

SURFING the YouTube: How social media is changing landscape research

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Abstract

Accessing insights from underrepresented populations, such as adolescents, remains a persistent challenge in the research and design process. The paper will investigate the utility of online videos of user-posted materials as an innovative research tool. Unlike traditional in situ approaches to studying human behavior and public space, online videos permit access to multiple sites based upon the population or activity of interest. The approach is similar to studies of behavior using unobtrusive observation—where participation or interviews might interrupt the activity under observation or where access to the setting of the activity would otherwise remain inaccessible to the researcher.

Methods. The use of YouTube remains largely untapped in urban design research, yet it is well situated amongst a discipline well versed in using visual research methods to understand the relationship between behavior and design. The following paper describes how anonymously posted online videos of adolescents skateboarding in 17 public, open spaces in New Orleans, LA were collected and coded for further analysis. Collectively, this culminated with 104 unique videos that contained 278 individual scenes gathered from online video search engines such as YouTube.

Findings. Videos were reliably coded ($k > .75$) for prosocial behavior and risk-taking behavior across locations which varied in terms of physical features, social groups, and urban context, showing that YouTube content could, indeed, provide useful data. Overall, the findings have important implications for research into the use of public space by underrepresented populations, alternative activities, or spontaneous events. The innovative strategy could incite positive changes in research methods in landscape architecture and urban design by employing strategies that access relevant streams of human behavior through online sources.

Introduction

A research method that permits access into how positive social encounters are encouraged amongst frequently misunderstood populations or activities would provide insight into inclusive urban design. Landscape architecture maintains an underlying assumption that designed environments influence human behavior. Architects, landscape architects, urban planners and designers continue to believe that the places they design promote “good” social encounters (Dobbins, 2009). Whyte’s observational research, for example, on public urban places—which used direct observation gathered from strategically placed video cameras recording human behavior—identified that the biggest, single deterrent, as to why there are not more “good” places is because of ‘undesirables’ (Whyte, 1980). Whyte’s research went on to identify that poor urban design decisions were often made out of an unsubstantiated fear of ‘undesirable’ individuals who challenged normal, spatial practice. Similarly, adolescent skateboarders are identified in the literature as undesirable in public space. Emerging concepts of “inclusive design” have the potential to challenge exclusionary urban design practices to better account for the diversity of human behavior (Burton et al., 2006; Carp, 2008; Zabielskis, 2008).

Urban design research should advance how built environments afford positive social encounters for everyone. The physical environment, as Gibson argues, affords experience (Clark et al., 2002; Gibson, 1979). Affordance, a term created by the ecological psychologist James Gibson, (1979) suggests that experience is dependent upon or limited to the actively perceived environment. But how and for whom remains a strong point of contention for strategies to create more inclusive urban environments for everyone (Turner, 2002), including adolescents (Collins et al., 2001; Mugan et al., 2009; White, 1993; Woolley et al., 1999) or for alternative activities, like skateboarding (Freeman et al., 2002; Nemeth, 2004, 2006; Stratford, 2002; Woolley et al., 2001).

The following paper addresses how YouTube can be used as a research tool to better understand how unsupervised adolescents, who are difficult to study, use and manipulate the urban environment. Adolescent skateboarders were

selected because they are active users of public space and notoriously difficult to observe, suggesting the need for an alternative approach. Observation and the use of secondary description—the use of sources that are found—are key descriptive strategies in landscape architecture research (Deming et al., 2011, p. 71-72). Following Deming’s suggestion, the following paper is based on a study that employed multiple methods—direct observation, site inventory, and secondary description—to overcome known limitations of relying on any single source to support contextual validity. Published results validated the use of YouTube to describe how physical and social settings support adolescent skateboarders (Shirtcliff, 2015). The present paper’s primary focus is on the use of online videos as an innovative research tool for gaining insights into covert populations (i.e. adolescents, ages 10 – 19+) and activities (i.e. skateboarding).

Background

The following literature review identifies that adolescents are an underrepresented population in the design and planning of cities. Skateboarding is engaged in by more than adolescents, however the activity is confounded further because of their age. As a population that is difficult to research, for ethical reasons, the literature review frames the need for alternative research strategies to access how adolescent skateboarders engage the city.

No Right to the City

Adolescents are shown in the literature to be intentionally marginalized, oversimplified as a group instead of being a part of many subcultures, possessing limited access to decision making regarding their environments, found to use the environment differently than adults, and to be dependent on public services more so than adults (Freeman et al., 2002). Adolescents have been found to be commonly referred to as delinquents and face confrontations with adults (Collins et al., 2001) and peers (Valentine, 1996; Woolley et al., 1999) in public space. Adolescents are unable to congregate or use public spaces because they are viewed as a negative element (Kato, 2009; Owens, 1997, 2002). Youth transgressions of spatial limitations (Janssen, 2009) maintain normalizing notions of youth resistance, subversive meanings of place, and the ongoing reconstruction of space (Robinson, 2000). Such transgressions, however, may have less to do with adolescents than the limited design intent of the place.

No Place of Their Own

Studies in geography, landscape architecture, and urban design reference how the social and physical makeup of the space generally factors into adolescent behavior. Travlou found that “the environments of teenagers are not just appendages of the adult world, but are special places created by teenagers themselves and invested with

their own values” (Travlou, 2004, p. 2). Multiple studies have further shown how space perforated by adolescent skateboarding is used to generalize all youth as unruly, their appropriated space as the site of resistance, and the deployment of exclusionary tactics to continue to marginalize all youth so as to encode a normalized spatial identity (Flusty, 2000; Fusco, 2007; Howell, 2005; Kelly, 2003; Nemeth, 2004, 2006; Robinson, 2000; Stratford, 2002; Vivoni, 2009; Woolley et al., 2001). Instead of playing in programmed facilities, adolescent skateboarders prefer to appropriate their own spaces in public space (see Nemeth 2004, p. 75–76, citing Valentine, 1996 and Woolley and Johns, 2001). Such appropriation, however, frequently leads to confrontations (Flusty, 2000) because their behavior is judged to be in conflict with the proper use of “neutral” public space (Rallings, 2014). The appropriation of public space by adolescent skateboarders is observable, contested, and further research may lend insight into how to create better places for this underrepresented population.

Staking their Claim

Teens use props, like skateboards, and will occasionally manipulate the design of urban places by waxing edges, installing steel edges, or building their own concrete ramps. Through the creation of such situations for play, the city becomes a playground (Flusty, 2000, p. 154). According to Eric Fredericksen, the urban environment is open to creative interpretation and adolescent skateboarders resist containerization in the physical environment (2002, p. 46-50). Fredericksen found that skaters “creatively use the environment around them” because they have so few spaces to skate (2002, p. 46). As Iain Borden describes, objects in the city transform human experience in relation to the skateboard (Borden, 2001, p. 191). Accordingly, the unstructured, non-programmed settings where adolescents are found in the city offer important insights for urban design research to better understand how public place supports their social and cultural interactions.

Limitations

Research on young people’s participation in environments designed to support play has several drawbacks. Insights are restricted to those adolescents who can access and would choose to use these places. The primary mechanisms for conducting research on adolescents’ active use of public space are identified in Table 1. No studies known to the author have conducted behavioral research on adolescent skateboarding and appropriation of public space using YouTube.

Significance

While secondary data collected via online video streams is novel to design research, the use of video recording to understand human behavior has an important history in public space research for landscape architecture. Whyte

(1980) incorporated strategically placed surveillance cameras to study behavior in public space. His findings had important implications for the design of public space in cities. Similarly, YouTube videos are recorded by ubiquitous cameras carried by anonymous users. YouTube videos differ from Whyte's methodology, however, in that cameras are held by active observers in public space and are publically accessible documents.

Research Methods

YouTube as a Research Tool

YouTube videos and the publically available, anonymous lens of the public eye is novel to research in the design fields, but is becoming a more common data source in social and behavioral research (Giglietto et al., 2012; Konijn et al., 2013). Giglietto and colleagues (2012) comprehensively reviewed the use of social media in current social and behavioral research. YouTube, they found, had 800 million users monthly and 60 hours of video uploaded every minute. Statistical approaches across studies focused less on the video and examined the "traces of social behavior" embedded within the video as a window into the community responsible for it (Giglietto et al., 2012, p. 151). The approach has the potential to lend insight into otherwise inaccessible settings of human activity.

Reliability

Giglietto and colleagues (2012) identified that a major challenge for the use of YouTube is that it opens the door to big data which necessitates the use of complex statistical analyses. One of the foremost concerns is maintaining internal consistency in coding multiple variables. As with other observational methods, inter-rater reliability of the coder ensures that codes are representative of video content and observed behaviors. Such reliability can be achieved by maintaining internal consistency amongst two or more trained raters (Haidet et al., 2009). The use of Cohen's kappa (following Hulley et al., 2007) is an appropriate reliability statistic because it requires precisely parallel scores, rather than general associations as calculated with bivariate correlation coefficients or percentages. The purpose of the reliability coefficient Kappa and maintaining inter-rater reliability, especially when working with "big data", is to ensure that what is being coded reflects a complete picture of what can be collected from the video. Haidet and colleagues (2009, p. 466) identifies that "video recordings are an excellent source of data that can be used to assess relationships between behaviors" and "provide a high degree of reproducibility when measuring observations." The research approach offers multiple benefits which must be balanced with an instrument that can be used to reliably code behaviors.

Table 1. Research Methods on Adolescent Activity in Public Space.

Research Method	Frequency	Reference
Interviews	15	Beal, 1995; Bradley, 2010; Freeman, 2002; Karsten, 2006; Korpela, 2001; Kraftl, 2006, 2008; L'Aoustet, 2004; Nolan, 2003; Owens, 2002; Robinson, 2000; Shannon, 2008; Simpson, 2000; Thomas, 2005
Focus Groups	9	Clark, 2002; De Visscher, 2008; Horton, 2006; Pomerantz, 2004; Robinson, 2009; Travlou, 2004; Veitch, 2007; Wheaton, 2003; Woolley, 2001
Archival Research	9	De Visscher, 2008; de Vos, 2005; Howell, 2008; Johnson, 2009; Nemeth, 2006; Rogers, 2005; Vivoni, 2009; Woolley, 2006; Fusco, 2007
Participant Observation	7	Atkinson, 2009; Beal, 1995; Doane, 2006; Kraftl, 2006; Robinson, 2000; Simpson, 2000; Travlou, 2004
Nonparticipant Observation	6	Beal, 1995; Bradley, 2010; de Vos, 2005; L'Aoustet, 2004; Nolan, 2003; Robinson, 2000
Site Analysis and Site Survey	6	De Vos, 2005; Freeman, 2002; Kraftl, 2008; L'Aoustet, 2004; Simpson, 2000; Travlou, 2004
Surveys and Questionnaires	4	Bradley, 2010; Nolan, 2003; Robinson, 2000; Travlou, 2004

External Validity

Inter-rater reliability can establish internal consistency, but it does not establish external validity—the extent to which coded behaviors can be generalized to other settings—and it is with this critique that the utility of YouTube may be most apparent. One recommended analytical strategy for overcoming the limitation identified by Giglietto and colleagues (2012) is the use of multilevel modeling across multiple settings. Multilevel modeling (MLM) received acclaim amongst social scientists because of its power to identify why students in one classroom in a particular school would perform better on standardized tests than equivocal students in other classrooms in other schools. MLM analysis nests data, like eggs in a basket, and permits parameters to vary at multiple levels, i.e. students (age, race, gender) within classrooms (well-lit, cleanliness, supplies, odors, and noise). Since students are very likely to influence one another, a statistical method was needed that did not violate the assumption of independence of observations. Independence of observations assumes that one observation does not influence the probability of another and is a fundamental assumption of General Linear Models, such as Analysis of Variance (ANOVA) or linear regression. MLM analysis assumes that individuals in a setting are likely to influence one another, making the assumption of independence of cases irrelevant (Tabachnick et al., 2007), and indeed provides a statistic (the intra-class correlation coefficient or ICC) to indicate the magnitude of that inter-dependence.

In sum, YouTube videos, in combination with other methods, provide access to communities and behaviors that might otherwise be overlooked. Online sources of user-posted materials are rich in content for how urban space is used and can be improved. YouTube videos permit unobtrusive observation similar to studies of behavior where participation or interviews might interrupt the activity (Lee, 2000) or where access to the setting of the activity would otherwise remain inaccessible to the researcher (Linkletter et al., 2010). The following describes the steps for landscape architecture research.

Research Setting

Identifying Sites of Adolescent Skateboarding Activity

The recommended use of YouTube as a research method is based upon a study conducted in New Orleans from 2010 to 2011. The study used a nested strategy documenting behaviors across multiple sites that varied in terms of physical features and urban context, see Figure 1. In that study, several neighborhood parks, well-known city parks, popular plazas and squares, abandoned, urban, open space, and accessible, semi-public plazas/building entrances were the primary focus of research. Descriptive variables from each urban setting were

measured in terms of urban context, observed social/peer context, and the specific physical features found in each location. Adolescents were observed and coded from in-field observations and from online, anonymously posted videos. The primary unit of analysis was the site in which adolescents skateboard in New Orleans. Initial observational research efforts maximized locations and times. Locations ($n=17$) were added and removed during the study as new information became available or sites were eliminated due to underuse. The research period began in the first week of December 2010 and extended until sufficient observations were completed for statistical analysis. The completed 10-month period is longer than similar studies in the literature, which most commonly range from three to four weeks.

Site Visits

The study also employed unobtrusive observation of the seventeen sites during the research process. Session locations and times varied so that the same observation session was not observed on two consecutive days and that two sessions are never carried out on the same day. This strategy was recommended by Castonguay (2010) to help the observer to remain unnoticed, thus decreasing interaction effects. The study used a sampling grid of known urban, public open spaces in New Orleans, with observation of times and locations based on the greatest likelihood of youth being present—e.g., after school, holidays, and weekends. Observation days and times were set up to best accommodate sporadic site usage. The study completed a total of 173 observation sessions altogether which took approximately 400 hours to complete. Despite this investment, only 6 successful unobtrusive observations were collected for further analysis.

Video Collection

Searching for Videos

The study collected 104 unique videos, which had been watched by that time 254,436 times, from online video search engines such as YouTube and Vimeo. I entered key words such as Skate, Sk8, Skateboard New Orleans, New Orleans Skate, and combinations thereof in internet search engines such as Google and Bing. As the number of videos collected increased, the time period of posting, within the past week or month, became a more reliable means of filtering and identifying videos. Approximately forty hours was spent searching for and downloading videos over the 10-month period from November to August. Videos were downloaded from YouTube in the Mozilla Firefox browser using an extension such as “Easy YouTube Video Downloader Express.” Videos ranged in length from 20 minutes to 8 seconds with an average length of 3:30 (SD 3:03).



Figure 1. Research Design: a nested strategy, multiple observations, multiple features and contexts, and sites.

Indexing Videos and Building an Archive

From the five and a half hours of video that was scanned for unique content specific to known sites in New Orleans, approximately one hour (54.5 minutes) from 62 videos posted by 22 unique authors was deemed acceptable for coding. An Excel spreadsheet was used to catalogue videos by: numeric id, coded (y/n), time duration, title, author, URL, date posted, date acquired, hits, location, youth (y/n), gender, estimated age, type of space, primary activity, and secondary activity. Once acquired and inventoried, each video was converted into a standard MP4 format for coding. Although well-known behavioral coding software applications exist to make coding more efficient, such as Noldus Observer or StudioCode, budget constraints lead to the use of Adobe Premiere for scanning and trimming scenes from videos in combination with directly entering values into SPSS 19.0 for data entry. I would not recommend this approach as video editing software uses a tremendous amount of processing power and overheating caused the computer to frequently and spontaneously shut down.

Completing Data Collection

Data was verified for accuracy throughout the process. Of studies with multiple sites, published results (Forsyth et al., 2008) have relied on 20 observations per focus area for a sufficient success rate. For this study, the average number of observations was 8 (SD=5) due to the inclusion of low performing sites. Average n's for studies thoroughly observing in situ behavior typically count from as low as 30 to as high as 700 observations, with an average around 250. At the close of data collection,

278 separate observations were successfully identified for coding and further analysis—placing this study well within sample size boundaries established in similar studies (Forsyth et al., 2008; Linkletter et al., 2010).

Selecting Scenes

Skateboarding videos often represent a composition of maneuvers across multiple sites. Consequently each video contains multiple scenes that reveal how different sites were interpreted at the moment. From the videos that involved a known site in New Orleans, 278 scenes were uniquely labeled and extracted for coding of behaviors, context, and physical features. Each scene was treated as an individual case, given a six-digit case number, labeled with the case number in SPSS and in Adobe Premiere, and coded directly in SPSS. Scenes were selected using start and stop points based upon the individual trick—the time before and after the maneuver was decided by the anonymous author who edited and posted the original video. An identical trick recorded from different angles was considered a duplicate. The same individual performing different tricks or multiple attempts of the same trick in the same scene were treated as individual cases because each one shared different information regarding the urban context (slow to change), physical features (vary by type of maneuver), and social context (frequently changes). Videos ranged considerably in how they brought together content. One video may have contained scenes from several different sites and time points, while another video may have focused exclusively on one site with time (minutes, hours, day, month, or

year). Scenes ranged from 1 to 5.5 seconds. Time spent coding each video ranged from 15 minutes to 3 hours, depending on the number of scenes and amount of information contained within each scene.

Coding Scenes

An initial coding scheme that utilized a grounded theory method was developed and updated during video coding (Babbie, 2007). Each scene was observed at least three times for different “levels” of video content: (a) for the site location and presence of youth; (b) for individual and peer behavior; and (c) for the social and physical environment. Depending on the complexity, scenes were viewed repeatedly to ensure accurate video coding of all 18 variables (coding sheet available from the author upon request). All inferential statistics were calculated in SPSS 19.0.

Maintaining Reliability

As described above, inter-rater reliability is an important measure as it indicates the effectiveness of the variable to be consistently coded for further analysis—the researcher really is seeing what is happening in each scene. Inter-coder reliability was supported by having a graduate-level volunteer review 10% of the collected material using a blind review process and making requisite changes until an inter-coder reliability of Cohen’s kappa ($k > .75$) was consistently attained (Haidet et al., 2009). A Kappa of 1.0 represents perfect agreement amongst raters; $K = 0$ indicates random agreement; and, $K = -1.0$ indicates perfect disagreement amongst raters. Behavioral coding of video in uncontrolled settings is difficult and good agreement amongst observers is traditionally achieved at lower thresholds than in controlled environments (Haidet et al., 2009). Nonetheless, a high threshold of $K = .75$ was set to best establish the utility of this methodology.

Inter-rater reliability is best maintained through training and continued reassessment of kappas throughout the research process. In this case, training included reviewing the code book, description of variables, and a brief written summary of how each variable was coded. It should be noted that more advanced techniques for coding behavior, such as Ekman’s facial recognition research (Ekman et al., 1997), requires years of training to reliably code. For the present study, training took approximately 20 hours and regular follow-up meetings to reassess Cohen’s Kappas.

Findings

The study found that several measures can be reliably coded and further analyzed for the relationship between behavior and public space. The success of these measures in accounting for adolescent skateboarders in public spaces in New Orleans are discussed below using the same multi-level process identified for coding

above: (a) identification of site location and presence of youth; (b) describing the behavior of the youth and peers present; and (c) describing the site features, social context, and urban context.

A: Site Location and Presence of Youth

The locations of scenes in videos were primarily identified by the familiarity of the researcher with the city, in part due to the commencement of the direct observations of sites. Since similar locations were used in multiple videos from different authors, certain site features or familiar background made locations easily identifiable. For locations that were unknown, contact with locals aided in identification. Another approach was to identify the location by examining the background for landmarks and using aerial maps of the area to identify the location, but this was largely unnecessary.

Individual variables, see Table 2, recorded observed gender ($k = 1.0$), approximate age ($k = .78$), and ethnic divergence from white as default ($k = .72$). In terms of age group (mean (μ) = 15–16), 27 young adolescents (9–12), 104 mid-adolescents (13–15), 98 late adolescents (16–18), and 54 emerging adults (19+) were coded from observations. Since ethnic variations were heavily skewed to two groups ($\mu = .63$), the variable was dichotomized into white (62%, $n = 178$) and mostly African American (38%, $n = 105$). Gender of individual performing the trick, highly skewed towards males ($n = 280$) over females ($n = 3$), was not included as a variable.

B: Individual and Peer Behavior

Behavior was measured through a risk/reward scale where increased levels of risk-taking were factored with increases in prosocial behavior from peers (see Table 2 and Shirtcliff, 2015). The extreme limits of the factor scale ranged from a destructive/injurious trick with no evidence of peer support to a risky trick with an overwhelming display of peer support (prosocial behavior). The present paper is focused on the reliability of the directly observed behaviors, although it is useful to note the utility of creating a continuous outcome scale from observed categorical or ordinal measures of prosocial behavior and risk-taking behavior. For example, the continuous scale allowed for the risk-taking behavior of each individual to be put in the social context of the degree of peer support present.

Prosocial was defined as the amount of observed peer support generated by the group in each setting. The prosocial variable ($\mu = 1.04$, $SD = 1.22$) was reliably coded ($k = .75$) as an ordinal level variable with increasing levels of observed behavior: 0 ($n = 120$) the default, none, escalated to 1 ($n = 96$) some but barely detectable, 2 ($n = 14$) to detectable but limited to a few observed individuals, 3 ($n = 35$) to more evident more than half of people in setting show support, 4 ($n = 16$) to most evident or the number of individuals showing support greatly outnumber those who did not.

Risk-taking was reliably coded ($k=.88$) as an ordinal level variable with increasing levels of risky behavior ($\mu=2.4$, $SD .73$): 0 as cautious required the use of safety equipment (at no point during the study was this observed); 1 ($n=188$) as restraint required that the speed and skill at which a trick was executed was observed to be within the means of the individual; 2 ($n=63$) as risky required some additional measure either environmental or personal to escalate the potential for damage to the individual or private property; 3 ($n=16$) as reckless suggesting that the individual executed a trick without sufficient restraint to avoid damage but somehow managed to not get hurt or break anything; and, 4 ($n=5$) destructive/injurious was coded when individuals were clearly hurt, either a concussion or excessive bleeding, or a trick impacted another person or property.

C: Tricks, Site Features, Social and Urban Context

Environmental and physical features were continuously updated over the course of the study as new observations made way to new features used by youth, see Table 2. Physical features had great internal consistency ($k=.95$) and were entered in as rail ($n=19$) or barriers ($n=2$),

driveway ($n=1$) or sidewalk ($n=15$) or street ($n=7$), street furniture ($n=28$), gaps ($n=44$), ramps ($n=14$), steps ($n=80$), walls ($n=16$), planter ($n=6$), feature or fountain ($n=11$), landing ($n=28$) and other, such as playground equipment ($n=1$).

Appropriation accounts for the observable degree of site modifications to support behavior. Appropriation ($\mu=1.5$, $SD .69$) was consistently coded ($k=1.0$) as an ordinal variable with increasing levels of appropriation (similar to Hall's discussion of the use of boundaries in proxemics, c.f. Hall, 1963): 0 ($n=171$) presence is the default strategy observed when youth used no site modifications to support the activity; 1 ($n=81$) temporary appropriation describes situations when movable objects were used; and 2 ($n=32$) permanent appropriation identifies the use of materials that are less easy to remove, such as concrete and glued steel rails.

Social context measures accounted for peers in each setting. Group size ($\mu=2.1$, $SD 1.3$) was reliably coded ($k=.91$) as an ordinal level variable describing the size of the group present from small ($n=147$, 1–5), moderate

Table 2. Reliability of Coded Observations from YouTube

Individual Variables		
Measure	Description (number of cases)	K*
Gender	Gender of Individual (males=280; females=3)	1.0
Age	Age Ranges: 9-12 (27), 13-15 (104), 16-18 (98), and 19+ (54)	0.78
Race	Dichotomized: white (178), and not-white (105)	0.72
Individual and Peer Behavior		
Risk-taking	Individual Risk: cautious (0), restraint (188), risky (63), reckless (16), and destructive (5)	0.88
Prosocial	Peer support: none (120), some (96), detectable (14), majority (35), unanimous (16)	0.75
Tricks, Site Features, Social and Urban Context		
Physical Features	Features used for tricks: rails (19), barriers (2), driveway (1), sidewalk (15), street (7), street furniture (27), gaps (44), ramps (14), steps (80), walls (16), planters (6), features (11), landing (28), other (1)	0.95
Appropriation	Site modifications: Presence (171), Temporary (81), and Permanent (32)	1.0
Group Size	Size of group: small (147), moderate (29), large (29), and very large (81)	0.91
Group Gender	Gender of Group: all males (167), some females (114), all females (2)	0.37
Group Ethnicity	Race of Group: white (50), mostly white (39), even (116), mostly nonwhite (68), and nonwhite (10)	0.86
Tricks	Skate trick performed: Ollie (187), aerial (3), board slides (62)	0.94
Success	Successful landing of trick: yes (187), no (68)	NR*
Police Activity	Observed police activity (5)	NR*
Confrontations	Observed Confrontations (5)	NR*

*Kappa (K) indicates inter-rater reliability, above .75 is considered consistent. NR indicates not rated due to lack of sufficient comparisons or matter of fact nature of event.

($n=29$, 6–10), large ($n=29$, 10–19) and very large ($n=81$, 20+). The presence of males and/or females ($\mu=1.4$, $SD .5$) in the group ($k=.37$) accounted for the variation of sex amongst the peers from all male ($n=167$), presence of one or more females ($n=114$), to mostly/all female ($n=2$). Group ethnicity ($\mu=2.8$, $SD 1.0$, $k=.86$) was used to account for variability in terms of divergence of ethnicity from the default ($n=50$), white, to mostly white ($n=39$), to relatively even distribution ($n=116$), to mostly nonwhite ($n=68$), and finally nonwhite ($n=10$).

Tricks ($\mu=1.3$, $SD 1.3$, $k=.94$) and the completion of tricks ($\mu=1.6$, $SD .6$) were included as three categories: ollie ($n=187$), aerial (3), and board slides or grinds ($n=62$). Tricks were also classified by whether or not ($n=69$) they were landed successfully ($n=187$). All forms of observed play were recorded, including skateboarding, roughhousing, parkour or urban acrobatics, socializing or hanging-out, making-out or courting, graffiti, and manipulating or vandalizing the physical environment. Observed police activity ($n=5$) was entered in as a measure, and observed confrontations ($n=5$) with police or authority figure was entered in as well. The success of a landed trick, confrontations with police, and observed form or play were not rated to save time and because of the matter of fact nature of the event.

In sum, the measures collected from YouTube were consistently coded ($k>.75$) with only group gender having a moderate level of agreement amongst raters. The coding instrument was reinforced with numerous site visits throughout the study, which permitted the level of urban activity, predominate land uses, and persistent level of appropriation to be inventoried. The strategy permitted the researcher to enter into each site with a perception guided by previous accounts of site manipulation and activity. By approaching each site in this manner, evidence of use, such as physical traces (Zeisel, 1981), were easier to document and analyze.

Intraclass Correlation of Behaviors within Sites

External validity of the coding strategy to successfully correlate behaviors to site locations was conducted by measuring the intraclass correlation coefficient (ICC) within multilevel modeling. As described above, the statistic is commonly used to evaluate similarities, correlations, for several nested “classes.” For the present study, repeated observations within a site were nested within 17 different urban sites in New Orleans. The intraclass correlation coefficient (ICC) was used to assess the degree of correlation of observed behavior within sites or the relative proportion of within and between site variance. In other words, from each scene that was coded, the level of individual risk, amount of prosocial behavior, type of trick, physical feature, urban context, and social context could all be nested within the site in

which the trick occurred. If the ICC is high, then there is a high average within site correlation that would remain unaccounted for by an aggregated means model; whereas, if it is low, then within-site variation can be modeled looking for fixed effects of changes between locations. In the larger study, the ICC indicates whether there is sufficient between site correlations to proceed with the recommended statistical strategy of multilevel modeling to explore affordances in further detail (Shirtcliff, 2015). As a measure of external validity, a larger ICC indicates that observations taken at the same site are stable or similar to one another, i.e. are generalizable within the site not unique to the individual, and observed in a correlated manner across different videos. External validity is maintained with a statistically high ICC, suggesting that another video at each respective site would likely be observed in a similar manner.

In an empty mixed model with sites grouped as subjects for random correlated effects; three dependent variables included the ordinal variables prosocial, risk-taking and appropriation. Other coded scores were categorical (yes/no) and not suited for the ICC. For prosocial, the ICC indicated that 38.4% of the variance in prosocial behavior was similarly observed within each site across observations, $Z=2.25$, $p=.024$. Similarly, 54.9% of the total variance in risk-taking was similarly observed within a site and this stability was significant, $Z=2.59$, $p<.01$. Lastly, the ICC showed that 46.7% of the variance in appropriation was stable within a site, $Z=2.63$, $p<.008$, and thus these behaviors were consistently observed within each site. These findings support the approach that YouTube provides access to traces of human behavior in public urban open spaces.

Discussion: Incite Change Accessing the Inaccessible

The study identified publically accessible, outdoor locations in the City of New Orleans as places where adolescents were known to play, hang-out, and skateboard—at a time when the city has no official skate park. Once sites were identified, two research approaches were engaged over a 10-month period: one, a thorough search for online videos of adolescents playing in the sites; two, each site was visited multiple times to “incidentally” observe youth. Ultimately, YouTube videos were reliably coded to represent the unstructured activity of adolescents across multiple settings. Inter-rater reliability coefficients using Cohen’s kappa ($k>.75$) internally validated multiple measures assessing behavior, individuals, groups, physical features, activities, and urban context. Because the study was about the relationship between sites and behavior, a descriptive statistical method called multilevel modeling (MLM) was used to externally validate that behaviors coded from scenes could be grouped to sites. A sufficiently large

ICC indicates that behaviors in sites could be grouped for further analysis as observations were correlated to the site; this was found for each of the three behaviors (prosocial; risky; and appropriation). Findings support the use of YouTube as a means to access descriptive information on human behavior in public settings.

This paper shows that online videos can offer key insights into accessing the activity of an underrepresented population or difficult to observe activity in public, urban, open space. Further, the innovative approach captured novel information when compared to traditional unobtrusive observation. Since adolescents often have to “move-along”, the study used unobtrusive observation to examine 17 sites across New Orleans for evidence of adolescent activity. Even after extensive reconnaissance involving hundreds of hours, the traditional approach did not successfully observe adolescent behavior. Adolescents in “their space” modify their behaviors with the unanticipated arrival of an unknown adult. YouTube videos, on the other hand, offer the researcher of the built environment access to evidence of how urban space is used without researcher interference.

Undesired and unsupervised, adolescents’ free movement and covert use of public space presents unique challenges to study how public place can support positive social encounters. Consequently, unobtrusive, observational, behavioral research remains largely absent from the literature. Three primary research strategies were identified from the literature: studies that occur in environments designed to support youth play, such as skate parks; studies that examine specific groups of youth in public space (Rogers and Coaffee, 2005; Doane, 2006; Janssen, 2009); and, those studies that examine urban, public spaces as settings for youth activity (Nolan, 2003; Simpson, 2000; Horton and Kraftl, 2006; Veitch, Salmon, and Ball, 2007; de Vos, 2005; Robinson, 2009). As the literature suggests, adolescents prefer to engage in places where they are able to appropriate settings that support the desired behavior (which is difficult to do if an adult is present). Furthermore, such places may happen to be in programmed environments or popular, public places, but appropriation is likely to be limited by what is anticipated in highly structured places. The use of online videos has been shown to provide access to traces of human behavior in appropriated spaces that would have otherwise likely remained inaccessible.

Implications for Inclusive Design Research and Practice

As landscape architects, architects, and urban designers, our expertise is to understand the benefits and limitations of the physical environment to support urban life by observing human activity. The quality of information gathered from interviews or surveys tends to reflect already known cultural and social values for space and is useful for making

collective decisions on materials, objects, or phasing. Participant observation and unobtrusive observation provides access, however constrained, to known populations or acceptable uses of public space. YouTube videos permit access to otherwise inaccessible populations or situations; and, an extensive and correspondingly complex strategy that enables the researcher to further understand the background (site) supporting the activity. The limitation of this approach is the type of information that can be reliably collected and coded for analysis. As the present study shows, quite a bit of data can be reliably collected; however, the approach is best interpreted with complimentary use of inferential and multivariate statistics.

YouTube videos provide insight into how sites are interpreted to support adolescent skateboarders—a difficult population and activity to incorporate in the design process. The use of videos in addition to the opportunity to visit sites repeatedly, even over a short period, is critical to the interpretation of those contextual qualities and aspects unique to each site as it relates to the population or activity of interest. The combination of these observational approaches permits a deep level of interpretation and improves the opportunity for researchers of designed environments to consider the affordances of place to support positive social interactions for everyone. Strategies to create more inclusive environments should incorporate multiple approaches that maximize opportunities to understand the heterogeneous use of public space.

Limitations

While it may be argued that presence of a video camera changes social behavior (Caldwell et al., 2005; Haidet et al., 2009), most research studies on youth suffer from known limitations of researcher intrusion by requiring parental consent and the successful building of a trust relationship. Such prerequisites are known to interfere with natural play behavior. Researchers incorporating video should keep in mind contextual limits when deciding which behaviors to observe and code along with other environmental variables. The method has limitations that must be considered in the design, process, and analysis of any study choosing to use this research tool. Further studies using this strategy would improve our understanding of these limitations and the convergent and discriminant validity of the research tool to address human behavior in public places.

Conclusion

Handheld video cameras, Go-Pro mounted cameras, cell phone cameras, and the affordability of near-professional video recording and processing has made the anonymous lens a ubiquitous element in urban environments. Free,

public access to post and view videos of human behavior has opened up a world of how people use and view space that was previously unavailable or difficult to capture in a moment of activity. YouTube videos and other anonymously posted videos represent an ever-growing amount of data recording human experience in built environments. The videos have fundamental limitations in term of control and scientific value, and contextual limitations should be considered throughout the research process. Regardless, the growing presence of videos on the internet suggests that this has become a stable, social practice in society. These videos are ripe for interpretation of human behavior and benefit by documenting experience removed from the mediating presence of a researcher. Such instances of human behavior in public space capture an important part of the social and cultural life of cities. This new online presence assuages barriers to previously inaccessible information on how underrepresented populations, like youth, behave, or how alternative interpretations of the city, like skateboarding, affect behavior in public space. Further inquiry along these lines may raise important questions testing the efficacy of design to meet claims of social and cultural equity.

The lens has long played a pivotal role in the measure of design success, only now it is anonymous and accounts for both anticipated performance and spontaneous human behavior. As cities continue to increase and diversity, normative theory on ‘undesirables’ reinforces exclusionary tactics. Landscape architecture should change how it gains insight into how inclusively designed environments can effectively meet the needs of a culturally and socially diverse population. Inciting such a change would push urban design beyond the predictable to support the unanticipated interactions that create culturally rich and vibrant cities.

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