# Changes in the cultural landscape and their impacts on heritage management : a study of Dutch Fort at Galle, Sri Lanka

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# 3.  Methodological Framework

*This chapter focuses on the methods used to collect the research data for the study. It elaborates on the combined use of qualitative data and quantitative data as well as analysis techniques in achieving each of the specific goals of the research.*

## 3.1 RESEARCH APPROACH AND METHODS

### 3.1.1 RESEARCH PROBLEM

The physical and human environment of the Galle Fort has been subject to considerable changes since the fort gained World Heritage status. These changes have significantly impacted both the fort as a monument and the people living there. In addition, there are conflicting interests between the fort community and heritage management authorities.

**Research Questions:**

1.  What demographic, built-environment, commercial and cultural changes has Galle Fort undergone so far since the initiation of the World Heritage project?

2.  Why do these impacts seem irreconcilable with the established guidelines for heritage management in Sri Lanka as a developing nation?[227]

3.  How can a more equitable solution be developed for Galle Fort with a greater consensus between stakeholders?

### 3.1.2 RESEARCH APPROACH, METHODS AND FIELD WORK

The research goals have been achieved by using both qualitative and quantitative approaches. The key areas analysed—the changes to Galle Fort since its World Heritage recognition in 1988, the conflicting interests of stakeholders, heritage laws, policies and practice—were all interrelated factors and consequences affecting each other. While the tangible aspects (changes to the historic buildings, demography, etc.) were mainly analysed quantitatively, the intangible aspects were analysed with qualitative methods (Table 01 and 02). In identifying the conflicts of interest, community and heritage institutions were considered as equally important, while the community (residents and the business community) was weighted more heavily, based on the current people-centred approach in urban heritage management, as elaborated in the theories chapter. The ideas of other stakeholders were also considered, in accordance with the participatory approach discussed in sub-chapter 2.4.

To be able to answer the sub-questions, fieldwork was considered an integral and necessary part of the study. Thus, more than one year was spent on fieldwork during 2015–2018 in the periods listed below; this mainly included participant observation at Galle Fort, one of the main sources of data gathering, which is discussed later (Table 03). In addition, some of my observations from Galle Fort in January 2019 are also included in the study.

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227        As briefly outlined in sub-chapter 1.4.3.

| Research Question | Qualitative Data Analysis Method | | | |
|---|---|---|---|---|
| | Interview | Questionnaire | Participant observation | Anecdote |
| Stakeholders' perception of Galle Fort and its changes | √ | √ | √ | √ |
| Conflicting interests | √ | - | √ | √ |
| Behaviour of community and heritage authorities | - | - | √ | - |
| Community ideas about heritage laws, policies and practice | √ | - | √ | - |

*UDA: Urban Development Authority; GMC: Galle Municipal Council; DOA: Department of Archaeology; GHF: Galle Heritage Foundation.*

**Table 1** Qualitative data analysis.

| Cultural Landscape Changes | Data Analysis Method | | |
|---|---|---|---|
| | Qualitative | Quantitative | Quantitative Data |
| **Built Environment** | √ | √ | Land use survey with drone images, building development data (UDA, GMC), data on illegal developments (DOA) |
| **Demography** | √ | √ | Demographic data |
| **Economy** | √ | √ | Business registration data, field surveys, surveys of UDA and GHF |
| **Urban culture** | √ | - | - |

*UDA: Urban Development Authority; GMC: Galle Municipal Council; DOA: Department of Archaeology; GHF: Galle Heritage Foundation.*

**Table 2** Qualitative and quantitative data analysis.

| Year | Month | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec |
| **2014** | | | | | | | | | | | | |
| **2015** | | | | | | | | | | | | |
| **2016** | | | | | | | | | | | | |
| **2017** | | | | | | | | | | | | |
| **2018** | | | | | | | | | | | | |

| | Fieldwork at Galle Fort |
|---|---|
| | Writing |

**Table 3** Fieldwork schedule

## 3.1.3 MATERIALS

**Primary Data**

**Qualitative Data**
i. Interviews (structured and semi-structured)
ii. Questionnaires
iii. Participant observation, including informal conversation
iv. Case studies, short cases (including "anecdotes")

**Quantitative Data**
**Mapping Data**
i. Cadastral Map of Galle Fort (No. 81003, 1:1000), 2013, Survey Department, Sri Lanka
ii. Drone images of Galle Fort with full coverage, April 2016 (DJI Phantom 3 Professional Drone)
iii. World View 3 panchromatic satellite images of Galle Fort, 2017 (courtesy DigitalGlobe Foundation)
iv. Aerial photographs of Galle Fort Nos. 65.05.036 (1965); 94.16.092 (1994) Survey Department, Sri Lanka

**Statistical and Other Quantitative Data**
i. Demographic data for Galle Fort (Department of Census and Statistics, Sri Lanka)
ii. Business registration data for Galle Fort (Four Gravets Divisional Secretariat, Galle)
iii. Statistical data on applications and issuance of the Preliminary Planning Clearance (Urban Development Authority, Galle)
iv. Data pertaining to the issuance of Building Permits in Galle Fort (Galle Municipal Council)
v. Data related to illegal developments and destruction of antiquities (Regional Archaeology Office, Galle)

**Other primary sources**
i. Local heritage laws, policy documents and policy decisions
ii. International heritage guidelines
iii. Decisions of the World Heritage Committee on the Old Town of Galle and its Fortifications
iv. Letters exchanged between heritage institutions and stakeholders
v. Primary literary sources and archival maps

**Secondary Data**
i. The systematic documentation of the building of Galle Fort, entitled *The Conservation of the Galle Fort and its Environs* (Kuruppu and Wijesuriya 1992)
ii. Literary sources

## 3.1.4 TOOLS AND TECHNIQUES

i. IBM SPSS Statistics 23
ii. ArcGIS 10.2

IBM SPSS Statistics was used to create the land use dataset for the fort, which was used to compare land use between 1992 and today, as elaborated in sub-chapter 3.3.1. The reasons for using SPSS were its ability to handle large amounts of data, its wide selection of analytical functions and its compatibility in linking the SPSS dataset with ArcGIS (as discussed in sub-chapter 3.3.2). The dataset included nearly 500 housing units, and thus the use of SPSS was efficient in analysing the changes in building stock, which was done with the simple descriptive statistics of SPSS. Furthermore, large amounts of qualitative data, especially the structured interviews and questionnaires, were also analysed with the simple descriptive statistics of SPSS. ArcGIS was mainly used to visualize the land use changes discussed in chapter 5.
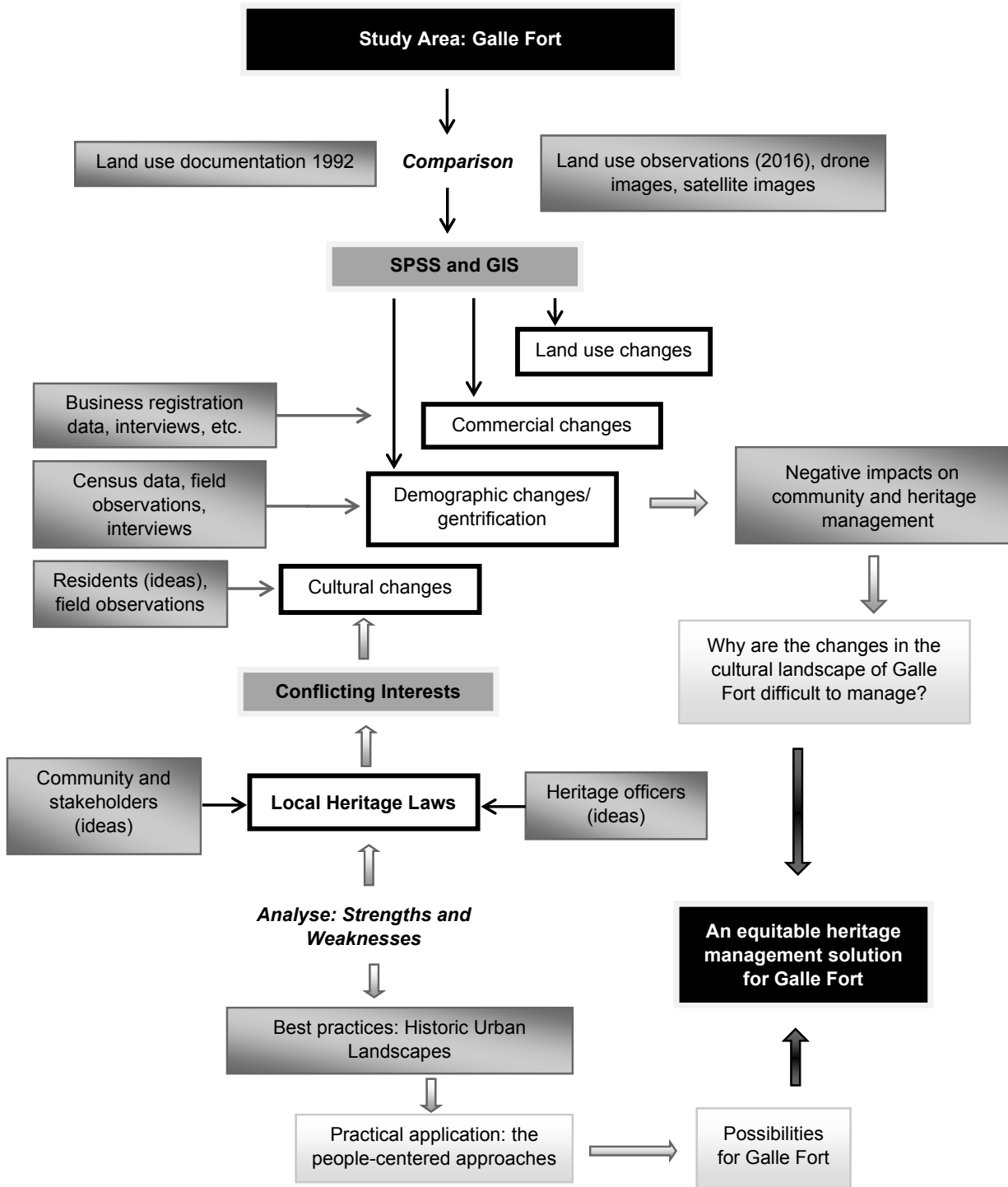
## 3.1.5 FLOW OF THE METHODOLOGY



**Fig. 27** Flow of the methodology.

## 3.2 QUALITATIVE DATA ANALYSIS METHODS

### 3.2.1 STRUCTURED INTERVIEWS WITH RESIDENTS

In structured interviews, people are asked to respond to as nearly identical a set of stimuli as possible, which are administered orally (Bernard 2006). According to Bernard (2006), a questionnaire is regarded as one kind of structured interview. Thus, a structured interview with questionnaire was administered orally to examine the ideas of residents, the key informants, while semi-structured interviews were also used (as is discussed below). A questionnaire is specifically considered suitable for ascertaining the overall opinion of the community on certain issues, such as ideas on the changes to Galle Fort, heritage laws, building development procedure, etc.[228] Furthermore, this method was considered the best approach due to the reluctance of some residents to record interviews. A substantial number of them had conflicts with heritage institutions associated with "illegal"[229] developments. Although they liked sharing this information, they did not want the interviews to be recorded. Thus, some information was recorded as field data.

Two questionnaires were specifically made for the structured interview, respectively consisting of 65 questions (a general questionnaire) and ten questions (a questionnaire on building development, if applicable), both including answer choices; however, the respondents were allowed to go beyond the form to express their views in detail and provide other answers if necessary, thus expanding the information and answer choices. While some of these interviews were recorded with the consent of the respondents, the majority of them

were not recorded, depending on the consent of the residents. The analysis of the data was mainly done with the simple descriptive statistics of SPSS.

### The Snowball Technique in the Selection of the Sample

The snowball technique, a network sampling method was used in choosing the sample; this is identified as the best method for dealing with a relatively small population of people who are likely to be in contact with one another (Bernard 2006). In traditional Sri Lankan neighbourhoods, it is very common for neighbours to have close contact with each other. This is very much visible in Galle Fort (as discussed in sub-chapter 6.1.1), which is a relatively small and confined space, where the houses share common walls, and the population of less than 1,000.[230] Among the 319 families (Electoral Register, 2012), there are some who have lived there for generations (although many have now left the fort), which has increased their neighbourhood relationships. According to Bernard, the snowball sample grows through recommendations by participants.

"In the snowball technique, you use key informants and/or documents to locate one or two people in a population. Then, you ask those people to (1) list others in the population and (2) recommend someone from the list whom you might interview. You get handed from informant to informant and the sampling frame grows with each interview. Eventually, the sampling frame becomes saturated—that is, no new names are offered" (Bernard 2006, 193).

The method is commonly used with hard-to-find or hard-to-study populations, mainly for three reasons: there are few members scattered over a large area; they are stigmatized and reclusive people (e.g., HIV-positive individuals or drug users); or they are members of an elite group who don't care about the needs of the researcher's data (Bernard 2006). It was essential to this research to identify the longtime residents of Galle Fort who have experienced the changes in the fort (since heritage recognition), as increasing gentrification and commercialization has reduced their number

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228    The questionnaires included questions on the residents' perceptions of Galle Fort, changes to Galle Fort, the interviewees' houses, heritage laws, "illegal" developments, property sales at Galle Fort, the advantages and disadvantages of living in Galle Fort and building development procedure (if applicable, in the case of residents who have developed their properties).

229    As outlined in sub-chapter 7.3, although they are deemed "illegal," some of these are simply requirements of the community; however, they are not properly facilitated by the heritage laws. Thus, it is questionable to call them illegal and therefore the terms "illegal" and "unauthorized" used in this study depending on the context.

230    1,068 in 2012 (Census of Population and Housing, 2012, Department of Census and Statistics, Sri Lanka).

significantly. Generally, the fort's residents are difficult to approach for a few reasons. First, the majority of them are reluctant to share information on development and heritage practice, as a considerable number of residents have conflicts with heritage authorities over "unauthorized" developments. Secondly, there are groups that do not care about the researcher's data, which includes the majority of the inhabitants who have recently become wealthy due to tourism or comprise the (traditional) elite of the fort. Thirdly, requesting data from residents is very common, as several government surveys and other studies have been carried out in the World Heritage City, and thus some residents see it as a disruption. For these reasons, during my first two months in Galle Fort, I failed to find residents who were willing to share information. Therefore, the snowball technique was used as a solution to this practical problem.

Key informants, who were identified mainly through day-to-day conversations, recommended others who were willing to participate, and this method was repeated with the new participants. This showed that residents were not reluctant to participate when they were recommended by neighbours who had also participated. For instance, a resident of Parawa Street recommended contacting her two neighbours, who then participated willingly. Consequently, it was decided that the participation of Parawa Street was sufficient when the owners of five of the 18 households on the street participated via each other's referral. In the end, a comparatively balanced sample of 33 informants, comprising all strata of society, ethnicities and street representation was achieved. The sample included 18 Muslims, 14 Sinhalese and one Tamil resident.

Although "unauthorized" building development was not always a frankly answered question, participant observation filled in this gap, as discussed below. Despite the long time spent in each household, the technique was extremely productive in gathering the necessary data.

## 3.2.2 SEMI-STRUCTURED INTERVIEWS

Semi-structured interviews have open-ended questions, but follow a general script and cover a list of topics (Bernard 2006). The method is used to survey the ideas of heritage officers, policymakers, the business community (local and foreign), some residents and lawyers handling court cases on "illegal" developments. This was identified as an ideal method for gaining information from heritage officers, especially at the top level, who have limited time to provide data. The method was also used when there were few informants; however, the questions require further explanations. The members of the business community, both longtime dwellers and those who had conflicts with heritage authorities, as identified by the snowball technique, were also interviewed by using this method. All semi-structured interviews were recorded with the consent of informants. Interviews were analysed manually, while many important ideas were quoted to illustrate the arguments.

## The Trio: The Influential Middle-Level Heritage Officers

Three important middle-level heritage officers were identified, who represented the three main heritage agencies and were in charge of the World Heritage City from 2015 to 2017: the Project Planning Officer of Galle Heritage Foundation; the Exploration Officer responsible for Galle Fort at the Regional Archaeology Office (South), Galle (replaced by the Site Manager in September 2017); and the Town Planning Officer responsible for Galle Fort at the Urban Development Authority, Galle. Their ground-level work and longtime experience at Galle Fort have turned them into important officials with a strong voice in decision-making, including the Planning Sub-Committee.[231] It was observed, from 2015 to 2017, that these three officers have cultivated good professional relationships, and that they sometimes collectively made positive decisions while supporting each other's decisions, also in the Planning Sub-Committee.[232] For these reasons, these three officers were interviewed, and contacted both formally as well as informally.

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231    Galle Heritage Planning Sub-Committee (discussed separately in sub-chapter 4.3.2), which regulates development activities in Galle Fort.
232    However, this situation changed when two of these officers were promoted/transferred in late 2017/2018, resulting in a lack of collaborative decisions among the three main heritage institution in certain cases.

### 3.2.3 QUESTIONNAIRES

Questionnaires are a popular and useful tool in ascertaining public knowledge, perception and opinion. In this study, short questionnaires were used to gather ideas from local and foreign tourists, the business community and the heads of institutions within Galle Fort.[233] The main objective of using this technique is to identify the perceptions of Galle Fort in each of these groups by means of brief questionnaires, as they cannot devote more time to the matter.

**Tourists and Visitors (Local and Foreign)**
Although there are no exact statistics on visitor arrivals at Galle Fort, Urban Development Authority estimates there are about 2,000 to 3,000 daily tourist arrivals of both local and foreign origin.[234] Therefore, the estimated number of daily visitors was considered to be 2,000 (population size), and the sample size was determined by using the online sample size calculator of the National Statistical Service of Australia[235] as follows.

Confidence level: 95%
Population size: 2,000
Proportion: 0.5
Confidence level: 0.07 (upper: 0.57000; lower: 0.43000)
Slandered error: 0.03571
Relative slandered error: 7.14
Sample size: 179

Therefore, it was decided to survey the opinions of 200 visitors (100 foreign and local visitors each) within one day. The questionnaires included 14 short questions, with answer choices offered in both English and Sinhala to suit both the foreign and multi-ethnic local community of Sri Lanka. While Sinhala is one of the two official languages of the country (the other is Tamil), English is recognized as the "link language."[236]

In April 2016, questionnaires were randomly distributed among tourists at the Moon, Utrecht and Flag Rock Bastions of the ramparts, which are popular gathering places. However, willingness to participate was considered important. One of the constraints was the lack of English proficiency among tourists, especially from Russia, China and France. However, there were occasions when tour guides and friends assisted them. This was also common with local Tamil-speaking visitors, especially schoolchildren, although the majority of them answered the English questionnaires. In general, the participation was highly successful, and tourists also shared further experiences along with completing the questionnaire; these accounts were added as field notes. Analysis of the data was done with SPSS.

**Partly-failed Questionnaire with the Business Community**
According to UDA statistics (2015), more than 230 tourism-related businesses operate in the fort, owned by residents, locals and foreigners, as well as both local and foreign companies.[237] A considerable number of these businesses are run by staff/individuals for their owners, and the majority of foreign-owned businesses is run by local staff. The questionnaire consisted of 20 short questions on the perception of Galle Fort, the nature of the business, ownership, structural (architectural) changes to the location of the business, building development procedures and heritage laws. There were occasions when the staff refused to answer the questionnaire, claiming their poor knowledge of the facts, and were reluctant to answer without the consent of the owners. While some frankly said that they lied, it was ascertained that other owners provided only partial information. However, some owners, especially the residents of the Heritage City, took great interest in this regard. For these reasons, this method was aborted after the completion of 24 questionnaires, and it was decided to continue with semi-structured interviews with business owners identified through the snowball technique.

233    This includes 20 institutions from the public and private sectors and religious establishments.
234    "Social Screening Report: Rehabilitation of Sky Walkway at Rampart, Galle City," Ministry of Urban Development, 2015, p. 4, available at http://www.scdp.lk/pdf/social_safeguard/Galle/Urban%20Upgrading/SSR%20-Rampart%20Walkway%20SSR-Galle.pdf (accessed 4 July 2018).
235    Available from http://www.nss.gov.au/nss/home.nsf/pages/Sample+size+calculator (accessed 4 July 2018).
236    "Official Language Policy of Sri Lanka," available at

http://www.languagesdept.gov.lk/web/ (accessed 4 July 2018).
237    "Social Screening Report: Rehabilitation of Sky Walkway at Rampart," p. 4, available at http://www.scdp.lk/pdf/social_safeguard/Galle/Urban%20Upgrading/SSR%20-Rampart%20Walkway%20SSR-Galle.pdf (accessed 4 July 2018).

**Institutions**

23 Twenty-three heads or other relevant officers of institutions (public and private) located within the fort were interviewed successfully with questionnaires. This was nearly half of the institutions of the fort in 2016.

## 3.2.4 PARTICIPANT OBSERVATION AND INFORMAL CONVERSATIONS

Participant observation "involves going out and staying out, learning a new language (or a new dialect of a language you already know), and experiencing the lives of the people you are studying as much as you can" (Bernard 2006, 344). The method is considered a staple in anthropological studies, especially in ethnographic studies, and has been used for over a century (Kawulich 2005). The methods include observation, participation and informal conversation carried out on a day-by-day basis. Bernard distinguishes participant observation from both pure observation and pure participation (Dewalt and Dewalt 1998). While Bernard (2007) identifies the three levels of participation as complete participant, participant observer and complete observer, observing as an outsider is recognized as moderate participation by Dewalt and Dewalt (1998). While non-participant observation was recently recognized as observing passively without participation (Liu and Maitlis 2012), Dewalt and Dewalt (1998) identify it as acquiring cultural knowledge without the active interaction of people, such as watching television, reading newspapers, etc.

Despite its broad use, the technique has constraints, as it is time-consuming, it is difficult to keep field notes, and there is personal bias due to the closeness of the groups; important information could be missed due to familiarity (Dewalt and Dewalt 1998). In addition, the method has ethical concerns, as informants do not know the information shared as "gossip" will become part of a book (Dewalt and Dewalt 1998). Thus, Dewalt and Dewalt (1998) point out that every possible step must be taken "to do no harm to our informants," according to the contemporary code (1997) of American Anthropological Association.

The major aim of using this method in this study is to identify the conflicting interests between the community and heritage authorities in the Heritage City through observing their natural behaviour and its results on a day-to-day basis by living in Galle Fort and interacting with both parties. The fundamental description of participant observation, as expressed by Malinowski on the Trobriand Islands, also includes taking a personal interest in gossip and taking morning walks through the town (Malinowski 2014).[238] Both methods were followed in this research, namely by building a good relationship with the community, which took nearly four months. Generally, the community is more open about their issues with someone familiar to them than with a researcher with field notes and a pen. They were more candid in informal conversations with regard to their "unauthorized" constructions and the behaviour of heritage institutions in legislative implementation. Thus, informal conversations are one of the main sources of this study. In addition, the observation of "illegal" developments when heritage offices were closed revealed the true nature of this issue. Thus, more than a year in total was spent between 2015 and 2018 at the YWCA,[239] a monumental building on Church Street. The major reason to not to stay with a resident family was the possibility of research bias due to familiarity.[240]

In addition, I participated in certain city events during this time, including the village security council meeting, functions at religious sites and other open functions, while I was invited by heritage authorities to a number of meetings, workshops and functions in the Heritage City. Among the non-participant observations are day-to-day observations of the Heritage City, as well as observations made while visiting both the Regional Office (South) of the Department of Archaeology and the Information Centre of Galle Heritage Foundation.

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238    "Soon after I had established myself in Omarkana (Trobriand Islands), I began to take part, in a way, in the village life, to look forward to the important festive events, to take personal interest in the gossip and the developments of the village occurrences … as I went on my morning walk through the village, I could see intimate details of family life ..." (Malinowski 2014, 6-7).
239    Young Women's Christian Association.
240    The Young Women's Christian Association (YWCA) of Galle runs a hostel for employed women and tourists (women), which houses employed women engaged in several sectors at Galle Fort, including the legal, education, banking and commercial (tourism) sectors. The YWCA works closely with the All Saints Church, one of the major living monuments at Galle Fort, as well as some residents. In addition, it rents space for businesses run by a leading (resident) businessman and a foreign investor. It is located right next to two large-scale development projects funded by a foreign and a local company in 2016.

**Challenges, Achievements and Pitfalls**

Participant observation was initially challenging, as some residents were suspicious toward me, knowing my affiliation with the Department of Archaeology; it was thus assumed that I was collecting data on their "illegal" developments to be submitted to the heritage authorities.[241] I was frustrated during the first two months in Galle Fort, as I could not build a good relationship with the community; some who spoke to me later ignored me. Yet, I kept on taking morning and evening walks in the fort, greeting the residents, and also spent time at one of the retail shops in Pedlar Street, chatting with the shopkeeper; this was a meeting place for residents. The situation gradually changed after the first four months, due in part to the use of the snowball technique (discussed above), which expanded my network. In the end, certain residents had some important things to share that they thought should be part of my research. Living in the fort also resulted in building good relationships with some residents, which was unavoidable, although a researcher should remain distant.

The case was similar with heritage officials, as it was difficult to remain distant in practice. Given the somewhat bad reputation that heritage authorities had in the community, the relevant heritage officers sometimes invited me when they made decisions that were positive for the community. The brief case of the foreign businessman's development, discussed in sub-chapter 7.6.1, is one such example. Participant observation gave me the opportunity to acquire a balanced view on certain critical incidents, as I saw how the community and heritage officers reacted and looked at the same issue from two different perspectives. Furthermore, I also saw the visible impact of these incidents on the urban landscape. While the community was frustrated with the law not being implemented equally, the officers revealed the practical challenges of legislative implementation.

### 3.2.5 ETHICAL CONSIDERATIONS, PITFALLS AND RESPONDENT CONFIDENTIALITY

My relationship with some residents as well as certain heritage officers sometimes resulted in personal bias, a pitfall of participant observation. Thus, I was reluctant to write anything that could harm them. Considering the ethics of this situation, members of the community were given pseudonyms when discussing sensitive information. This was especially relevant with respect to critical information about a number of controversial situations (such as "illegal" development, negative criticism, bureaucratic and political will, etc.) discussed in chapter 7. This method was also followed in the case of heritage officers and other professionals. In fact, there were occasions that when both residents and heritage officials requested to be anonymous, and I respected their requests. Similarly, some of them did wish to be named, and their wishes were respected, in the case of uncontroversial information. As a substantial amount of information is based on day-to-day conversations, I was very careful not to use this information in a way that could negatively affect the "contributors." It is also important to mention that the verbal consent of contributors was requested prior to conducting the interviews, while requesting written consent was somewhat difficult in the local context of Galle Fort.

### 3.2.6 ANECDOTES, MENTAL IMAGE OF THE CITY AND PRODUCING A SHORT DOCUMENTARY

Anecdotes are one of the major sources of information in this study. Anecdotes in this study could be regarded as interesting and powerful incidents (or examples) briefly adduced to support certain arguments, while some of them provide in-depth information on certain matters. In general, the arguments supported by anecdotes are either difficult to support with quantitative data, or could be better supported by both qualitative and qualitative data, since they are associated with the "human element" of the urban landscape. Sub-chapter 6.6 contains two anecdotes that focus on intangible aspects of the urban landscape (sense of place and neighbourhood feelings) affected by gentrification, which deals with the emotional feelings of residents and is thus difficult to analyse quantitatively. Both chapters 6 and 7 contain a number of anecdotes focused on the impacts of legislative implementation and socio-economic changes on the community.

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241     As revealed by a few residents later on.

Almost all of the anecdotes and short cases were retrieved through interaction with the community and heritage officers (participant observation), except for the three short cases in chapter 7.7, which deals with political and bureaucratic will. These are focused on controversial policy decisions (two of them also drew the attention of UNESCO) heavily affecting the urban landscape, and therefore considered important to this study. In general, some of these short cases are also supported by other sources, such as policy decisions, court decisions, letters and newspaper articles.

I produced the short documentary (20 minutes) *Another Story of Galle Fort: A UNESCO World Heritage City* based on the anecdote "Selling the Doll House" (sub-chapter 6.6.1). The documentary centres on the poem of the same name, copied by a shopkeeper in Galle Fort and written by a veteran Sri Lankan lyricist, and shows the lyricist's emotional attachment to his former house (in the fort), sold to a foreign investor in 2011. I identified documentary film as a powerful method for showing the residents' strong emotional attachment to their houses and urban landscape, which I had experienced from time to time throughout four years in Galle Fort, but is difficult to put into words in a book. Furthermore, I wanted to bring the research to a broader audience through this medium.

The research also attempts to ascertain the mental image of the city held by its residents, a method used by Lynch (1960). Mental mapping was developed by Kevin Lynch, and represents a visual perception of urban forms, based on the theory that people experience landscapes as places but not as artefacts (Williams 2015). Although a mental image is generally based on an individual's perceptions, a mental image of the fort collectively drawn by three residents is used here, which is closer to community mapping. The aim of this method is to identify a collective mental image of Galle Fort by a group of residents based on their collective memories, and thus, to identify how they experienced the landscape collectively. Community mapping, increasingly used today both in indigenous and non-indigenous communities, is defined as local mapping, produced collaboratively by local people, incorporating local knowledge about their places (Perkins 2007). Among the widely used terms for this are collaborative mapping and counter-mapping; the latter indicates the mapping against dominant power structures, or the opposite of the formal mapping of an authority (Hodgson and Schroeder 2002; Keller 2014).

## 3.3 QUANTITATIVE DATA ANALYSIS METHODS

### 3.3.1 COMPARISON OF BUILDING STOCK OF GALLE FORT FROM 1988 TO 2016

The main rationale for exploring the changes in building stock is to identify whether and to what extent material preservation is prioritized over the community of Galle Fort by current heritage management practice, and also to identify whether there is a difference in the way in which various actors are treated in this regard. Thus, a detailed periodic analysis of the changes in building stock at the inception of the World Heritage project, from



CHURCH STREET (NORTHERN PART)

**Fig. 28** Streetscape of Church Street with façades bearing the tax numbers 39 to 51 (Kuruppu and Wijesuriya 1992, 243).
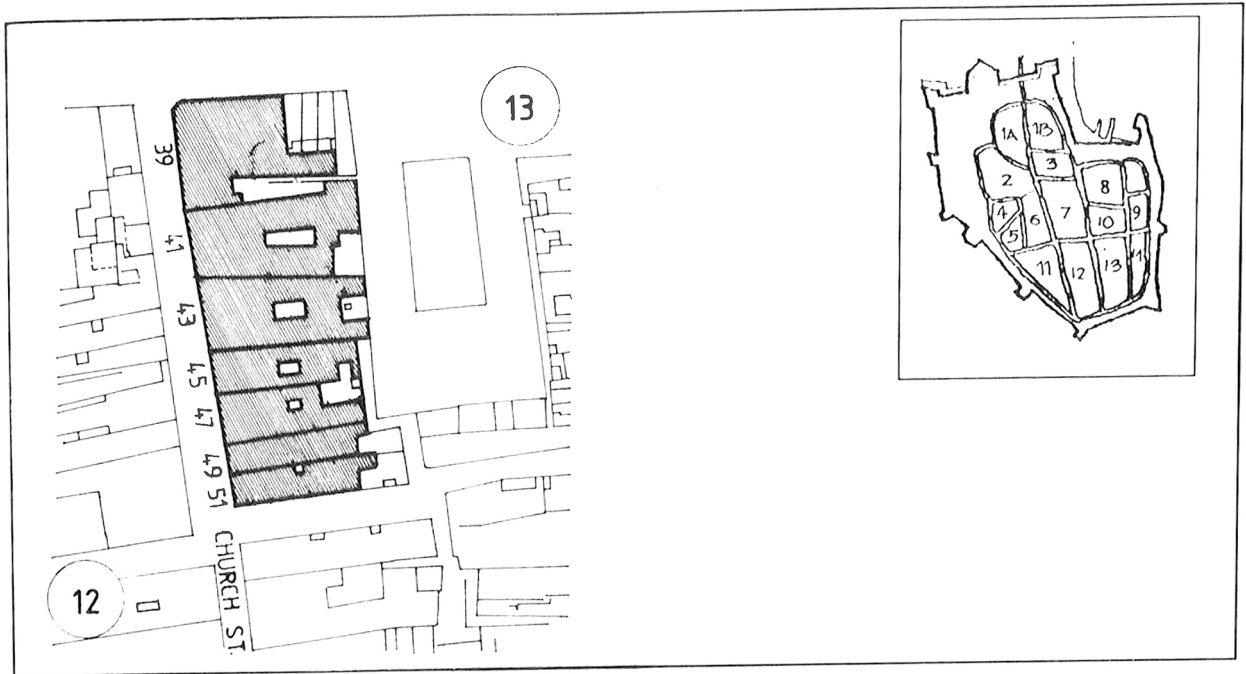
| BLDG. NO | BLDG. FUNCTION | STRUCTURE | | PROBABLE PERIOD | NO OF STOREYS | TRANSFORMATION | SPECIAL REMARKS |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | ROOF | SUPER.STR | | | | |
| 39 | COMMERCIAL | HALF ROUND | BRICK | BRITISH | TWO | RESTORED | DECORATED DOORS, WINDOWS, ARCHES, TIMBER UPSTAIR |
| 41 | RESIDENTIAL | HALF ROUND | CORAL | DUTCH | ONE | RESTORED | ARCHES, MASONRY COLUMNS, COURT YARD |
| 43 | RESIDENTIAL | HALF ROUND | CORAL | DUTCH | ONE | RESTORED | COURT YARD, DECORATIONS |
| 45 | RESIDENTIAL | HALF ROUND | CORAL | DUTCH | ONE | RESTORED | COURT YARD, DECORATIONS |
| 47 | RESIDENTIAL | HALF ROUND | BRICK / CORAL | MODERN / BRITISH | ONE | V-MODIFIED / RESTORED | COURT YARD, DOORS, WINDOWS |
| 49 | RESIDENTIAL | HALF ROUND | BRICK | MODERN | ONE | MODIFIED | - |
| 51 | RESIDENTIAL | HALF ROUND | BRICK / CORAL | MODERN / BRITISH | ONE | RESTORED / MODIFIED | COURT YARD, DOOR, WINDOWS |
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| | | | | | | | |

**Fig. 29** The location and description of the buildings (nos. 39 to 51) on Church Street (Kuruppu and Wijesuriya 1992, 245).

1988 to 2016, was carried out. However, the lack of available temporal data was a constraint in analysing the change as a process. The comparison was also carried out in accordance with the prevailing building regulations (Special Regulations (Planning and Building), 2009).[242] Thus, the architectural elements prioritized by the building regulations—such as the façade, verandah, building colour, roof materials, number of floors, etc.—are compared, while the changes to colonial architectural features (the verandah and courtyard) are given special attention (these colonial elements are specifically discussed in the first part of chapter 5). A periodic comparison of the changes in the building stock is also an indication of the drastic changes in land use, both positive and negative, and thus, both in accordance with and also counter to the strict heritage laws. The findings indirectly shed light on the extent to which the requirements of the community are heeded by the currently practised heritage laws and practice. Therefore, conducting a comprehensive periodic analysis of the changes in building stock is regarded as crucial to this study, as it can quantitatively support arguments based on qualitative data.

The analysis is mainly based on the first systematic documentation of the buildings, carried out by the Department of Archaeology between 1988 and 1990 (edited by Kuruppu and Wijesuriya, 1992) soon after World Heritage recognition, and thus shows the contemporary condition of the buildings at the inception of the World Heritage project in 1988. The work, published in 1992, covers roughly 80% of the buildings (384 building units, including current subdivisions).[243] The documentation features detailed drawings of contemporary streetscapes with the façades of each building (Fig. 28). Buildings are documented by street and tax number, while the fort is segmented and the location of each building in each segment is shown with a basic ground plan of each building (Fig. 29). In addition, a table of descriptions of buildings includes each building's function, roof, building materials, probable period, number of

stories, transformations and special remarks (Fig. 29).

The survey included in this study, carried out in 2016, covers nearly 90% of the buildings, including the ones surveyed in 1992 as well as new infill (total 494). However, the survey does not include the majority of buildings in the schools,[244] army camp and Black Fort (due to security reasons), while it does cover all private houses, buildings and other government establishments. The identification of each building unit or household is based on its tax number.

In addition, the "Survey on Social, Economic and Cultural Information of Galle Fort," carried out by the Galle Heritage Foundation in 2009, was also used for comparison on some occasions.

**The Process of Comparison**

The comparison aimed to identify changes both in as well as behind the façades, which are not visible on the streetscape; however, the façades were subjected to severe changes due to both approved and "illegal" developments. Therefore, drone images were used to identify the changes behind the façades. Changes were identified through visual comparison, and the analysis was based on SPSS, as is described later. The following five steps were taken in the process of comparison.

**Step 1:** Photographic documentation of buildings

The façades of each building in the fort were photographed in March and April 2016, including the ones recorded in 1992 as well as the new infill from 1992 onward. They were ordered by street and tax number based on the combined use of Kuruppu and Wijeruriya (1992) and the Cadastral Map of Galle Fort (2013). The cadastral map was mainly used to identify changes in some of the tax numbers (associated with subdivisions and new infill of buildings) and ownership of properties.

**Step 2:** Drone coverage of the whole fort (21 April 2016) to identify the architectural changes behind the façades

The drone was flown manually over each street to capture the street view of either side, while important groups of buildings and individual buildings of interest (monuments, buildings with central courtyards, "illegal" developments, ongoing

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242      The regulation is separately discussed in sub-chapter 4.3.2.

243      The work does not include the majority of the buildings in the schools (Southlands and All Saints Colleges), the Army Camp, the Black Fort with several buildings and three minor streets, namely Leyn Baan Cross Street, Small Modara Bay Street and Front Cross Street, with less than 30 buildings. In addition, a few buildings in Leyn Baan Street were also missing.

244      Southlands College and All Saints' College.

**Fig. 30** Street view, Pedlar Street.



**Fig. 31** Group of buildings, Church Street.



**Fig. 32** Individual buildings of interest: Dutch Reformed Church.

construction, etc.) were specially photographed (Figs. 30–32). Due to the difficulty of flying the drone from the middle of the fort, with its narrow streets, and disturbing telephone and electricity wires, it was mostly flown from the ramparts and outer roads to the interior, as shown by the map below (Fig. 33).

**Step 3:** Create an SPSS dataset for the buildings in order to compare the changes between 1992 and 2016, including the following information (Table 04)

**Step 4:** Visual comparison of the functional and architectural changes (mentioned in the above table) of each building between 1992 and 2016 (illustrated
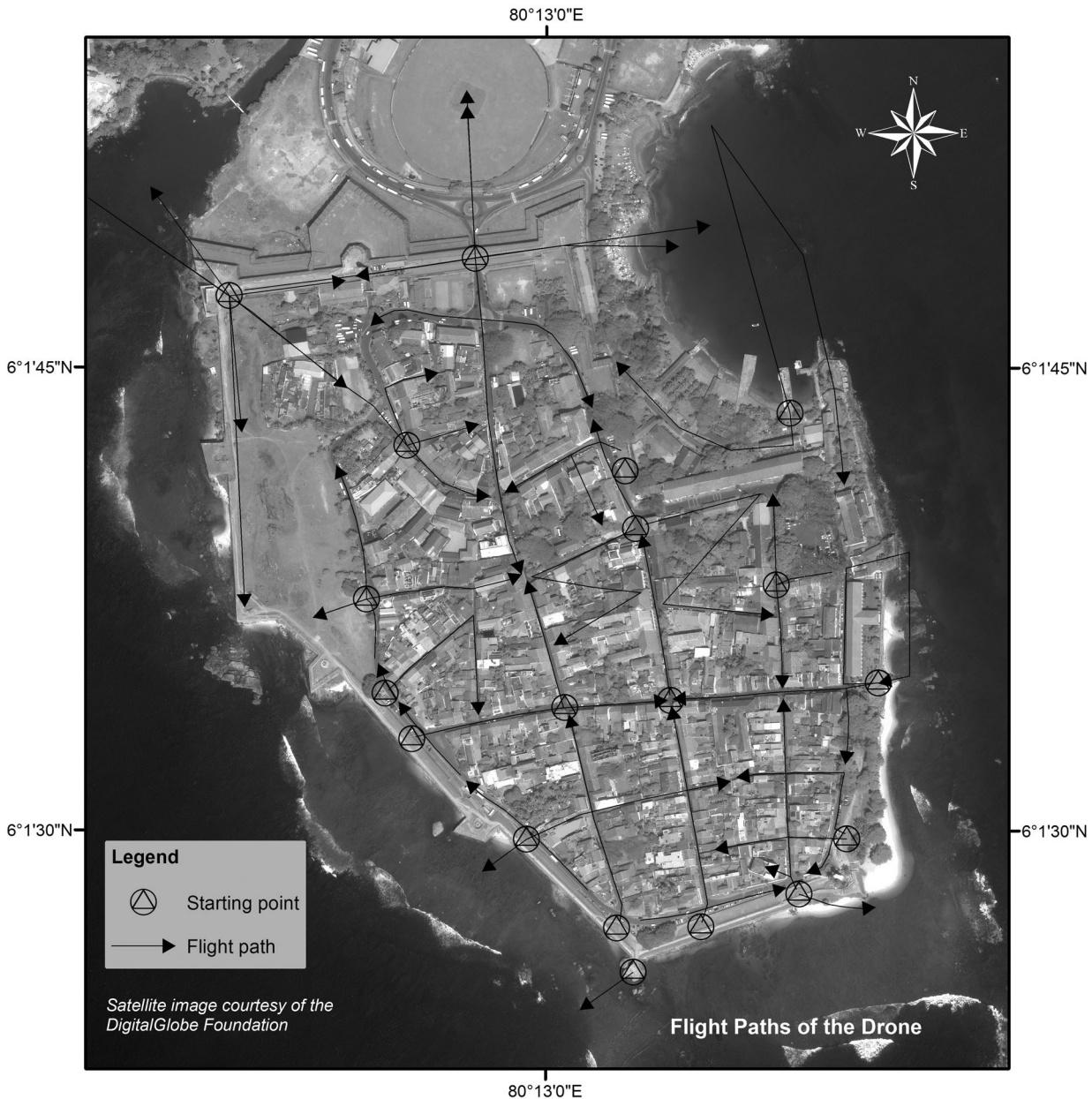


**Fig. 33** Flight paths of the drone.

| | | | |
|---|---|---|---|
| | **General details of the building** | | |
| 1 | No | text | tax number |
| 2 | Recorded | yes/no | whether recorded in 1992 documentation |
| 3 | New | yes/no | whether the building is newly constructed |
| 4 | Subdiv _2016 | yes/no | whether the building is subdivided |
| 5 | Subdiv_nos2016 | text | tax numbers of the subdivided property |
| 6 | Merged_2016 | yes/no | whether the building has merged |
| 7 | Merge-nos2016 | text | tax number of the merged property |
| 8 | Bld_name | text | building name (if applicable) |
| 9 | Street | text | street name |
| 10 | Ownership | local/foreign/local & foreign | property ownership |
| 11 | Period_1992 | Dutch/English/Modern, etc. | period identified by 1992 work |
| | **Function (1992 and 2016)** | | |
| 12 | Fnc_1992 | residential/commercial/ residential & commercial/ institutional, etc. | function in 1992 |
| 13 | Fnc_2016 | " | function in 2016 |
| 14 | Fnc_ch | yes/no | whether the function had changed by 2016 |
| 15 | Com_trst | null/ tourism/ non-tourism/ tourism & non-tourism/ OC | whether the building is currently associated with tourism |
| 16 | Com_type | null/ hotel/ restaurant/ gem & jewellery/ bank/ etc. | type of commercial activity |
| | **Façade (1992 and 2016)** | | |
| 17 | Fçd_1992 | contributory/ moderate/ disturbing/NE/ NR | façade in 1992 |
| 18 | Fçd_2016 | contributory/ moderate/ disturbing/ OC/ etc. | façade in 2016 |
| 19 | Fçd_ch | yes/no | whether the façade had changed by 2016 |
| 20 | Fçd_shop | yes/no | has the façade been converted into a shop |
| | **Behind the façade and overall changes** | | |
| 21 | Con_ behind | high/ moderate/ low/ none/ NC/ OC/ etc. | nature of the constructions behind the façade |
| 22 | Overall_ch | contributory/ moderate/ disturbing/ OC | nature of the overall change |
| | **Roof materials (1992 and 2016)** | | |
| 23 | Rf_1998 | half round/ Calicut/ asbestos/ concrete/ etc. | roof material in 1992 |
| 24 | Rf_2016 | half round/ Calicut/ asbestos/ concrete/ etc. | roof materials in 2016 |
| 25 | Rf_ch | yes/ no | whether the roof materials had changed by 2016 |
| 26 | Add_solar | yes/ no | whether solar panels had been added to the roof |
| | **Floors (1992 and 2016)** | | |
| 27 | Fl_1992 | 1/ 2/ 3/ 4/ NE, NR | number of floors in 1992 |
| 28 | Fl_2016 | 1/ 2/ 3/ 4/ OC | number of floors in 2016 |
| 29 | Fl_ad | yes/ no | whether floors had been added by 2016 |

| 30 | Fl_facade | 1/ 2/ 3/ 4/ OC | number of floors in the façade |
| 31 | Fl_hidden | yes/ no | are the floors not visible in the façade |
| 32 | Fl_attic | yes/ no | is there an attic |
| 33 | Fl_ch | 1 to 2/ 1 to 2 and attic/ 1 to 3/ 1 to 4/ 2 to 3/ 2 to 3 and attic/ 2 to 4/ 3 to 4/ OC/ NE | nature of floor change by 2016 |
| | **Verandah (1992 and 2016)** | | |
| 34 | Vrd_1992 | yes/ no/ closed verandah/ half verandah/ NR/ NE] | whether the building had a verandah in 1992 |
| 35 | Vrd_2016 | null/yes/no/ closed verandah/ half verandah/ NR/ NE/ OC] | whether the building had a verandah in 2016 |
| 36 | Vrd_no2016 | yes/ no/ NR, NE/ OC | verandah existed in 1992 but not in 2016 |
| 37 | Vrd_add2016 | yes/ no/ OC/ NR | whether a verandah had been newly added by 2016 |
| | **Central Courtyard (CCY) (1992 and 2016)** | | |
| 38 | CCY_1992 | null/ yes/ no/ NC/ NR/ NE | whether the building had a CCY in 1992 |
| 39 | CCY_2016 | null/ yes/ no/ OC | whether the building had a CCY in 2016 |
| 40 | CCY_add | null/ yes/ no/ OC | whether a CCY had been added by 2016 |
| | **Side Courtyard (SCY) (1992 and 2016)** | | |
| 41 | SCY_1992 | null/ yes/ no/ NC/ NR/ NE | whether the building had a SCY in 1992 |
| 42 | SCY_2016 | null/ yes/ no/ OC | whether the building had a SCY in 2016 |
| 43 | SCY_add | null/ yes/ no/ OC | whether a SCY had been added by 2016 |
| | **Features** | | |
| 44 | Sp_ft | yes/ no/ NR/ NE | are there special features |
| 45 | Old_dw | yes/ no/ NR/ NE/ OC | are there old doors/windows |
| 46 | Stable | null/ yes/ no/ NR/ NE | is there an old stable |
| | **Building colour (2016)** | | |
| 47 | Colour | white/ beige/ grey/ yellow/ etc. | external colour of the building |
| | **Other Additions (antique doors & windows, rooftop and swimming pool)** | | |
| 48 | Add_dw | null/ yes/ no/ OC | whether antique doors/windows were added |
| 49 | Add_roof top | null/ yes/ no/ OC | whether a roof top had been added |
| 50 | Add_pool | null/ yes/ no/ OC | whether a swimming pool had been added |
| | **Abandonment** | | |
| 51 | Abd_ 1992 | yes/ no | was the building abandoned in 1992 |
| 52 | Abd_ 2016 | yes/no | was the building abandoned in 2016 |
| | **Architectural style (contemporary or colonial)** | | |
| 53 | Style 90_ 1992 | yes/ no/ NR/ NE | does the façade bear the contemporary styles of the 1990s |
| 54 | Style 90_ 2016 | yes/ no | does the façade still bear the style of the 1990s |
| 55 | Style-colonial-1992 | yes/ no/ NR/ NE | did the façade bear the colonial style in 1992 |

| 56 | Style-colonial 2016 | yes/ no/ OC | did the façade bear the colonial style in 2016 |
|---|---|---|---|
| | **Other** | | |
| 57 | Demolish | yes/ no/ could be/ NR | has the building been demolished and rebuilt |
| 58 | Illegal | yes/ no/ could be/ not clear/ NR | are there illegal developments |
| 59 | Modi_ style | not modified/ compatible/ incompatible/ OC/ NR | nature of modification |
| 60 | Sp_remaks | text | special remarks |
| 61 | Con_projects | yes/ no | has the building been conserved by the Preservation of Private Houses Project |
| 62 | App_dev | yes/ no/ could be | has the building been changed by an approved development |
| 63 | Comments | text | comments |

*[OC: ongoing development; NC: not clear; NE: did not exist in 1992; NR: not recorded in 1992.]*

**Table 4** Information recorded in the SPSS dataset. *[OC: ongoing development; NC: not clear; NE: did not exist in 1992; NR: not recorded in 1992.]*

by one example in Fig. 34) and the addition of these data to the SPSS dataset.

**Step 5:** Analysis of the building stock between 1992 and 2016 with the simple descriptive statistical functions of SPSS using the created datasets.

3.3.2 CREATION OF THE GIS DATABASE

One of the challenges in the creation of a GIS map was the unavailability of a base map that shows the land use of Galle Fort with the individual buildings by tax number. The land use map of Kuruppu and Wijesuriya (1992) and the improved version of the same map by Boxem and Fuheren (2011) did not identify the buildings by tax number. In addition, a large number of subdivisions and amalgamations as well as new developments have changed the shapes of the buildings substantially, and were not included in these past maps. Although the fort's GIS map, prepared by the Galle Municipal Council in 2015, showed the tax numbers, the shapes of the buildings were not accurate due to the use of low-resolution satellite imagery.

Therefore, the Cadastral Map of Galle Fort (2013), with a high resolution (1:1000), was used to identify the land plots with individual tax numbers (and land ownership). The map was georectified

and the individual properties were digitized by tax number and street. Then, a georectified high resolution World View 3 Panchromatic image (2017) was overlaid on it, and the individual buildings were digitized in each land plot identified at first. The method is illustrated in the following flow chart (Fig. 35).

The tax number was considered a unique key in the GIS map as well as the SPSS dataset. The SPSS dataset was connected to the GIS map to allow visualize the data as well as the changes in land use over the period. The analysis was mainly done using simple queries, and the GIS map was mainly used to visualize the changes in building stock discussed in chapter 5.
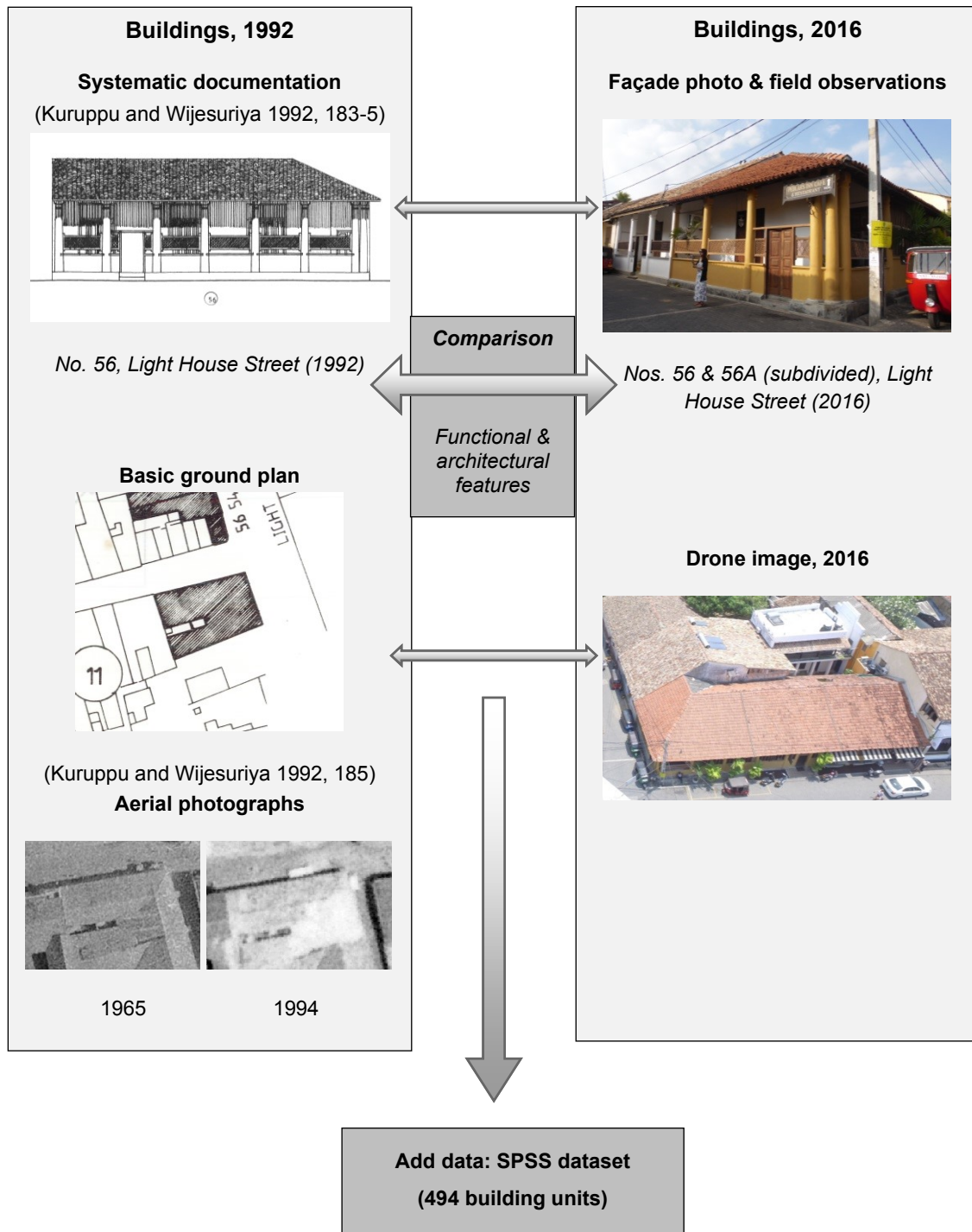
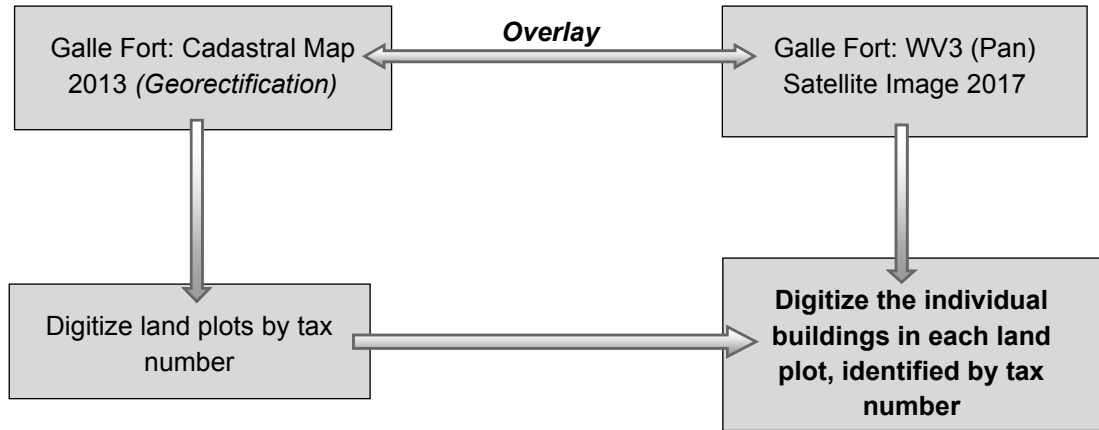**Fig. 34** The flow of the comparison of building stock.

**Fig. 35** Flow of the creation of the GIS map.