & Brown, G. (2016). Understanding cycle tourism experiences at the Tour Down Under. *Journal of Sport & Tourism*, 1-19.
- Snelgrove, R., & Wood, L. (2010). Attracting and Leveraging Visitors at a Charity Cycling Event. *Journal of Sport & Tourism*, 269-285.
- Stinson, M. J., & Grimwood, B. S. (2019). On actor-network theory and anxiety in tourism research. *Annals of Tourism Research*, 77(1), 141-143. <https://doi.org/10.1016/j.annals.2018.12.003>.
- Stoffelen, A. (2018). Tourism Trails as tools for cross-border integration: A best practice case study of the Vennbhan cycling route. *Annals of Tourism Research*, 91-102.
- Teles, A., & Joia, L. A. (2011). Assessment of digital inclusion via the actor-network theory: The case of the Brazilian municipality of Pirai. *Telematics and Informatics*, 191-203.
- Tribby, C. P., & Tharp, D. S. (2019). Examining urban and rural bicycling in the United States: Early findings from the 2017 National Household Survey. *Journal of Transport and Health*, 143-149.
- Van der Duim, R. (2007). Tourism as an Actor-Network Perspective. *Annals of Tourism Research*, 34, 961-976.
- Van der Duim, R., Ren, C., & Johanesson, G. T. (2017). ANT: A decade of interfering with tourism. *Annals of Tourism Research*, 139-149.
- Van der Duim, R., & Caalders, J. (2008). Tourism Chains and Pro-poor Tourism Development: An Actor-Network Analysis of a Pilot Project in Costa Rica. *Current Issues in Tourism*, 107-125.
- Van der Duim, R., Ren, C., & Johanesson, G. T. (2013). Ordering, materiality, and multiplicity: Enacting Actor-Network Theory in Tourism. *Tourist Studies*, 3-20.
- Whitehead, J. C., & Wicker, P. (2018). Estimating willingness to pay for a cycling event using a willingness to travel approach. *Tourism Management*, 160-169.
- Wathanaklang, D., Ratanavaraha, V., Chatphattananan, V., & Jomnonkwao, S. (2016). Measuring the motivation to ride bicycles for tourism through a comparison of tourist attractions. *Transport Policy*, 153-163.
- Wong, C. U., & McKercher, B. (2012). Day tour itineraries: Searching for the balance between commercial needs and experiential desires. *Tourism Management*, 1360-1372.
- Weed, M. (2009a). Global Trends and Sports Tourism. *Journal of Sport & Tourism*, 1-19.
- Weed, M. (2009b). Progress in sports tourism research? A meta-review and exploration of futures. *Tourism Management*, 615-628.
- Wen, J., & Wu, M.-Y. (2020). How special is special interest tourism - and how special are special interest tourists? A perspective article in a Chinese context. *Current Issues in Tourism*, 1968-1972.
- Xing, Y., Volker, J., & Handy, S. (2018). Why do people like bicycling? Modeling affect toward bicycling. *Transportation Research Part F*, 22-32.