Research Note

Innovative Methods in Urban Research: On the Use of Action Cameras in East Asian Cities

By Katharina Borgmann and Deirdre Sneep

Summary
There are many tools and means for looking at urban settings, and both quantitative and qualitative methods are widely accepted. For researchers who conduct fieldwork in cities that they are not thoroughly acquainted with, choosing the right method is an important step in the design of their research plan. There is a plethora of valuable literature available on doing fieldwork in East Asian cities, but in the past decade — due to the rapid development in digital research technology — the equipment and tools for research have multiplied in number. New equipment leaves many researchers willing to experiment with it, but at the same time unable to find sources that evaluate these unfamiliar tools. This research note discusses one of these new digital equipment devices, the action camera, which — with some considerations — can prove to be a valuable tool for urban research across many different disciplines. Based on the argument that visual media, and in particular video recordings, are a necessary addition to research designs that focus on the relationship between built environment and society, the authors discuss the tool and share their experiences of using it. In this research note, experiences from researchers using a new tool for visual urban research in case studies from Urban Anthropology and Environmental Design were combined so as to shed new light on using visual aids in research plans.

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Introduction

There are many possible tools and methods for looking at practices in urban settings, all of which have their own advantages and disadvantages to them. Both quantitative and qualitative methods are widely accepted among these. For researchers who conduct fieldwork in cities that they are not thoroughly acquainted with, choosing the right method is an important step in the design of their research plan. There is a plethora of valuable literature available on doing fieldwork in East Asian cities,[1] but in the past decade — due to the rapid development in digital research technology — the equipment and tools for research have multiplied in number. New equipment leaves many researchers willing to experiment with it, but at the same time unable to find sources that evaluate these unfamiliar tools. This research note discusses one of these new digital equipment devices, the action camera, which — with some considerations — can prove to be a valuable tool for urban research across many different disciplines.

The discussion draws on the research and experiences of two researchers based in an interdisciplinary research school that analyzes urban systems in East Asia. In this research note, experiences from researchers using a new tool for visual urban research in case studies from Urban Anthropology and Environmental Design were combined so as to shed new light on using visual aids in research plans. Based on the argument that visual media, and in particular video recordings, are a necessary addition to research designs that focus on the relationship between built environment and society, the researchers will discuss the tool and share their experiences of using it.

First, the paper will look at the use of cameras in urban research and briefly comment on the possible points where it could be improved upon. Next, two different cases of applying enhanced urban research methods in China's and Japan's cities in order to capture the processes of innovation and transformation in urban contexts are introduced. By comparing our research experiences with studying cities in China and in Japan, the authors are not implying that these entities are inherently similar. On the contrary, during their research the authors were once again confronted with the many cultural differences that exist not only between cities in China and Japan but also between those in the same country. Nevertheless, all the cities that the authors take into consideration for this discussion are similar in terms of size, population, and cultural complexity. Precisely because of these similar characteristics, the authors want to elaborate on the ways in which the data has been collected for the individual research projects. After evaluating the methodologies used, a discussion follows on the opportunities and challenges that researchers face

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1   In this research, the authors follow the definition of "city" that is provided by the United Nations (The World's Cities in 2016: World Urbanization Prospects).

when bringing new tools and methods into their research design and what the added value could be for the overall quality of such research.

The use of action cameras

Cameras have long been used as a core aspect of research designs in a variety of academic fields. Even though nowadays a large group of urban studies specialists doing fieldwork in Asia make use of visual media in their research, very few, however, use film footage as the main source of data collection. Among the methods that do rely on film footage to that extent, video-based fieldwork (the act of filming subjects in a natural, non-staged environment) is perhaps the most used (Jewitt 2012). There are many reasons why film footage is beneficial to a researcher's work. Film captures details that the eye might miss at first glance. It can be rewatched, paused, and slowed down to note small details about the subject's actions. Furthermore, by immersing themselves in the environment of the subject of study the researcher gains valuable insight in how it influences the subject. Lastly, the film can be used not only by one researcher at one particular moment in time but can also be reused as a valuable data pool by many subsequent researchers over time. Of those using cameras during their fieldwork, very few rely on footage alone for their analysis. Often, the researcher simultaneously makes use also of maps, statistics, or other data so as to enhance their research.

When making use of video tools there are several issues to be considered. One of the main challenges arising during filming is the issue of reactivity. To a certain extent, this phenomenon occurs in all research conducted around human subjects. It is the psychological effect had on a person when they are aware that they are being studied, which can affect that person's behavior. Using equipment such as video cameras in fieldwork augments this effect. This is a major issue, since reactivity distorts the basic idea behind video-based fieldwork: to catch the subject in their natural environment, without any influence from outside. There are some researchers who argue that because all video data is influenced by the subject's reactivity, such sources present a distorted view of the real situation and cannot be used for empirical research.

In reality, however, keeping the influence of reactivity on research analysis to a minimum has proven to be possible. First of all, the extent of behavioral change among subjects does not always influence the results of the research (Heath et al. 2010). Second, a researcher can learn how to diminish the effect of reactivity before commencing the research as well as when later analyzing the data (Bernard 2011). Nevertheless there is always the possibility that reactivity will influence the results, making it one of the main problems in all kinds of video research (Flick 2013). In general, it is deemed best for the research if the camera is used as unobtrusively as possible (Jewitt 2012). The more obvious the presence of the camera is, the greater

the possibility that the act of filming will disturb the objectivity of the situation at hand.

When it comes to filming in urban public spaces, local laws and customs should be taken into consideration. In general, the type of filming that was conducted for the case studies presented here can be classified as low-risk, unobtrusive research: "The observation of behaviour in public places where questions of privacy do not exist" (Fluehr-Lobban, 2014: 142). The Code of Ethics published by the American Anthropological Association in 2009, however, stresses that the researcher should take into account local views on conducting any kind of fieldwork. In the case studies that are discussed below, the researchers first studied the laws on filming in public areas.

Local laws, however, can sometimes be open to interpretation. For example in the Japanese case, the country has quite strict but also quite vague rules when it comes to privacy in public spaces. Japan tends to be ambiguous about the publication of visual material where subjects in public space are being portrayed. Basically, according to the 京都府学連事件 (*Kyoto Fugakurenjiken*), an act endorsed in 1969 by the Japan Supreme Court, you cannot publish anything without the consent of those featured in the picture. When interpreted in the strictest sense, even photographs of people in public spaces are not allowed to be published. Visual anthropologist Stephen Fedorowicz states that: "Anything and everything in public is NOT fair game to be photographed/filmed in Japan" (2009: n. p.). However, this does not mean that, especially when preserving the privacy and anonymity of the subject, no visual material — for example of a crowded street — can be published. The Japanese Professionals Photography Society discussed in one of their most recent online publications that when photographs are for research purposes or beneficial for society as a whole these kind of images are indeed allowed. This is, in general, also the stance of many of the urban ethnographers doing fieldwork in Japan argues Fedorowicz (2009).

The action camera and other small, unobtrusive technological devices in particular are prone to be the subject of discussions on visibility and the privacy rights of the person(s) filmed (Chalfen and Murui 2001). It is, however, important to note that first of all these issues are not only bound to the use of action cameras (their use has been a topic of debate for a long time) and, second, when used in the most ethical way possible they provide a flexible tool for collecting data. See, for example, the research of Waters, Waite, and Frampton (2014), who used the action camera in ethnographic fieldwork conducted in school playgrounds. Instead of filming the children, they allowed the children to film instead (which would not have been possible with heavy, fragile equipment). Thus when taking into account local laws and customs, and when making sure the privacy of the subject is guaranteed, the action camera can add key new insights to the research.

Using the action camera: Case studies

Within the framework of their research, the authors analyzed the selected megacities and the processes taking place in those urban environments from a people-centric approach on the one hand while focusing on the built environment on the other. However, as a result of their interdisciplinary collaboration, Borgmann and Sneep were able to develop an improved approach to data generation in fast-developing and ever-changing urban environments with the purpose of capturing different facets of urbanization and transformation processes. This was carried out specifically by wearing a mobile action camera in Tokyo in one research setting, and in seven selected Chinese cities in the other. Using the less externally visible action camera enabled Borgmann and Sneep to become part of the flow of human movement within the spatial settings of these Chinese and Japanese cities, and that without being immediately recognized as observers.

While the footage of the action camera was only one of the elements used to collect and generate important data for Borgmann, as will be explained below, the recorded videos represented a central part of Sneep's research data, as also detailed in due course. The video data was collected and recorded in exactly the same way, with the only difference being in the way that it was analyzed further in the respective researches from the perspective of an urban design researcher on the one hand and an anthropologist on the other. The settings and technical set-up for the mobile camera were the same for both Borgmann and Sneep, a deliberate choice in order to capture a comparable sample of the built environment and its users. Furthermore, some of the selected and recorded spatial situations were the same for the co-authors — with the difference that one conducted the research in Chinese cities while the other did the same in Japan. In order to generate useful and comparable datasets, the mobile action camera was used with the widest angle possible (to capture the urban built environment, see Figures 1 and 2 below) and with high-quality recording that allowed the researchers to capture people's behavior as well as environmental influences — such as noise pollution or the weather.

Figure 1. Smartphone use in Shinjuku center; video still. Source: Sneep 2017, all rights reserved.

Figure 2. West Railway Station, Beijing; video still. Source: Borgmann 2017, all rights reserved.

The Chinese Case

The basis for this case study is a research approach that not only uses a variety of data sources but also combines multiple different methods, so as to analyze the transformation processes reflected in the built environment. However, within the framework of this approach, the author focuses on specifically selected urban

components in the seven largest Chinese cities. Beijing, Chongqing, Guangzhou Shanghai, Shenzhen, Tianjin, and Wuhan and were selected based on their size (largest number of inhabitants) and diversity of location in China, from the coast to the inland and from the south to the north. The selected city components (railway stations, city halls, and central business districts (CBDs)) reoccur in all cities in China, and are some of the fundamental elements with representative functions of which cities are composed. Other reoccurring and essential city components are residential and commercial areas and public spaces; these, however, do not form part of this study. Within the framework of the research project, it was only possible to focus on a select few of these city components. Moreover the ones that are mentioned not only have a representative function in common, but additionally are all of public or semi-public use. As such they offer an interesting opportunity to conduct research on the different processes of urban transformation, innovation, and development that are reflected especially in these city components, but that are also visible in the general urban texture of the cities.

In order to be able to capture the rapidly changing built environment and the interaction of users, inhabitants, and environmental factors, the physical environment was captured in photographs and video by use of an action camera. Pauwels (2016) emphasizes that film material should be perceived as auxiliary to the actual research work — even if the research relies heavily on film — and not as a readymade end product. In concert with this view, Borgmann treats the video footage as part of the substance from which the research work is molded. In the data collection, the action camera enabled the unobstructed documentation of the everyday functioning of people and places. In support of the task of capturing urban transformation, with its multiple facets, the mobile action camera provided the researcher with the opportunity to record the spatial situation and the users' behavior for the purpose of analyzing it — even at a later stage, when urban development phases are far more advanced and have erased particular existing spatial phenomena — and of archiving it, so as to allow documentation of the different phases of the Chinese urbanization process.

The data was scrutinized using the method of decoding urban physical space within its context, and spatial and architectural analysis. In this particular case, the author used the method of decoding urban space only by looking at the selected components thereof so as to focus on the processes reflected in their design — as first introduced to the Chinese realm by Hassenpflug (2010). This enabled Borgmann to use the tools and methods of the discipline Urban Design in combination also with interdisciplinary ones. Analyzing the architectural and urban codes typically used in the Chinese context, which is closely interwoven with the country's building traditions, allowed the author to research the different processes of urban transformation, rapid urban development, and the people's interaction with their environment.

Figure 3.   Hankou Railway Station, Wuhan, entrance square; video still. Source: Borgmann, all rights reserved.

The use of the action camera allowed Borgmann to better analyze spaces, especially in regard to the user and their interaction with the built environment (see Figure 3 above and Figure 4 below).[2] This has already changed significantly since its initial documentation in spring of 2015: for instance, one of the railway stations has closed (West Railway Station, Shenzhen) and a neighborhood has been razed to the ground (Wuchang old neighborhood, Wuhan) to make room for new development. Video footage constitutes a more efficient vehicle for gathering information (e.g. noise pollution or human traffic patterns) about the urban environment in its state of flux, as well as for information about the users' adaptation process to that evolving environment — and was therefore a crucial element in improving the author's research approach.

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2   The use of public space by the people, especially the users' movement flow, is only possible to analyze in a detailed way with the help of video recordings showing the main areas of gathering. This is particularly the case when public space is appropriated by the users of it in ways that were not dedicated for those or originally planned by designers, for example the handrail structure of the metro entrance (Figure 4).

Figure 4.   Hankou Railway Station, Wuhan, metro entrance area; video still. Source: Borgmann 2017, all
             rights reserved.

Results based on the fieldwork have shown that urban design projects respond to global overarching impetuses such as technological advancement, but their representation — as well as the way that the building complexes are created and communicate to the surroundings, and to its users — is through the constant transformation, appropriation, acceptance, or rejection of the spatial situation by those individuals. The analysis and evaluation of the research data have shown that different aspects of transformation and (re)innovation are reflected in the built urban environment. Urban design projects respond to the overarching, global facets of innovation, such as technological innovation and development. At the same time, however, another kind of transformation and innovation process can be witnessed: how some of the built environment is adopted and changed by its inhabitants, visitors, and by the users of space. The mobile action camera is a tool to highlight these informal and unplanned processes, useful in order to analyze the spatial situations and, most importantly, to draw conclusions for scholars and practitioners of built space creations. This helps them to consider these findings, learn from them, and possibly implement them in future projects too. This adds value especially if the analyzed spatial situations are different from the ones already known to the relevant scholars and practitioners, since behavioral patterns and spatial interactions are rooted within the specific sociocultural context of one's environment.

The Japanese case

This field study was conducted for the purpose of research on mobile phone users' behavior in public spaces in Tokyo. Coming from an area studies background and

trained in anthropological fieldwork, Sneep's study focuses on Tokyo as an example of a city where mobile internet impacts on how people move and behave in public spaces. The hypothesis is that using mobile phone applications such as navigation and mobile internet changes the ways in which people walk through urban spaces, leading to a new kind of "smartphone" pedestrian. Even the same space can acquire a new function when people use mobile phones — think, for example, of traffic lights, which now invite people to go online while waiting for the green light. While analyzing how innovative technology influences city life, the research itself included such technology in its research design as well.

While traditional, pen and paper participant observation in a small area in Tokyo would have worked, this research could not make use of this method because of the project's relatively large scope. The sizeable area and high density of people make observing people's behavior in a fast-paced part of the city a near-impossible task unless the right methods are used. Using George Marcus' (1995) multi-sited approach, Sneep picked several different urban components (*chōme*) as spots for ethnographic fieldwork. These included a residential area, a CBD, a commercial area, and an entertainment area. To capture the mobile phone behavior of many pedestrians at the same time, Sneep decided on a visual approach to gathering material. With the help of a camera, even in a crowded space like the center of Tokyo, details would still be recorded. She used a small action camera to gather data and walked specific routes through the blocks that she had picked beforehand. In order to capture the interactions between smartphone users and the built environment, a wide-angle, high-definition setting was used. The portability and compactness of the action camera still guarantees a certain level of unobtrusiveness, that in order not to disturb or influence smartphone users while observing them. Although the camera is small enough to be unobtrusive, it still complies with Japan's quite strict public filming regulations — which rule out the use of concealed or hidden cameras.[3] Furthermore, in order to preserve the privacy of the subjects, the researcher blurred their facial features.

In Figure 5 below, a still from footage shot in Omotesandō shopping district shows that when the researcher later goes over the footage cases related to the research can be easily picked out even in crowded spaces. In Figure 6 below, we can see how the wide-angle lens of the action camera is able to record a large area of possibly relevant research data. In this shot of people using a pedestrian crossing in Shinjuku, it shows not only the pedestrians but also the traffic — as well as other physical aspects of the street environment that might influence the behavior of smartphone users.

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3   In accordance with the 京都府学連事件 (*Kyoto Fugakurenjiken*), endorsed by the Supreme Court of Japan in 1969.

Figure 5.   Example of a video in a crowded area in Shibuya; video still. Source: Sneep 2017, all rights reserved.

Figure 6.   Example of a situation where wide-angle settings provide a full overview of the scenery; video still. Source: Sneep 2017, all rights reserved.

At the same time, the wide-angle lens ensured that a sizeable area of detail around the researcher was being captured without the need for her to continuously check the screen. This enabled Sneep to be on the lookout for specifically interesting cases or places of smartphone usage in the city. It was also a safer way to operate, since it

allowed the researcher to be more aware of oncoming traffic. Traffic safety and mobile electronic device usage was, indeed, one of the concerns that led her to develop this particular research in the first case.

The video material that the camera produced was coded on mobile phone users' behavior. It was noted precisely how they used the space directly around them, and how they moved through it if they were on foot. This could not have been done without the camera: in an environment like Shinjuku Station (the most crowded railway station in the world), it is not possible to write down by hand each mobile phone user's behavior. Instead, when using the camera, one can pause and rewind in order to code *all* mobile phone users' spatial behavior. From these detailed descriptions of every such individual's behavior, it was possible to develop both general assumptions and a theory of how mobile internet alters people's movement and behavior in urban spaces.

For Sneep's research, picking the right tool for gathering visual data made a considerable difference. Capturing the effect of the use of technology in cities can be a daunting task, especially in those that are as crowded as Tokyo is. By making use of the very small and mobile action camera, Sneep was first of all able to gather data unobtrusively. Consequently subjects are shown as being as much in their natural environment as possible. Second of all, the use of a wide-angle camera lens and high-definition film ensured that both the physical environment and the way that smartphone users interacted with it were captured.

Concluding remarks

Urban researchers' tools for data gathering are becoming increasingly digitalized. As we have seen from both Sneep's and Borgmann's fieldwork, it can be extremely valuable to utilize the latest digital equipment to enhance the method. In both cases, the tool that the researchers used enhanced their research design and opened up new methodological approaches. The advantage first and foremost of the action camera is that, when using the wide-angle lens in urban areas and filming in high quality, it is able to capture in great detail what happens during the observation period. In densely populated and crowded areas such as Beijing and Tokyo, being able to go over the video material afterward multiple times in order to gain a full picture of the surroundings and the people is beneficial for the research analysis.

In terms of human interaction, the action camera is exceptionally unobtrusive because of its size and portability. In crowded areas, there is no attention drawn to the camera or to the person carrying it, ensuring a (relatively high) naturalist capture of the environment. Moreover, when mounting the camera on a chestpiece or holding it close to the body it films from a first-person perspective — making the data as close to an "insider's' eye" as possible. This way, the mobile action camera films both interaction between people and the interaction of them also with urban components such as buildings, streets, and open places from a user's perspective. Of

course, the data acquired in this way is still only complementary and cannot substitute for primarily acquired observations. Also, even though the camera is small and unobtrusive, it does not negate the effect of reactivity in interactions between people. It can, however, diminish that effect to a great extent. In Urban Anthropology this is, however, only the case when the researcher is not directly interacting with the subject, but using the camera for observing.

For traditionally practical and problem solving-oriented disciplines such as Urban Design and Architecture, the choice and selection of the appropriate methods and tools to analyze the urban physical environment may pose a challenge. Since most of the research on cities is carried out without much involvement of the creators or the users of the urban built environment, there is significant scope and necessity to contribute to the body of knowledge that enables us to understand the rapidly changing and complex systems therein from a more sustainable and holistic perspective. On the other hand, urban anthropologists struggle with a similar challenge in terms of methodology. Traditionally representing a field that deals with studying only small groups of humans, urban anthropologists are now challenged by the vastness of East Asian megacities. One possible solution could be to increase academic exchange between the two disciplines, Urban Design and Urban Anthropology, in order to identify new methods and tools for researching spatial interaction as well as transformation processes in these East Asian centers.

As we saw from the discussion of the two case studies presented in this research note, interdisciplinary interaction not only helped the two researchers to find their scope but also led to an interdisciplinary discussion on the use of the latest technical equipment for fieldwork in East Asian urban areas. In addition, the individually collected data may be valuable even for researchers outside of the respective discipline in which the data was initially recorded. In both presented case studies the way that the video footage was collected as well as the selection of the urban settings were comparable, so that Borgmann and Sneep were able not only to comment on each other's collected data but also use the other's as a point of reference for their own research. This shows that both Urban Anthropology and Urban Design can still benefit substantially from the research environment's evolution toward more interdisciplinarity, and thereby become better equipped in terms of research approaches, methods, and tools.

As a final remark, the authors would like to clarify that this paper — although discussing the authors' scientific experiences and findings during their research, and contributing to the discussion on new methods for observing urban innovations in East Asia — is only one of the first steps toward a small but slowly growing body of knowledge on new digital tools in urban research. Therefore, the authors would like to ask that those who will carry out fieldwork in East Asian megacities henceforth critically assess the elaborated experiences and take the conclusions reached with them. Furthermore the authors would like to encourage those who experiment with

new digital tools to write their own assessments, and to share them with other researchers on interdisciplinary platforms so as to contribute to the development of new methodologies. Since the body of literature on new digital tools in urban research is still relatively small, the authors hope for more in-depth evaluations and to encourage further such research in future.

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