University of Toronto Planning MSc CIP Project

An evidence-based approach to design: Improving Beasley Park

Matt Armstrong March 31, 2010

Executive Summary

Far too often, design is based on fashion and fancy, rather than on evidence. This is unacceptable in public spaces, as the implications may range from fear, to underuse, to waste. The expropriation of lands to build Beasley Park, Hamilton in the 1970s resulted in such fear, underuse, and waste. However, Beasley Park has much going for it, such as its kid's area, skateboard park, green space, and active local residents as stewards (of a kind). For the sake of the neighbourhood, and city as a whole, Beasley Park should be redesigned in an incremental fashion in order to build upon its strengths, limit fear and underuse, and realise its potential.

This study proceeded with the aim of trend-finding via two complementary research rationales: urban design theory, and human-input/observation techniques. These trends were found by looking for correlation between the two techniques, and a number of findings resulted. First, the park is used disproportionately by males, with certain areas of the park notably absent of females. Second, the park's shape, and the urban form of the greater neighbourhood, are impacting the success of the park. Third, options for the park are limited due to previous uses on the lands, but the City and local councillor aim to expand the park nonetheless.

Synthesising these individual results, the study was able to identify 4 key areas of focus for the future of the park. These are: the corners by the community centre, and in the north end, the area by the car lot, and the skateboard park. The study concludes by encouraging the evaluation of specific design interventions using similarly robust evidence-based methods in these areas.

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The Beasley Neighbourhood, as depicted in Paul Elia's work "Hamilton Strip" (online, 2010). Beasley Park is behind these buildings.

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I.1 Closing

A.1 Introduction

What is the right mix of activities for an urban park and its surrounds? How about drug dealing, public defecation, day sleeping, and graffiti, all wrapped up in an urban envelope of a car lot, hydro transmission station, two 4 lane one-way streets, a factory... and a school?

Something should be done to improve Beasley Park.

Now, this is not to say that Beasley Park is a negative entity. It surely is not. In fact, Beasley Park has a community centre, children's play area, skateboard park, fountain (though not currently operating), well maintained paths, and some housing abutting the green as well. Perhaps most important for the park is that it has the support of community groups - Beasley Neighbours for Neighbours and the Beasley Neighbourhood Association - which are active and do great work in the neighbourhood.

Local residents and park users would certainly benefit from a considerate redesign of the park. This research proceeds with valued input from them and from the community groups (I am working directly with the co-chair of Beasley Neighbours for Neighbours). The City of Hamilton also stands to benefit from an evidence-based research project on the park as well, as it will help to inform the redevelopment of the park. In addition, if crime prevention through environmental design (CPTED) values can be incorporated and successful on the ground, then Hamilton Police Services, and those currently fearful of the park may also stand to benefit. Although CPTED is an established urban design theory, I prefer to focus on *fear* prevention through environmental design as it encompasses a wider range of improvement possibilities, most notably inclusiveness.

Admittedly, some of this work will proceed out of self-interest, as I am a homeowner who lives mere minutes from Beasley Park. I want to make a difference for myself and my community as well.

What then, are the possibilities for Beasley? How does its current design and state lead to its problems? How can a combination of local input, observation and expert advice be mobilised for a considerate and inclusive redesign? How can the positive aspects of the park be reinforced or supported while the negative aspects ameliorated or removed or designed out? How can the ideas of respected urban theorists be incorporated (Jane Jacobs' eyes on the street, Oscar Newman's defensible space, etc)? And perhaps most crucial to this project, how can research into understanding patterns of usage of the park guide the redevelopment of the site?

In an effort to answer these questions, this project uses a multi-method evidence-based approach, divided into two categories: the 'human input methods', and the 'theory-driven methods'. The 'human input methods' are:

behaviour mapping (observing activities in the park), behaviour tracking (observing movement through the park), participant mapping (collecting user feedback in the park), and semi-structured interviews with expert knowledge or local knowledge of the park (or parks). These 'human input methods' will be compared against or complemented by the 'theory-driven methods' of: permeability analysis (analysis of path options in and around the park), block size analysis, interface mapping (analysis of the built environment's 'interfacing' with the park), historic research and literature review, and visibility graph analysis (analysis of what can be seen). *The overall approach of this paper is to consider the 'human input methods' against the 'theory-driven methods' as a means to justify potential changes. The goal is to identify opportunities to reinforce 'positive areas' and to offer alternatives to 'negative areas'.*

All of this observation, surveying, mapping and data collection offers a large amount of information for consideration in offering a park redesign. *The thrust of the analysis is one of trend finding, which is the purpose of the multi-method approach.* For example, if the permeability study suggests that there are too many routes through the park diluting movement, and the mapping exercise provides that one route is 'of concern' to park users, then this route is a good candidate for closure or fencing. A second example could be a result of a combination of clear avoidance of an area in the behaviour tracking section, with evidence from the interface mapping exercise that shows a large area of blank walls (i.e. lack of 'eyes'). This would suggest that either an activity generator needs to be placed there, or that buildings need to be re-oriented (or new ones built).

A.2 Precedent

This type of reasoning was employed in Jan Gehl's 2004 "Towards a Fine City for People" where a great deal of observation was used to evaluate how well design interventions have worked, with full use being 'good' and poor use 'requiring improvement'. One of the key aims of his work is to try to determine what people want to do, against what options are available to them. Sitting in areas with no seating suggests that seating should be installed there, for example. As an additional precedent for this type of work, Moore and Cosco (2007) used a multi-method approach, including behaviour mapping and behaviour tracking, for evaluating a park in terms of inclusivity and universal design.

B.1 Perspective

Gehl's techniques are rooted deep in the environment-behaviour perspective, which is based on a belief that the design of the physical environment has an effect on behaviour, that undesirable behaviours can be dissuaded via certain spatial layout and design interventions, and that social activity is generated by an environment supportive of it.

But where did this urban design theory come from? Looking back a number of decades, it can naturally be traced in part to Jane Jacobs (1961), who famously made the argument that sidewalks are among the safest environments because of 'street ballet', with many people overlooking (and guarding) activity and each other. At about the same time, Kevin Lynch (1960) set out on a project whereby wayfinding abilities of people were examined, where he discovered that the organisation of the physical environment had a significant impact on this ability. Later, Oscar Newman (1972) formulated his theories of 'defensible space', which eventually led to theories of Crime Prevention Through Environmental Design (CPTED). From these theories came a desire to analyse space in terms of its social logic in a more technical way, which led to the development of space syntax theories (including visibility graph analysis) by Bill Hillier and Julienne Hanson (their 1984 The Social Logic of Space was a formative work).

While these ideas and theories explain the general direction of this paper, as well as determining some of the methods to be used, it is important to note that one of the key methods is simply that of inductive observation. William Whyte's observational study "The Social Life of Small Urban Spaces" (1980) is perhaps the most well known example of this technique. Whyte's team focused mainly on observing small urban spaces in New York and looked for patterns in behaviour. This was a pioneering work in post-implementation evaluation of the use of public spaces.

Each of these theories and techniques have since been used in the evaluation of parks, and some have been combined for this purpose. I have personally used a similar set of techniques for park evaluation while a consultant at a masterplanning firm. However, to the best of my knowledge, there are no other works that have attempted to bring all of these ideas together. This may have wider positive implications for environmental design and urban design in parks, as the "empirical basis for much design decision-making is lacking" (Golicnik and Thompson, p39, 2010). A more robust park evaluation is the result of doing so, and this could easily be applied to other parks.

Figure 1: Location of Hamilton (Google, 2010a)

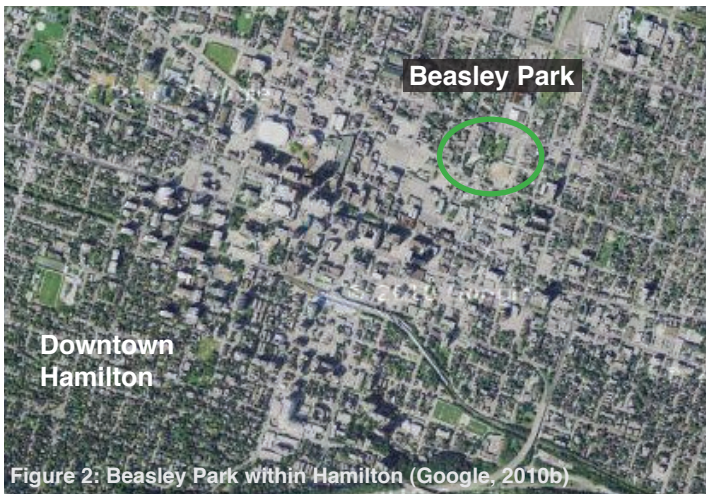


Figure 2: Beasley Park within Hamilton (Google, 2010b)

Figure 3: Beasley Park Detail (Google, 2010c)

C.1 History

It is important to undertake an examination of the history of the park, as past events and past uses are currently affecting the future possibilities of the park. Although labelled a 'neighbourhood park' (see context figures 1-3), the Beasley neighbourhood was only described as such about 30 years ago, which is quite recent when consideration is given to the age of the City as a whole. This recent neighbourhood designation may have implications for how people behave in the area or what affinities they have for it. The area that Beasley encompasses is actually one of the oldest areas in the City of Hamilton, and its name is borrowed from Richard Beasley, who came to the area in 1777 (City of Hamilton, 1995). While Mr Beasley was a prominent individual for some time (both a successful businessman and member of the legislative assembly), he eventually came upon difficult financial times, and had to sell his property at Burlington Heights in 1832 and move

to what is now the neighbourhood named for him. Sir Allan MacNab purchased the site from him and built Dundurn Castle on the foundations of Mr Beasley's home (City of Hamilton, 1995).

From this point, my work focuses on the history of the area as depicted in maps. The earliest map I was able to find - from 1836 (see figure 4) - shows that Mary Street (which borders the current Beasley Park) is the eastern extent of the City, with the site of the park itself occupied by a farm owned by a Mr Archibald Ferguson (McKenzie, 1836). There is a smaller portion of land, abutting Mr Ferguson's, that is marked as belonging to Mr Richard Beasley. A sketch map from 1842 (figure 5) shows that the park site remains undeveloped, but shows a few buildings on the southern edge of the site (Piper, 1842). More importantly for this study, it also shows the historic topography of the area, which shows the beginnings of a valley and drainage northward toward to the lake. The city was obviously expanding quite rapidly, as only 9 years later in 1851, the now late Mr Archibald's farm is all but encompassed by the growing city (Smith, 1851).

Development resembling the current road network in the park seems to have been complete by 1858 (see figure 6), where a map of the city shows both the cross streets through the park (Elgin and Kelly), and the bordering Ferguson Avenue in the east (Shepherd, 1858). Cannon Street is called Henry Street at the time.

Figure 4: Beasley Park Area, 1836 (present park outlined in green) (McKenzie, 1836)

Figure 5: Beasley Park Area, 1842 (present park outlined in green) (Piper, 1842)

Figure 6: Beasley Park Area, 1858 (present park outlined in green) (Shepherd, 1858)

By 1898, rail lines have been built along Ferguson Avenue, and a 'radial electric railway line' down Wilson Street is noted ("Map of the City of Hamilton", 1898). The street design of the present Ferguson Avenue recalls this heritage through rail-themed signage and simulated railway street markings.

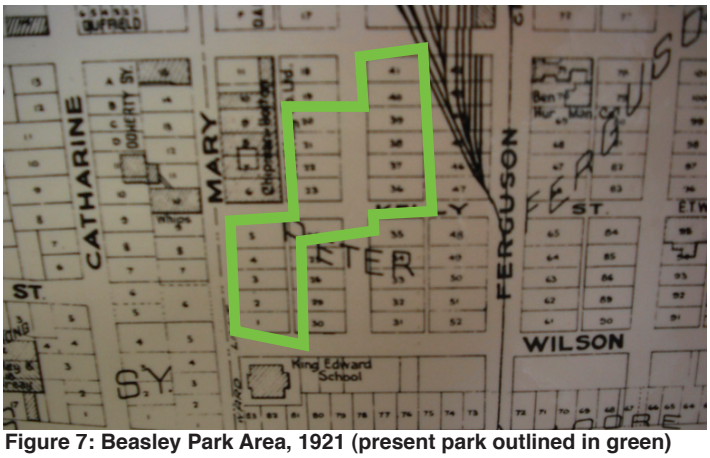


Figure 7: Beasley Park Area, 1921 (present park outlined in green) (Kirk, 1921)

The rail network expands rapidly over the next couple of decades, and by 1921 there are several rail lines occupying the north east section of what is the present day Beasley Park (see figure 7) (Kirk, 1921). This is important to note as these uses, and others have resulted in contamination of the soils in the park (Bingham, 2007).

An insurance map from 1947 (figure 8) shows the area of Beasley Park with residential and industrial uses on the land (Underwriter's Survey Bureau, 1947). A knitting mill is labeled on the map, and continued to operate at the site until 2009. By 1961, the population density of the area exceeded 20,000 people per square mile (see figure 9) (City of Hamilton, 1970).

Figure 8: Beasley Park Area, 1947 (present park outlined in green) (Underwriter's Survey Bureau, 1947)

In the 1970s, the City of Hamilton undertook a 'Neighbourhood Improvement Program' that called for 1 acre of park for every 1,000 citizens, and under this program the Beasley Neighbourhood was considered to be underserved ("Bethune insists", 1975). A plan was devised to create a park for the neighbourhood of approximately 9 acres, and would have required the ex-

Figure 9: Beasley Area Density (1961), Prior to Block Consolidation. East end of park had 20,000 people/sq mile (City of Hamilton, 1970)

propriation and demolition of a former home of Lester B. Pearson (a former Prime Minister) (Hamilton Public Library, 1996). However, political opposition ("Bethune insists", 1975), and budget restrictions resulted in a re-planned park of 3.74 acres with development of the park complete by 1978, and its name becoming "Beasley Park" in 1988 (Hamilton Public Library, 1996).

Photo series 1. Images 1 and 3, by the author. Image 2, by Mississauga Watch, online, 2010. Image 4 by "local resident/artist", 2009.

Since the initial park was completed in 1978, a few revisions have taken place. Perhaps most important for the evolution of the park was the beginning of use of the wading pool as a skateboard ramp ("skateboarder", personal communication, 2010). The City eventually made Beasley its first skateboard park. From that point, Beasley Park began to be well known among skateboarding enthusiasts with riders coming "from other cities in southern Ontario and across the border, because Sarnia is the only other city in Southern Ontario that offers concrete skateboard ramps" (Hamilton Public Library, 1996). A well attended skateboard rally continues every July in the park, with famous skateboarders in attendance. As an example, Mark Appleyard - a professional skateboarder - developed his skills in the park ("skateboarder", personal communication, 2010).

A number of redesigns took place between 1978 and 1995, with the most recent revision resulting in an update of the facilities to make them more accessible for people with mobility impairments (Hamilton Public Library, 1996). A few photos of the current park are displayed in photo series 1.

More recently, from about 2005 to 2008, Dr J. Edgar Davey public school was investigating the possibility of expanding and relocating onto the existing park lands and swapping its existing location (at the corner of Mary and Wilson) to a new park (Bob Bratina, personal communication, 2010). However, the City refused the deal on the grounds that it fears the park lands are contaminated due to previous automobile repair businesses and other uses (Cox, 2005). Without this option, a decision was made to demolish the existing school and build a new one on the same site. This new school is presently under construction.

C.2 Current Context

The history of the park affects its future, especially where past uses restrict future possibilities. However, the park's current context, feel, and perception can have a similar impact. The park currently suffers from

Figure 10: The Beasley Neighbourhood (Baviera, 2006)

a poor reputation, and this is depicted (and exacerbated) as such in the media. Perhaps the best example of this comes from the major daily newspaper (The Hamilton Spectator) in a map they published in 2006 (displayed in figure 10). Notice such things as 'listerine alley'(centre), a broken mattress (upper right), needles and alcohol bottles (upper left), 'XXX peep show' (centre bottom), the 'Wesley Wastelands' (centre right), and 'Beer Mahal' (referring to the Beer Store). Note also that the prominence of the Beasley Community Centre is roughly the same as the Elgin Transformer Station beside it. In what other depiction of a neighbourhood would this be relevant? Obviously the transformer is prominent (and a problem). Many immigrants live in the area, and there is a mosque in the centre, but this is not depicted. In fact, no places of worship are depicted in the drawing. Even some of the better points in the neighbourhood are depicted as 'restaurant *row*' and 'artisan *alley*', which are not the most complimentary descriptors.

It is no accident that the entire area is depicted at dusk or night time under a 'purple haze.' Altogether, this drawing begs for scrutiny using the teaching of Roland

Barthe's *Rhetoric of the Image* (1998).

Other media articles echo the general tone of 'The Beasley Neighbourood' illustration, with titles as negative as "It's essential to clean up Beasley Park before allowing children to play" (Myrie, 2005), "This isn't Mr Roger's neighbourhood" (Dunphy, 2006), and a letter to the editor, "Beasley Park: It makes my stomach turn" (Shaw, 2001).

Altogether, this image and articles emphasise a widespread belief that Beasley has an image problem, and one way to improve the situation is to improve the public spaces of the area. Beasley Park is at the centre of the neighbourhood and improvements to this public space will act as one way of improving the area's image. If drugs, mattresses, and the few unsavoury (versus needy) characters that occupy the 'Wesley Wastelands' are further from public view, then the general public's image of the area should also improve (and one hopes that the media will follow).

A park resdesign will not do this alone. Luckily for Beasley, there are many advocates and supporters of the park, and some media articles in support of it: "Beasley park oasis breathes new life into downtown" (Wilson, 1995), and "It's a beautiful day in my neighbourhood" (Gilbert, online). The supporters come in the form of the local community groups, who hold barbecues, sporting events, and run breakfast programs for local children at the Beasley Community Centre (an expanded version of which will be incorporated into the new public school at one corner of the site). A National Film Board podcast illustrates the changes that have occurred as a result of the work of the group. The podcast is narrated by a woman named Maggie Hughes, who professes that she previously avoided the park because she was fearful even to cycle through it, but with the help of the community group, she now regularly visits the park (Hughes, online).

C.3 Musings and Observations

As for my own experience, I live about 15 minutes from the park, but never entered it prior to this project. From observing the park, and speaking to many people, I believe that the park's negative reputation is undeserved. I have spoken to people who visit the area from other parts of the city (and often from outside the city) who provide positive reasons for travelling such distance: 'best skateboard facility around', 'the park has a soul not found in newer parks in the suburbs', and 'I'm an artist and I love the factory and graffiti'. However, I have also come across broken bottles, garbage, and witnessed some negative behaviours in the park, such as public relieving, public drinking, and begging. The behaviour and activities of some vagrants in the area detract from the park's atmosphere as well. (Note that I make the distinction between 'homeless' people who can and should use the park, and 'vagrants', whose

activities and behaviours make for an unpleasant atmosphere).

While I do believe that the park's poor reputation is undeserved, I also believe there's much room for improvement. Of the anti-social behaviours that I observed, all were in places away from the main activity centre at the skateboard park, and all were at 'edges' or 'corners' of the park. One exception was a man relieving himself in the middle of the park by a grouping of shrubs. In all cases, design intervention would likely have a positive impact - for example, design out the shrubs, and relieving will likely happen somewhere else. The results of personal observation are encouraging as they support my initial thoughts that the park would benefit from design improvements. If anti-social behaviour was occurring in areas other than the 'edges' or 'corners', then this project would have little value or impact, as the behaviours could not be explained from an environmental design, or environment-behaviour perspective.

C.4 City Plans

With personal observations supporting further work on this project, I then aimed to research the plans the City of Hamilton had for the park. A "Beasley Neighbourhood Plan" dates from 1996 (City of Hamilton), but this was superceded by the "West Harbour Plan", which came into effect in 2005 (City of Hamilton). The only reference to Beasley Park in the plan: "The City shall seek to expand and improve Beasley Park to better serve existing residents in the Beasley Neighbourhood and serve new residents in the Ferguson-Wellington Corridor" (City of Hamilton, section A.6.3.5.3.7 of the West Harbour Secondary Plan, 2005). This line, and especially the words "seek to expand and improve" suggest both a) that the City intends to make the park larger by some means, and b) that the City recognises that residents in the area deserve an improved park.

The limited reference to Beasley Park struck me as peculiar, so I brought this up in an interview with a City of Hamilton Public Works Official. His response countered this by indicating that not all parks receive master plans, but that Beasley Park actually has many features of larger parks that would be subject to master plans (the skateboard facility and fountain were deemed 'unusual for a neighbourhood park') ("Public Works Official", personal communication, 2010). The process for park renewal and redesign is based on a points system, whereby criteria such as wear, time since redevelopment, health concerns, and resident demand (among other factors) are weighed and a score given. The top scoring parks get highest priority for redevelopment ("Public Works Official", personal communication, 2010). However, a park must first get on 'the list' (as this official called it) before it can be considered. Beasley Park is on the list.

The next item I wanted to discuss was the item indi-

cating that the City sought to 'expand' the park, but the Public Works Official had no knowledge of this. However, I learned from members of the community that they had heard a rumour that the City is in negotiations to purchase the lands currently occupied by Lockwood Motors in order to expand Beasley Park. I later brought this up with local councillor Bob Bratina, who confirmed that negotiations were underway to purchase (as opposed to expropriate) the Lockwood Motors site in a willing buyer/willing seller arrangement (Bratina, 2010). If this transaction cannot be agreed to, it is unclear how the City will be able to meet its aim of expanding the park.

C.5 Block Size Analysis

Beasley Park was originally formed through expropriation of lands, which remains an option (though unlikely) for expanding the park. In the original expropriation, four smaller blocks were consolidated, and two streets were truncated (Kelly and Elgin). In this process, the form of the neighbourhood and the urban fabric of the area changed. This kind of change can have impacts beyond the boundaries of the new block. Siksna (1997) goes so far as to suggest optimal block sizes depending on the situation, with smaller blocks suggested for urban centres. The logic for smaller block sizes in urban centres rests in factors as varied as density, walkability, and permeability, whereby a 'finer mesh' of blocks in an urban centre allows for easier movement (larger blocks often result in increased walking distances). Therefore, the knowledge that Beasley Park was formed via block consolidation warrants further investigation, as this may be a factor in its use as a route, or its character as a place.

In investigating changes in block size around Beasley, I examined aerial photos and fire insurance maps from the late 1940s and 1950s, and compared them with current aerial photos using Google and Yahoo maps (accessed January and February 2010). I chose these years as they fall just before the 'rationalist revolution' in planning that occurred starting in the late 1950s to the early 1980s where large projects and automobile-centric developments expanded rapidly. While I was aware of a few key super-projects in the city, such as Jackson Square and the 'new' City Hall, I was less aware of the extent of the consolidations - 9 blocks for Jackson Square and 6 for City Hall. There were others at Central Park, and Sir John A MacDonald High School, as well as other 'tears in the urban fabric' to assist cars in scaling the escarpment. Roadways were also realigned, with the obvious goal of increasing the speed and ease with which vehicles could move through the city. Many streets were made one-way.

The combined effects of these consolidations, and of design that catered to cars is beyond the scope of this paper, but are important to note. First, these factors have negatively impacted the downtown neighbourhoods by

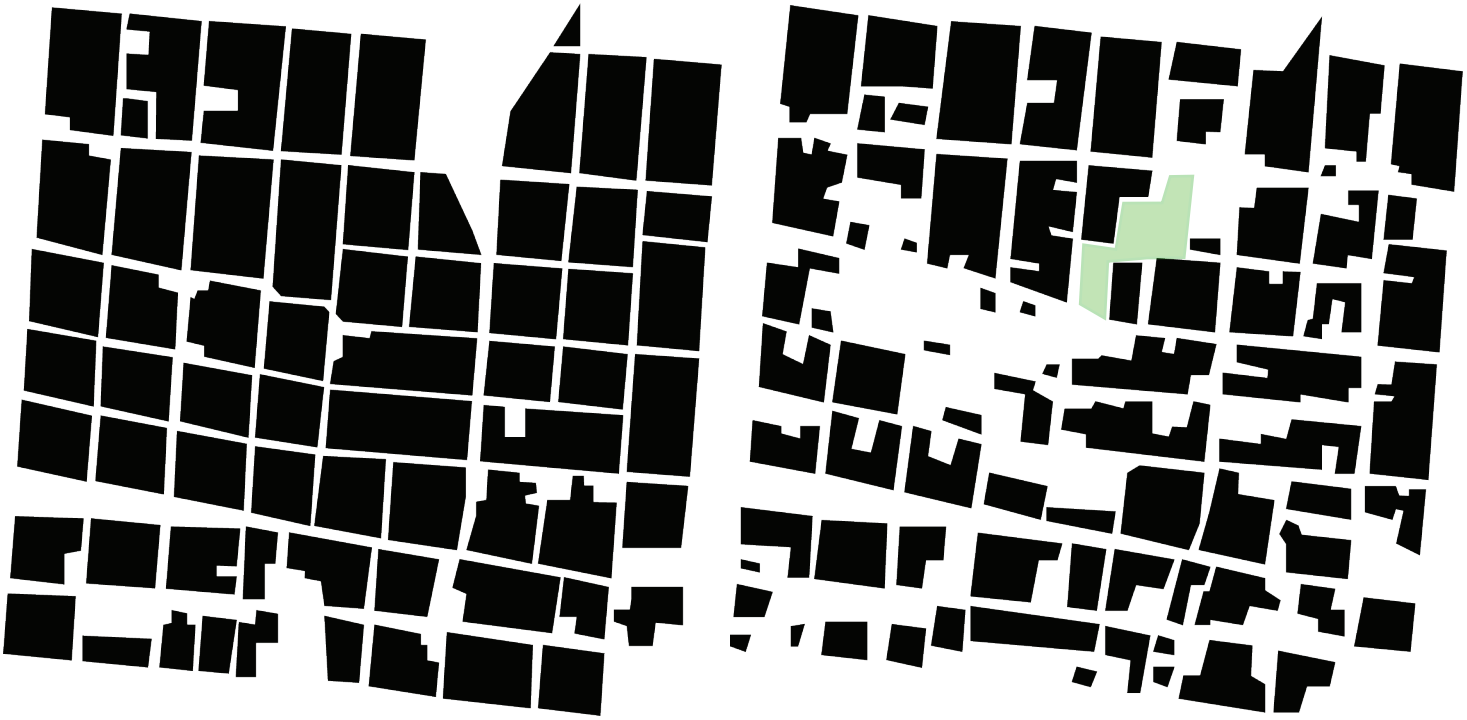


Figure 11. Contiguous built form (black) around the Beasley Park area, 1950 (left) (Government of Canada), 2009 (right) (Google, 2010d)

making them less desirable places to live. Noisy roads that feel like highways have resulted, and as one park user commented "Beasley Park is just large enough that if I sit in its centre, I get some relief from the noise and traffic from Wilson Street and Cannon Street" ("park user", 2009). Second, these outside factors acknowledge the fact that there are limitations in redesigning Beasley Park. As a Public Works official from the City of Hamilton said: "Many of the problems that Beasley Park faces are the city's problems, and not the park's" ("public works official", 2010).

C.6 Permeability

Closely related to block size, permeability is another factor in urban design that may contribute to or detract from an area of a city. In this case, permeability refers to the ability of a person to pass through a space. Overly permeable space dilutes or diffuses movement over too many routing choices, often resulting in routes that are poorly used. These poorly used routes may feel lonely or desolate, and possibly fearful. By that same logic, an area that is under-permeable may cause fear by provoking a feeling of enclosure or entrapment. It is therefore important in public spaces to strike a balance between these two extremes. For design purposes, if an area is deemed to be overly permeable, this can be corrected through appropriate closure of pathways, building infill, or fencing. Under-permeable space can be corrected by opening it up. This kind of intervention is commonly associated with crime prevention through environmental design (CPTED), especially with respect to gating, and appropriately delineating public and private space.

I will use three ways to evaluate permeability. The first

is to observe and record the use of the park, and measure how often each entrance and exit is being used. Areas that are seldom used may be candidates for gating, or infill. This will be explored further in the section on behaviour tracking and behaviour mapping. The second is to listen to responses of interviewees, both with the experts as well as with users of the park (the intercept interviews). The key here is to listen for key words and acknowledge user observations, while remaining cognizant that most users will not have any concept of permeability. A sample result suggests that one area of the park may benefit from gating, while other areas would benefit from being opened up. In fact, the words 'enclosed' and 'entrapment' were used by interviewees (more on this to come in the results synthesis section).

The final way that I have evaluated permeability is more closely related to block size. Using aerial photos from 1950 (Government of Canada), and comparing that to online aerial photos of Google (2010d), I have created diagrams displaying areas of contiguous built form (see figure 11). In these diagrams, black represents built form, and white represents open space (either transportation corridors, park space, or parking lots). The white spaces offer opportunities to move through the environment (mainly for pedestrians) and are basic indicators of the level of permeability. It is clear from these diagrams that downtown Hamilton was less permeable in 1950 than it was in 2009. The 1950 map resembles a quilt, whereas the 2009 map seems to lack such organisation. Again it appears that the problems facing Beasley Park are external in nature (fearful feelings in the park may be related to diffusion of natural movement and limited 'eyes on the street' that are a result of the form of the greater city in 2009).

C.7 Interface Mapping

Urban design theories around crime and fear prevention through environmental design, as well as those of the related 'defensible space' (initially developed by Oscar Newman in 1972) suggest that a space's 'interfacing' can impact how the space feels and how it is used. One can imagine how a dead-end laneway entirely enclosed with blank walls and no windows would feel to be in, as compared with a laneway with homes along it with doors and windows fronting the space. The latter would feel safer and more welcoming.

Part of the explanation for the difference in feeling between these two spaces lies in the fact that the majority of people who commit acts of crime, vandalism, or anti-social behaviour do so in a highly rational way. It's all about risk: risk of being caught, risk of being seen, risk of punishment, risk of encountering resistance, and so forth. The risk of spray painting someone's front door is greater than spray painting their alleyway-facing garage, as the front door is more 'defended' than the back garage. The front door is more likely to be used by the owner of the home, and the street is more

Figure 12: Beasley Park Interface Map

likely to be occupied or active (in other words, the perpetrator is more visible). (Visibility Graph Analysis, to be explained later, can be used to map levels of visibility for this purpose). This explains why back alleys are more often canvases for graffiti and tagging than front doors. Parks are therefore better designed, served, and 'defended' when they have 'front door' style interfacing rather than 'back alley interfacing'.

Another tool that assists potential perpetrators is confusion over territoriality. A clearly defined private space (for example, a home with a fenced-in yard) is owned and maintained by the homeowner or his or her tenants. A clearly defined public park works in the same way: it is maintained and defended by its users and city staff. When a space falls between these two, and control of the space is unclear, an opportunity is created for perpetrators of anti-social activity, who count on going un-

challenged in their activities. A classic example of this confusion is the green space in many public housing estates, especially those with inadequate fencing and building footprints that stray markedly from the surrounding area. Is the space between these houses public land? Is it owned by the homeowners? Is there evidence either way? This confusion removes a psychological barrier that exists in other spaces that tells the user of the space that there is control, and that someone is 'defending' that space. If garbage is dumped here, is it obvious who is responsible for its removal? As a result, poor behaviour can often result in these spaces.

With this in mind, we can approach Beasley Park with the aim of determining which areas of the park offer higher degrees of 'defence'. While levels of use, routes, permeability, maintenance, and other factors influence levels of perceived 'defence', for this section we are focusing on the interface elements. For the most part, these are based on the ability to 'see' or 'be seen'. Of course, a house with a front door and windows facing the park offers a higher degree of 'defending' power, or 'seeing' power than a blank brick wall. A wall with windows only offers a little less 'defending' power than a front door and windows, and a see-through fence offers more than an opaque fence. The hierarchy from most power to least is mostly as follows: windows and doors, windows only, doors only, see-through fence, opaque fence, and blank wall. All of the park's 'interfaces' (and a few photographic examples) are displayed in these categories in the map in figure 12.

As with the other methods used in this work, interface mapping is unable to stand alone in explaining the park. As such, it will be placed along the other methods in the analysis section (where analysis of the results of the mapping exercise will explained).

C.8 Visibility Graph Analysis

Visibility Graphy Analysis (VGA) is used to determine levels of intervisibility, which can be useful in park design by demonstrating areas that are 'unseen' or 'cold', and areas that are easily 'seen' or 'warm'. Being able to see and be seen in public spaces was popularised as being important by urban theorists such as Jane Jacobs, and VGA is a quick graphical way of presenting this feature of a space. It is useful for helping non-experts to understand design choices, but also useful for experts for the quick understanding of complex spaces. The technique was developed at University College London, and is used by masterplanning and architecture firms in England and elsewhere. For this project, it is important to understand the visual fields from within the park, from outside the park looking inward, and a combination of both. In the absence of customised software to generate VGA for Beasley Park, I have instead simulated the method, which I explain below.

To conduct VGA, the concept of an 'isovist' must be

understood first. Essentially an isovist is the 'shape of what you can see in 360 degrees' (this is overly simplified, but a sufficient definition for our purposes). While this can be thought of and displayed in three dimensions, isovists are more commonly used as two dimensional horizontal fields.

Continuing with a basic example, if you are in a square room, and you look around you in 360 degrees, the *shape* of what you see will be square. If you are in a circular room, the shape will be circular, and so forth.

In the real world, the shape of what is visible is not that simple. Here is an example (see figure 13). Imagine you are in a square room, but there is a large post in the room. What is the shape of what you can see in this room? We will create an isovist for this. To do this, we first need to take a straight line that hits the post at a tangent, which is the closest viewpoint you have by it. These are depicted as red lines (figure 14). As there are no further obstacles to your view within the room, we have completed the first task in creating an isovist and can now draw the shape of what you can see. This is the purple line in figure 15, and polygon in figure 16.

What would this shape be if you were in a different location within the room? Here's another example from the same room (see figures 17-19). Now, if we overlay the two shapes we have created, we get a new shape and one that is 'intervisible' for both points in the room

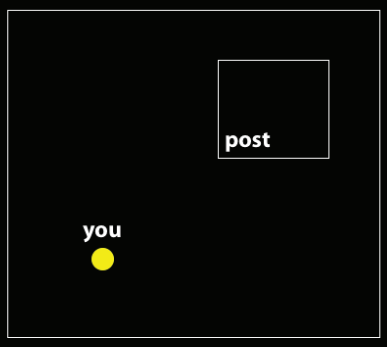


Figure 13: sample room

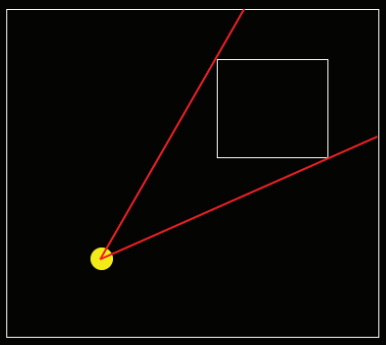


Figure 14: sample viewing tangents (red) by room obstructions

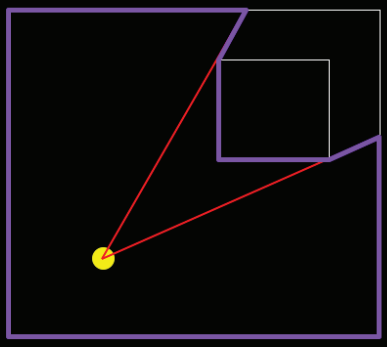


Figure 15: sample isovist outline (purple)

Figure 16: sample isovist

(figure 20). This is the 'visibility graph' and is the concept behind Visibility Graph Analysis (VGA).

With new understanding of this concept, we can use the approach for analysing Beasley Park. However, in applying this method, it is important to note that the real world complexities (that is to say, barriers such as shrubs, deciduous trees, temporary buildings, and so forth) do somewhat limit the effectiveness of VGA as it is entirely too difficult and time consuming to conduct isovists around all these barriers. As a result, the VGA conducted here will use the barriers of buildings throughout the area, and buildings and fencing within the park as 'visibility barriers'.

To begin the process, I located GIS data on buildings in the area (City of Hamilton GIS Services, 2006) , and then divided up the park into a series of points 10 metres apart from each other. I wanted to go down to 5 metres, but found that even at 10 metres it was a huge task to complete this work. I then exported the data to AutoCAD and began creating isovists. See figures 21 and 22, which show the equivalent steps used in the previous example at figures 13-15.

Eventually, I had covered the area and had 64 isovists (figure 23). This AutoCAD file then had to be exported to Adobe Illustrator, and the isovists were filled in with colour (see figure 24). These coloured layers must then be made somewhat transparent. Consideration to

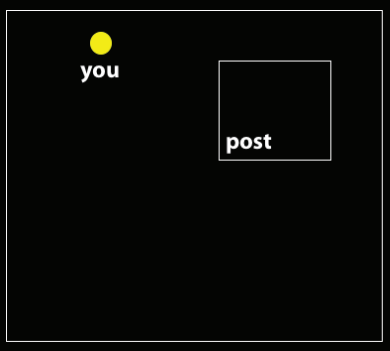


Figure 17: sample room with different viewing location

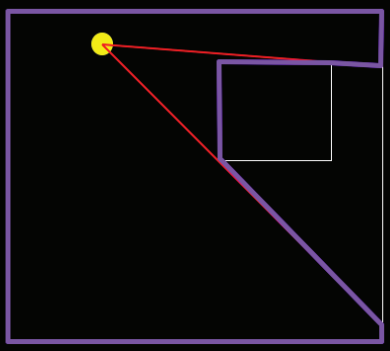


Figure 18: sample isovist outline (purple) from new viewing location

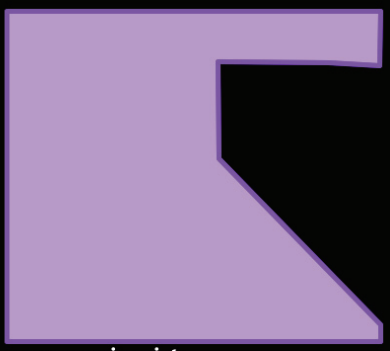


Figure 19: sample isovist from new viewing location

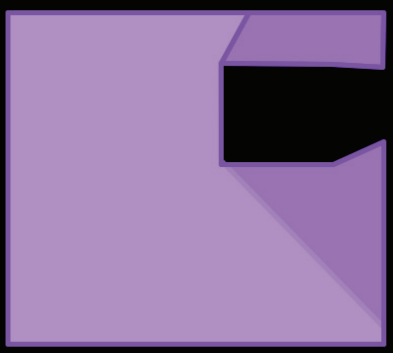


Figure 20: sample monochrome VGA

the level of transparency must be given at this stage in order to present an accurate image (refer to figure 25).

The limitations of the vectorised graphics software prevent the creation of the typical ‘heat map’ look of a standard VGA. For this, I then had to create a high resolution TIF file from the Illustrator work and export it to the rasterised world of Adobe Photoshop. Here I used the gradient tool to create a ‘heat map’ to better display the areas of the park that are most intervisbile. The result is displayed in figure 26.

The process was repeated for the area around Beasley, and looking inward (figure 27) and the combined results of the two exercises are displayed in figure 28.

C.8a Limitations of VGA

While I briefly alluded to some of the limitations of conducting VGA, it is perhaps important to elaborate on this more explicitly. First, a finer mesh VGA (that is, using a grid size smaller than 10 metres by 10 metres) would result in a more accurate VGA. Second, barriers that prevent visibility in the real world had to be ignored due to time constraints (temporary buildings, cars, fences, etc). Luckily, the topography of the area does not impede visibility in any direction around the park. Finally, I found that the GIS data that I was relying on was somewhat out of date. A key piece of this is the new Dr J Edgar Davey school in the southeast cor-

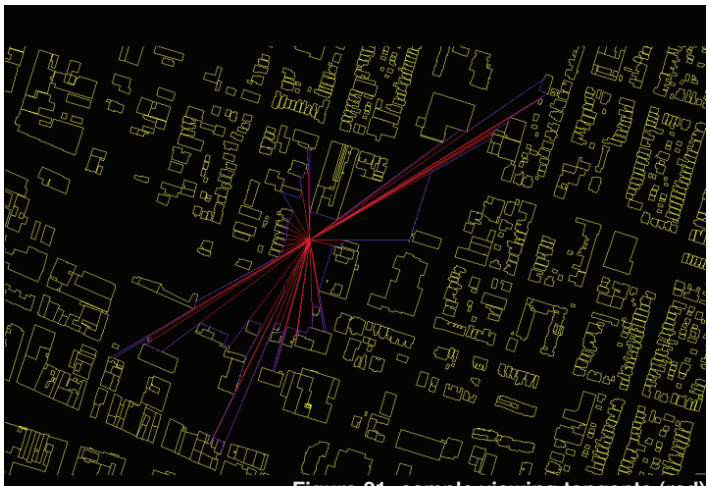


Figure 21: sample viewing tangents (red) and isovist outline (purple) in Beasley Park

Figure 22: further viewing tangents (red) and isovist outlines (purple) in Beasley Park

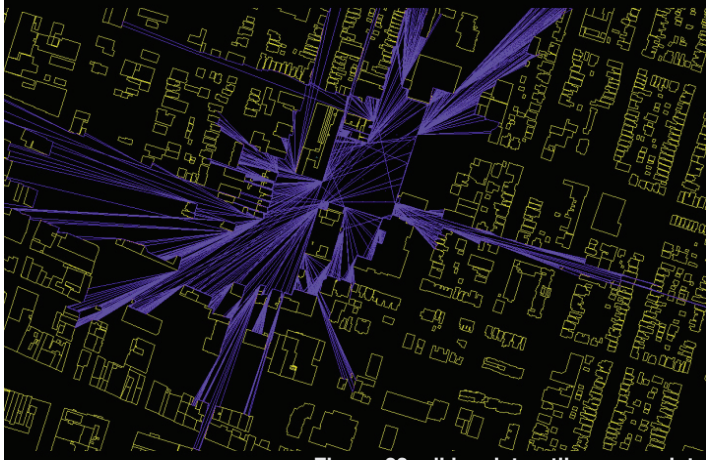


Figure 23: all isovist outlines complete

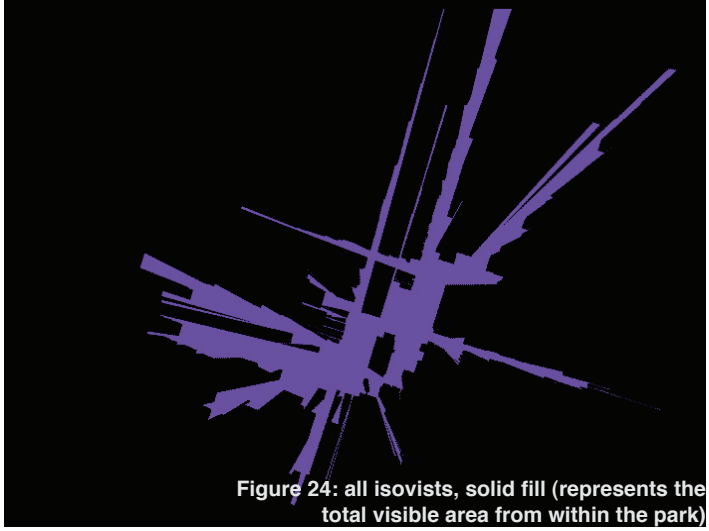


Figure 24: all isovists, solid fill (represents the total visible area from within the park)

ner, which is under construction. I located architectural drawings for the school using the City of Hamilton website and estimated its position within the site (and drew the building in before drawing the first isovist).

Results and analysis of the VGA will be presented in the results synthesis section.

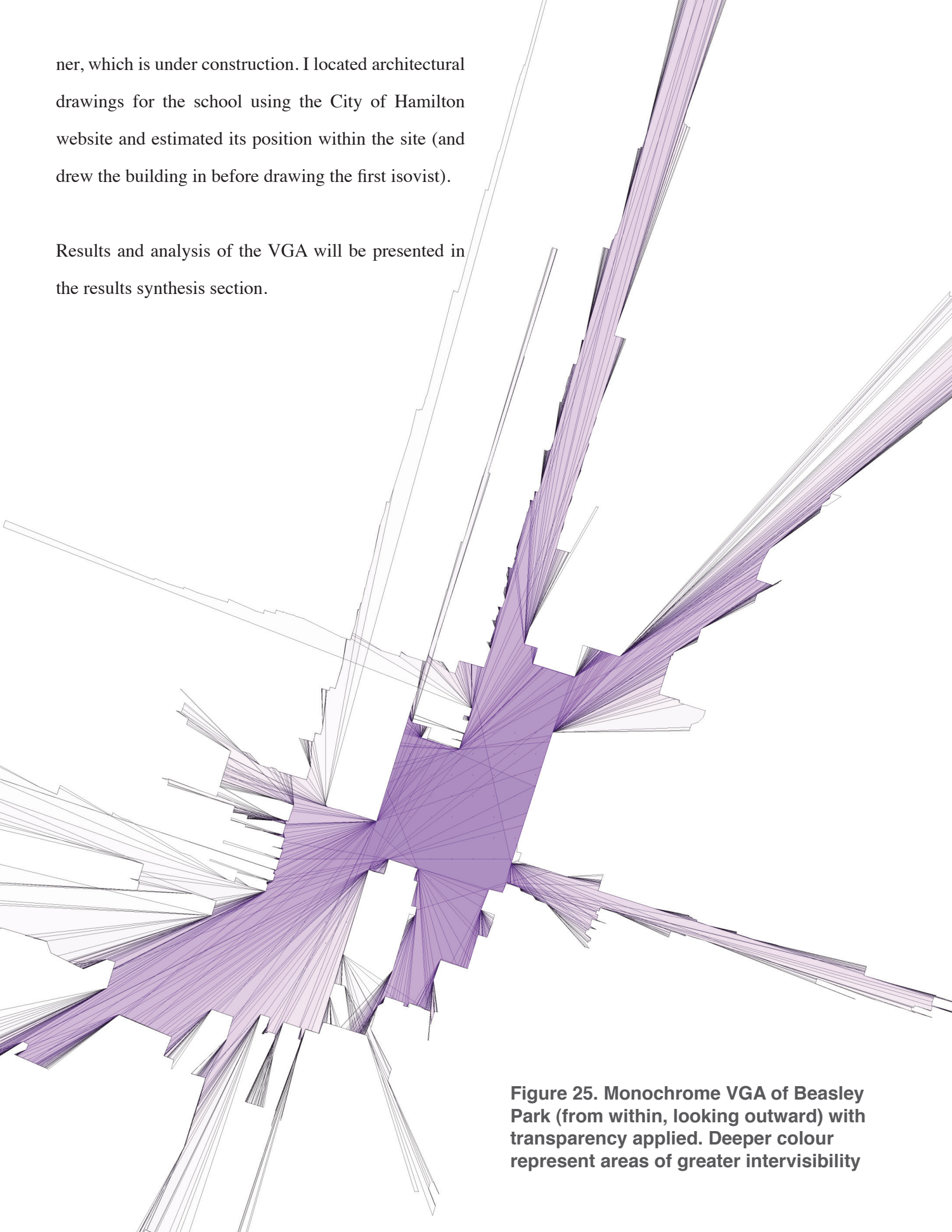


Figure 25. Monochrome VGA of Beasley Park (from within, looking outward) with transparency applied. Deeper colour represent areas of greater intervisibility

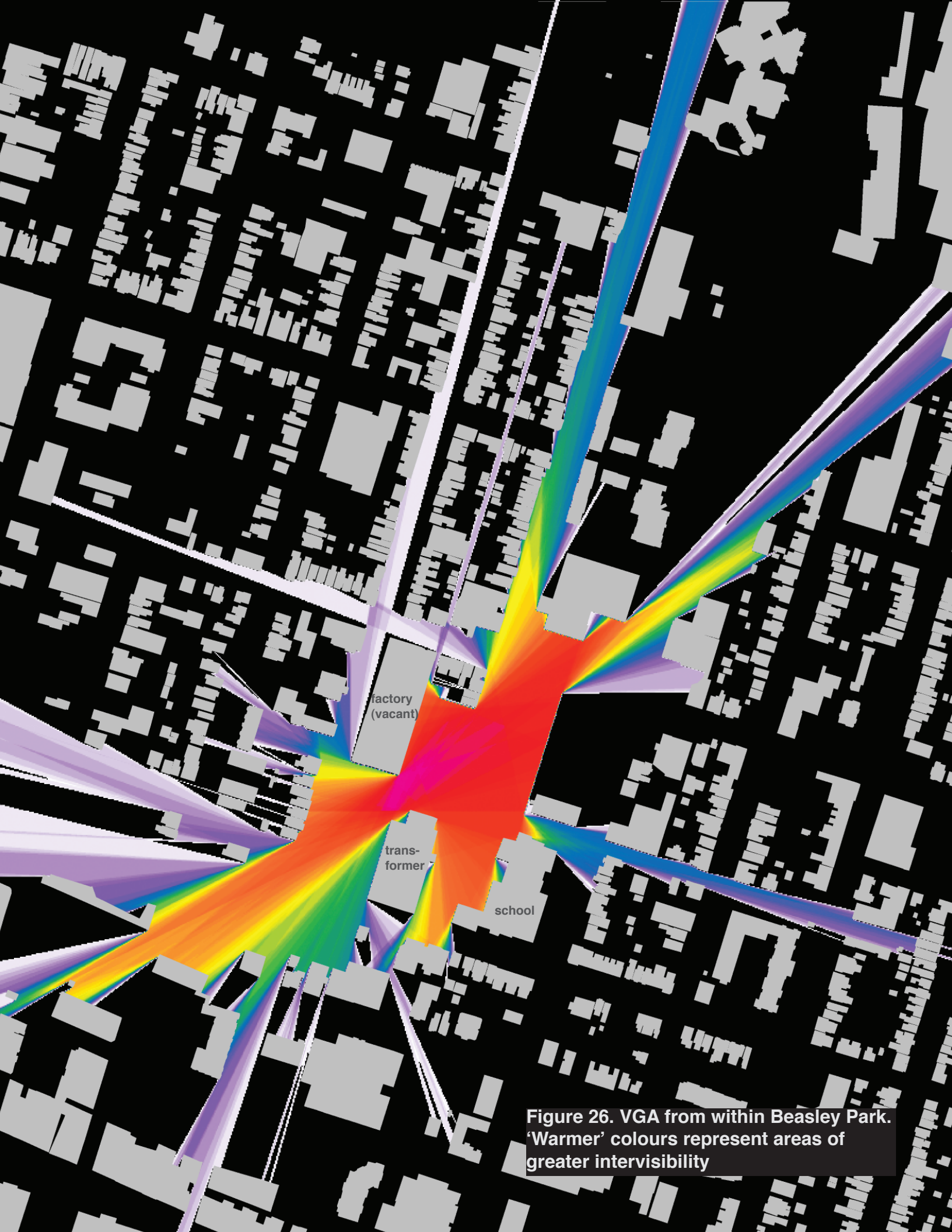


Figure 26. VGA from within Beasley Park. 'Warmer' colours represent areas of greater intervisibility

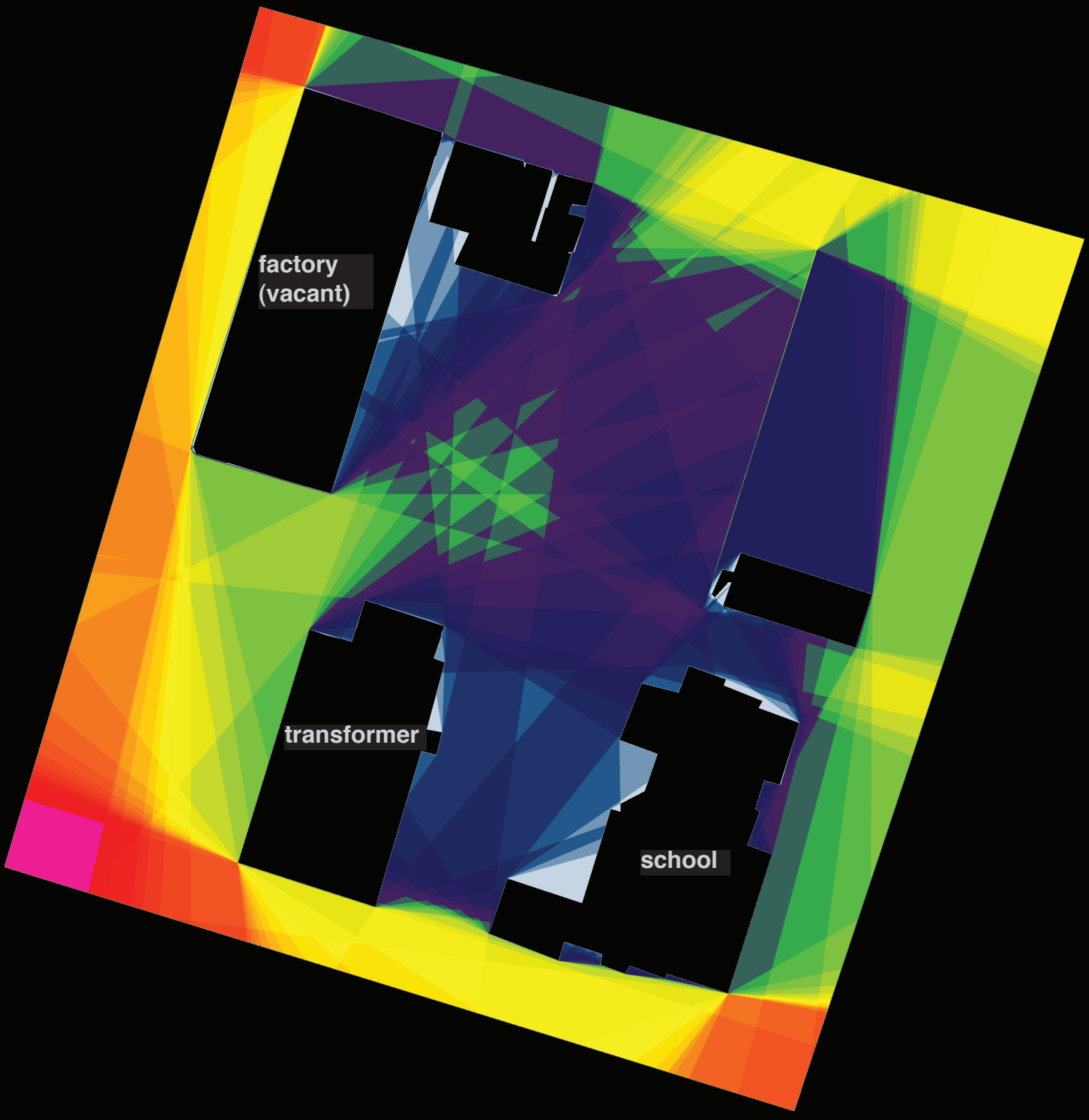


Figure 27. VGA around Beasley Park, facing inward. ‘Warmer’ colours represent areas of greater intervisibility

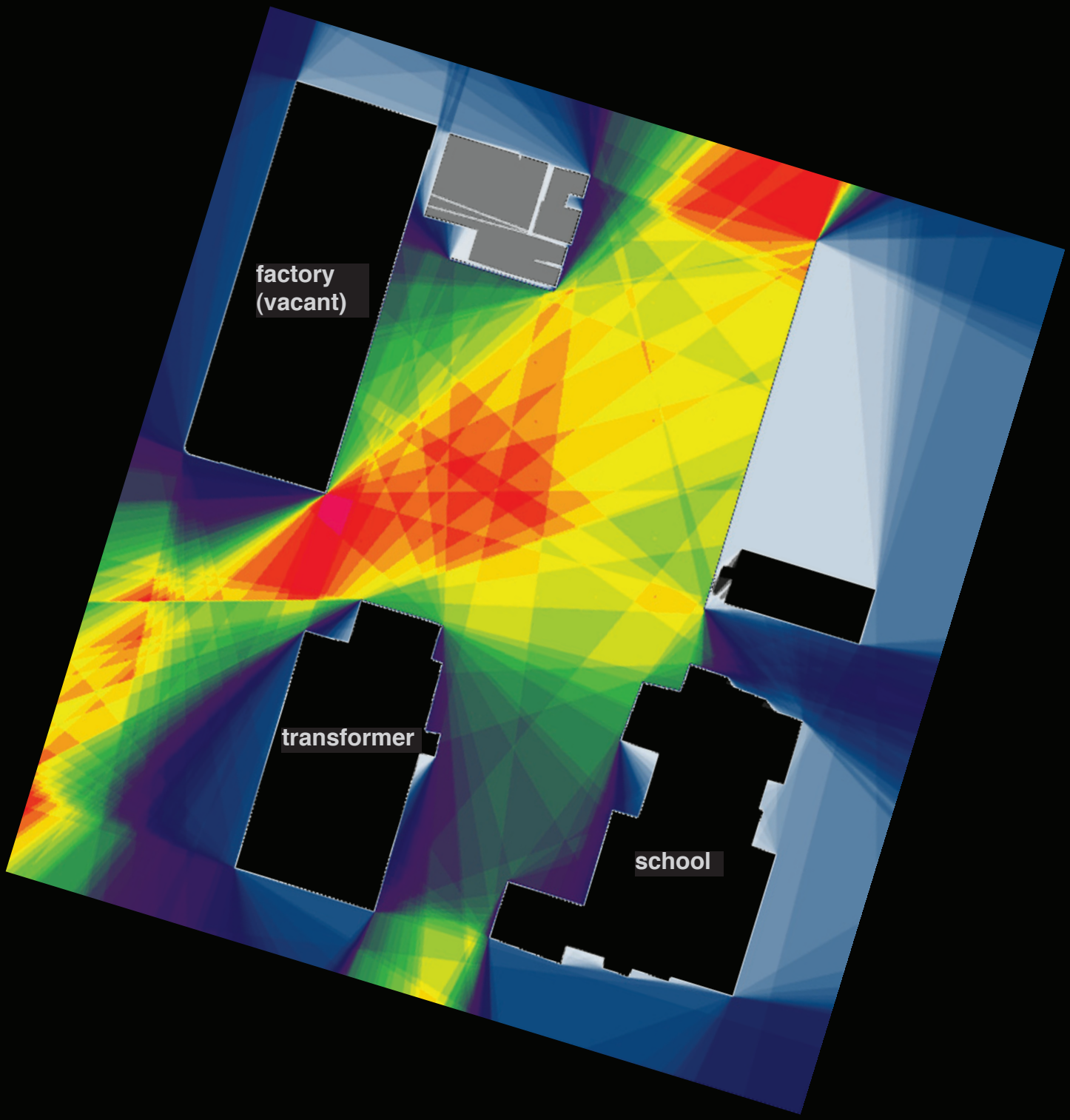


Figure 28. VGA of Beasley Park, both from within and around. ‘Warmer’ colours represent areas of greater intervisibility

D.1 Comment on Theory-driven Methods

Section C presented all of the theory-driven methods, and offers insight towards identifying both positive and negative factors affecting Beasley Park. The VGA and interface mapping exercise provide clear guidance for areas that may feel enclosed, fearful, or 'cold' (i.e. of a relatively low level of intervisibility). The history section provided evidence that previous uses are impacting future opportunities (previous uses caused soil contamination, for example). The City Plans section suggested that the City is interested in seeing a redevelopment of the park, and provided direction for the park, but remained vague about it. Finally, the permeability and block size analysis sections demonstrated that some of the problems that the park faces are external to it. Evidence from this section indicates that further work on general city-building would also offer benefit to Beasley Park.

In order to help justify this work, I offered some context for the park in section C.2, and undertook some initial observations of the park, as explained in section C.3. Section C.3 could arguably be a component of the next section on human-input methods, which will act in conjunction with the theory-driven methods to justify potential recommendations for park improvement.

E.1 Behaviour Mapping ('Snapshots')

In order to understand how the park is being used and by whom, a series of behaviour mapping exercises were carried out. For four hours on each of four days (three Sundays and one Thursday), I kept track of who was in the park, and what they were doing. Each hour, on the hour, I would observe and record the location of everyone in the park, and attributed general attributes to them, such as estimated age, gender, ethnicity, and activity. This was conducted between behaviour tracking, which is the topic of the next section. A sample of how these were recorded is offered in figure 29. Unfortunately, due to time and resource constraints, only gender and activity were evaluated.

Behaviour mapping is useful for evaluating a park as it offers clues about inclusiveness (are certain groups using the park more than others?), safety (are certain areas being avoided?), and programming (which areas of the park are most popular?). Golicnik and Thompson even proclaim that behaviour mapping "...is a powerful tool to support designers with empirical evidence of the relationship between environmental design and the use of open space" (p52, 2010).

Overall, skateboarding was the most popular activity in the park, with sitting and cycling being two other popular activities. This was an expected result. However, there are a number of unanticipated results. First,

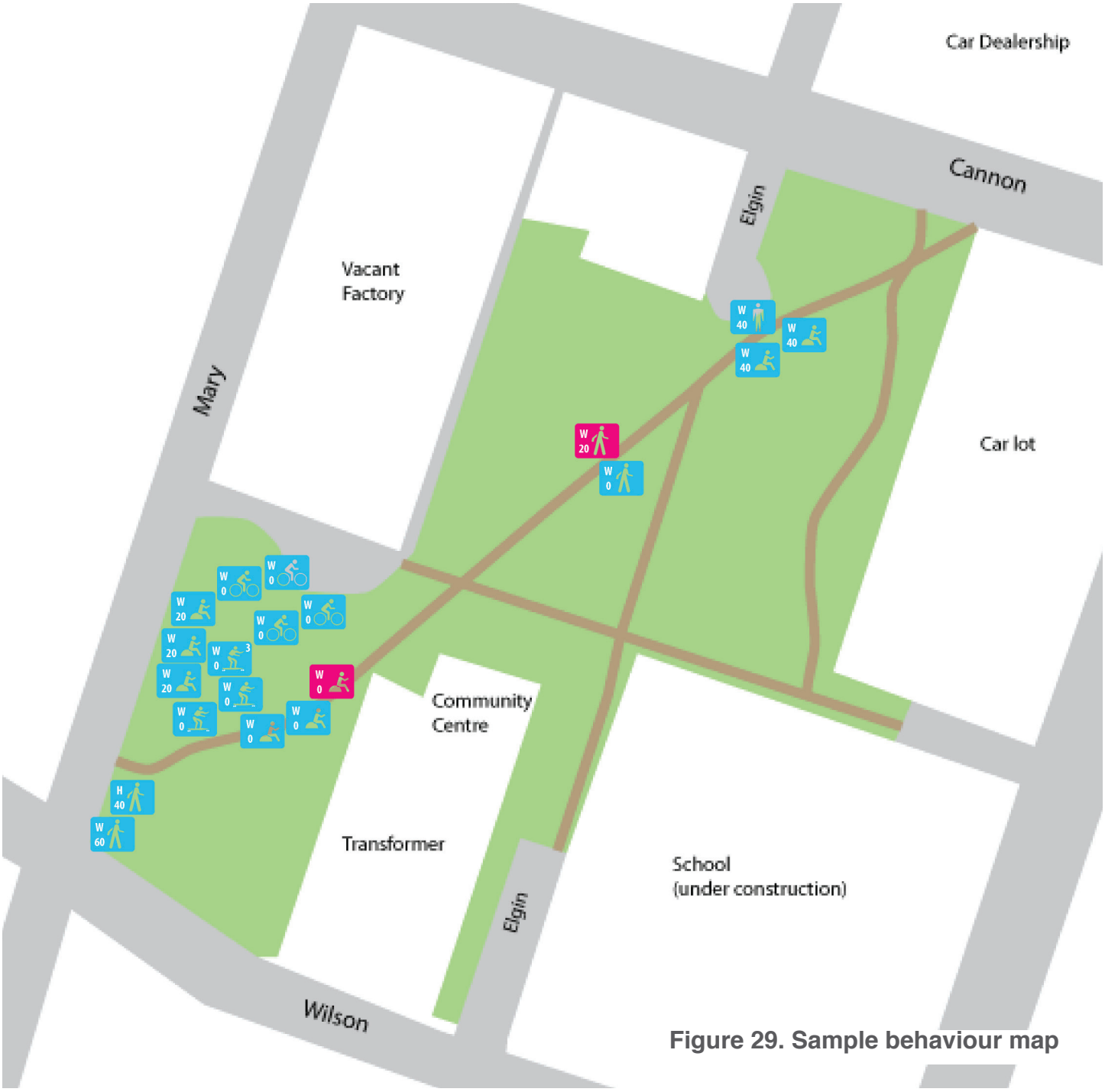


Figure 29. Sample behaviour map

Legend

Female / Male

Symbol = activity
(not all activities appear in this sample)

cycling, walking, sitting, standing, playing, relieving, skate-boarding, reading, roller-blading, laying down

Number = age [(0)-20, (20)-40, (40)-40, (60)+]
Letter = ethnicity [(w)hite, (b)lack, (s)outh asian, (e)ast asian, (h)ispanic, (n)ative, (ar)abic)]

Subscripts in upper right: a number indicates a group of similar individuals, and (d) indicates a disbility

Example: H 20 = a 20-40 year old hispanic man reading

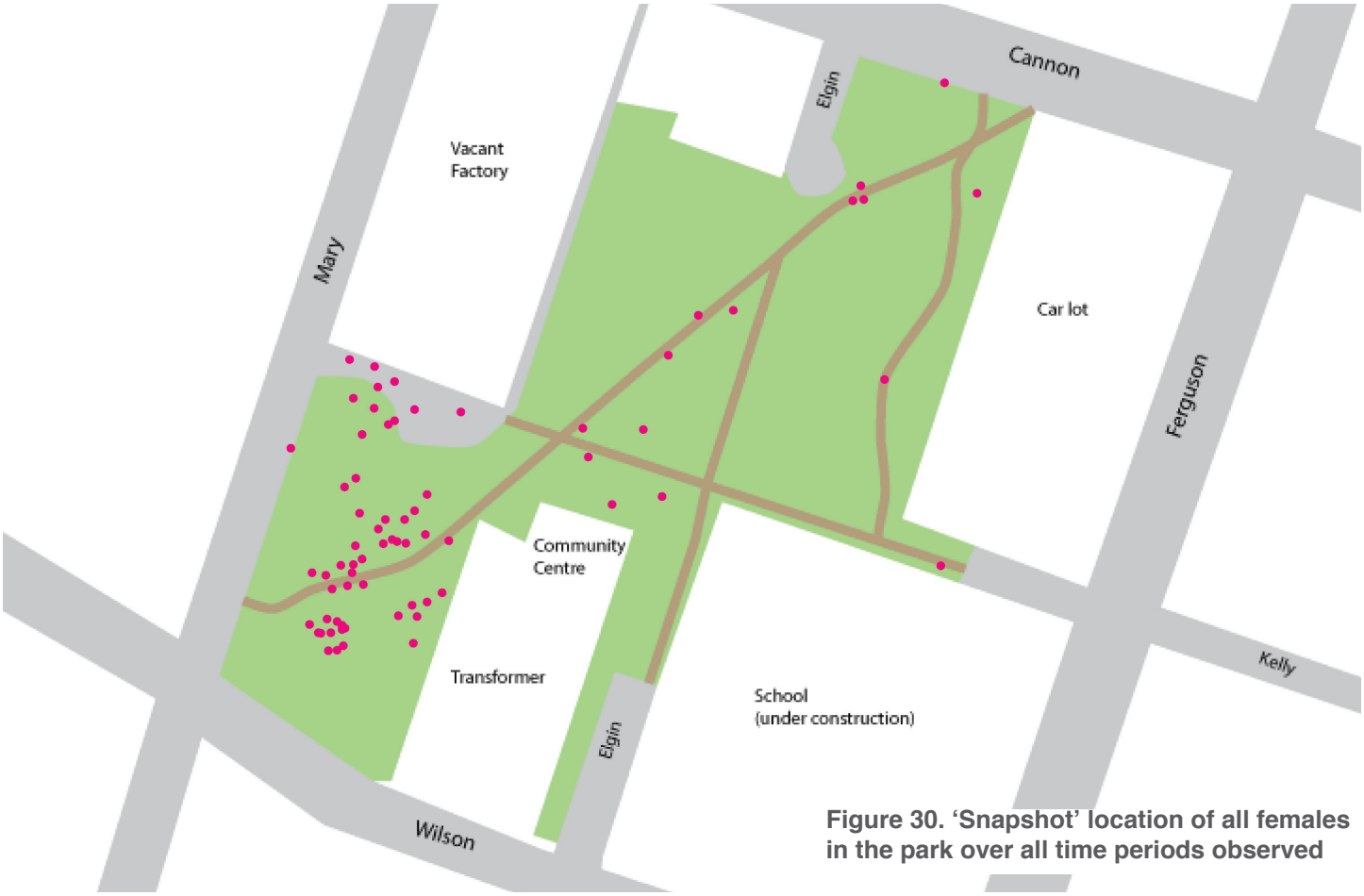


Figure 30. 'Snapshot' location of all females in the park over all time periods observed

Figure 31. 'Snapshot' location of all males in the park over all time periods observed

there is a clear concentration of activity in only one area of the park, near the skateboard facilities. In addition, the proportion of males using the park is far higher than that of females, with males representing just over 75% of activity over all times observed (see figures 30 and 31). This may indicate a need to improve the park, as programming, safety, or comfort may be factors that are limiting use of the park by females. In fact, referring back to the sample map (figure 29), we can see one female sitting, while many males play. Perhaps programming for girls could be improved.

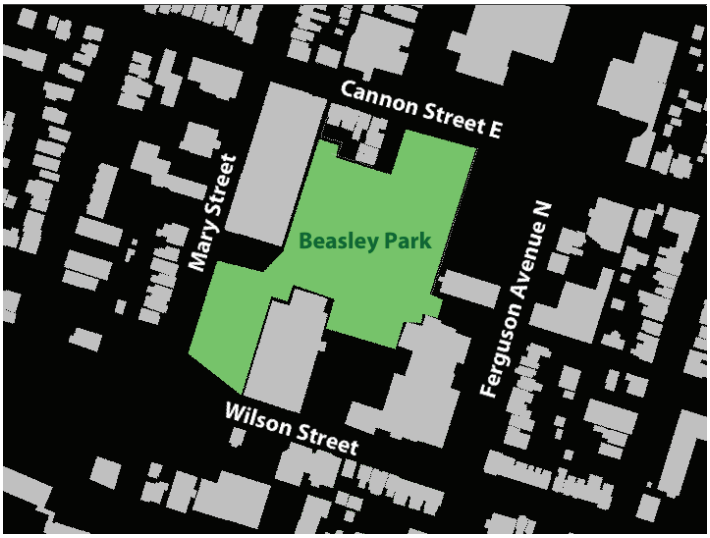


Figure 32. Beasley Park shape

E.2 Behaviour Tracking

There is often a marked difference between what people say they do, and what they actually do. If I were to go out and ask people how they use the park, it is possible that I may get different (and more general) responses than if I were to go out and watch how the park is being used. Hence, this study uses the established idea that "[park] users' knowledge and behaviour [are] a valid and appropriate body of data" (Moore and Cosco, 2007). It is also a method I have used in a professional manner while working at a masterplanning firm.

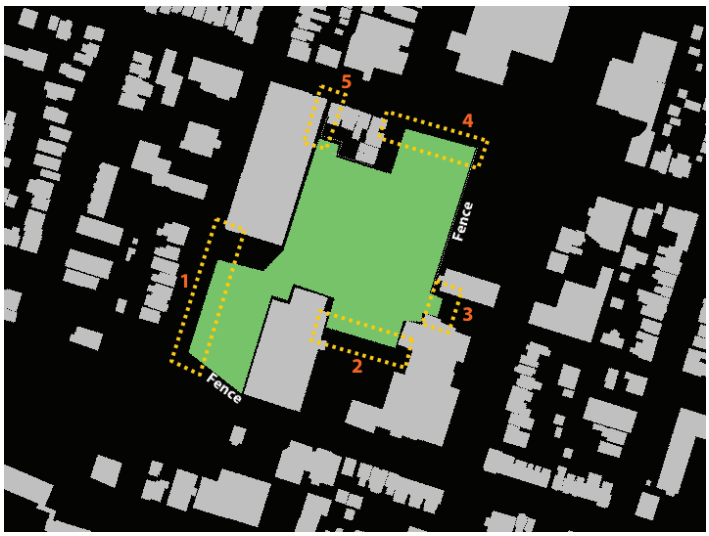


Figure 33. Locations of entrance or egress

Observing use of Beasley Park in an efficient manner required developing a system, as the park is an atypical (and perhaps odd) shape (figure 32). As a result of its shape, there are 5 areas for entrance or exit from the park, as shown on the map (figure 33). Five areas

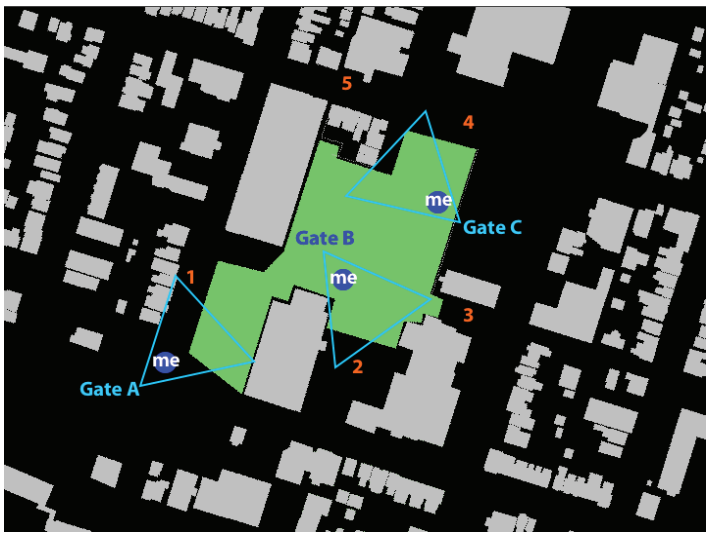


Figure 34. Observation gates

to watch is too many and would take too long, and I expected that a couple of the entrances would hardly be used. As a result, the system I developed for pedestrian tracking is based on three gates (figure 34). At Gate A, I was able to capture movement at location 1. At Gate B, I was able to capture movement at locations 2 and 3. And at Gate C, I was able to capture movement at locations 4 and 5.

At each gate I waited for park users (or passers by) to appear and kept track of their direction of movement, numbers, and gender. I also estimated their age and ethnicity, and took extra notes when users were using mobility devices, such as bicycles, roller blades, or wheelchairs. I did at this at each gate for 15 minutes, then moved to another gate until all the gates were captured. Then, on the next hour, I repeated the cycle. I kept this up for 4 hours each day, and completed the task on 4

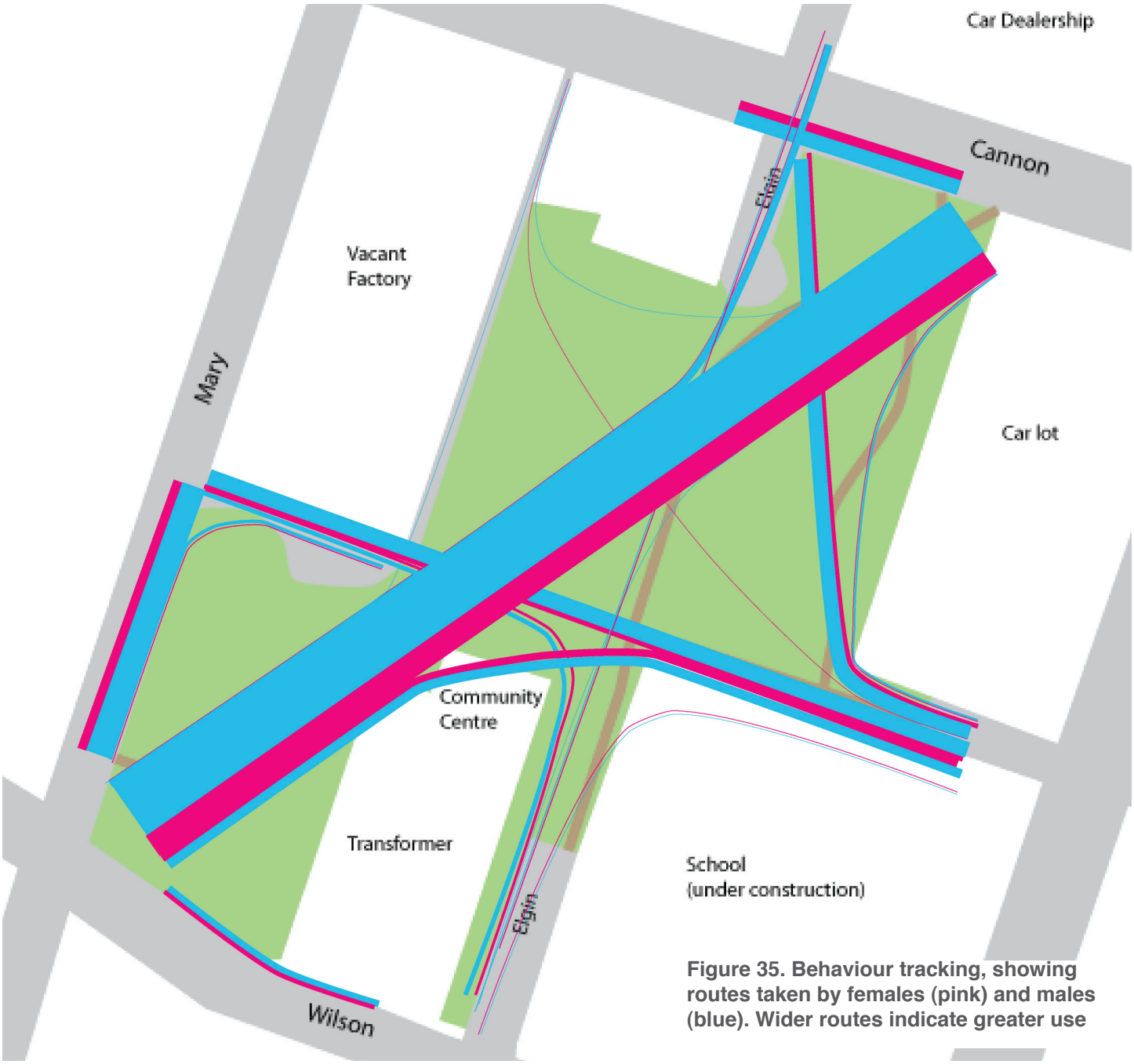


Figure 35. Behaviour tracking, showing routes taken by females (pink) and males (blue). Wider routes indicate greater use

separate days. Three of these days were Sunday afternoons due to my own personal scheduling limitations, and one was conducted on a weekday. All were completed in October.

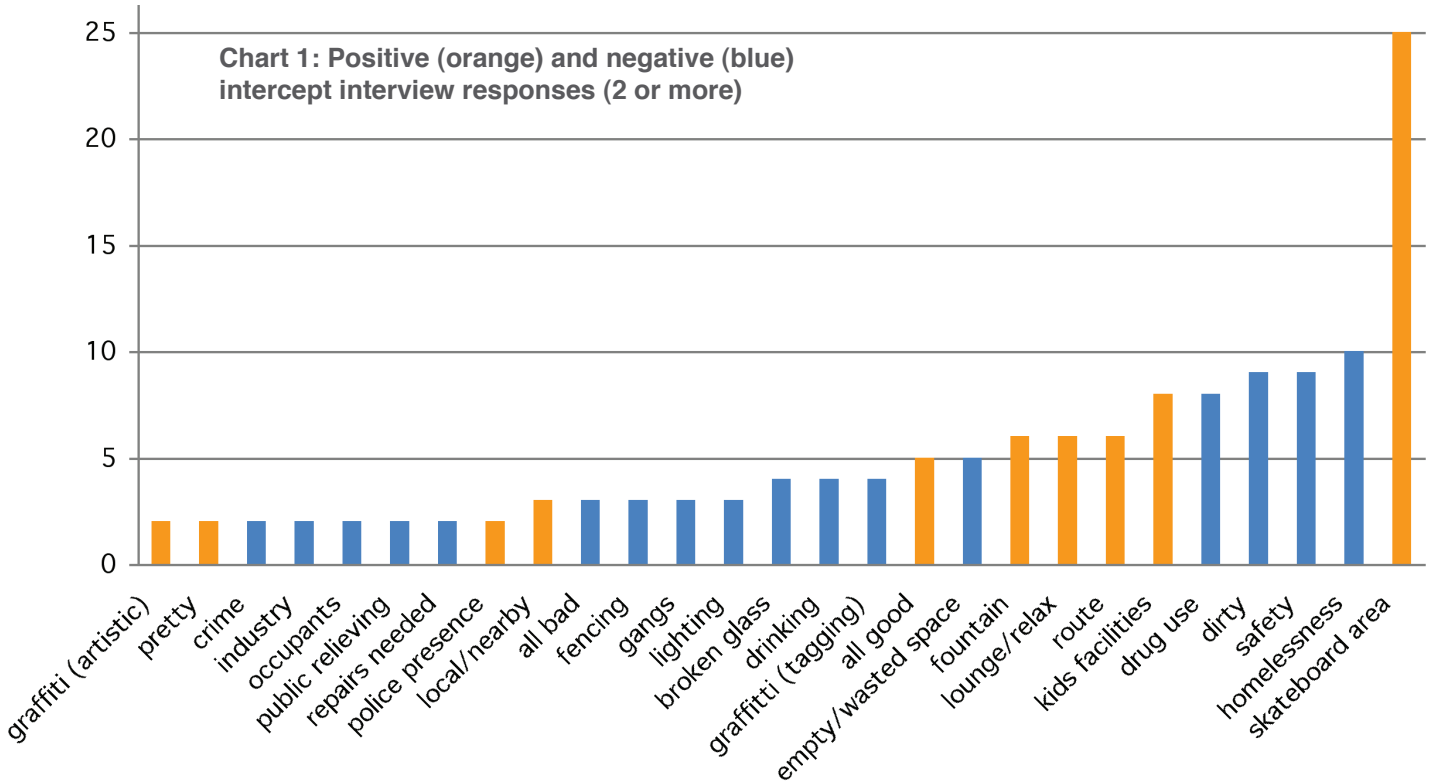
The data were recorded as traces on a map indicating an estimate of the general path used by the observed. At no time was the park too busy for me to follow each user, and hence I have managed to record everyone who passed through each gate during each time slot.

These results are displayed for females and males in figure 35. Figure 35 shows the routes used through the park, with wider routes indicating proportionately heavier use by men (blue lines) and women (pink lines). Of particular note are the relatively even split between men and women on the routes at Cannon and Wilson, but a dramatic difference within the park. This suggests that women are avoiding entering the park. In addition, the limited use of the routes at the south leg of Elgin, and more clearly at the laneway by the factory suggest that these entrances may not be necessary (or need improvement).

E.3 Participant Mapping & Intercept Interviews

In order to get a better understanding of usage of the park (by users) than is offered through observation and theory, I conducted intercept interviews in the park. This was done after park observations, which were conducted at a distance in an attempt to not influence behaviour. The logic behind this was also to not influence answers or behaviour in the park.

The intercept interviews were open and quite basic, and consisted simply of the questions “what do you



like about the park?" and "is there anything about the park that is of concern to you?" Answers were recorded in the park, and marks made on a map showing where both 'positive' and 'negative' locations were, as the participants were more likely to point to an area and describe it than make marks directly on a map (interviewees were asked to do this instead, if they preferred and some did). The option to make a mark on a map was provided for those who may have had safety concerns in the park and did not want to be seen pointing at any area or anyone within the park. The resulting map is provided in figure 36.

Results were categorised into aggregate forms such that a response of 'I like the area by the fountain' and 'the fountain is pretty' are simply positive responses about the fountain. All responses that were mentioned twice or more often are displayed in chart 1, with orange bars being 'positive' responses about the park, and blue bars being 'negative' responses about the park. The fact that 'graffiti' shows as both a positive and negative response suggests that Beasley Park contains some so-

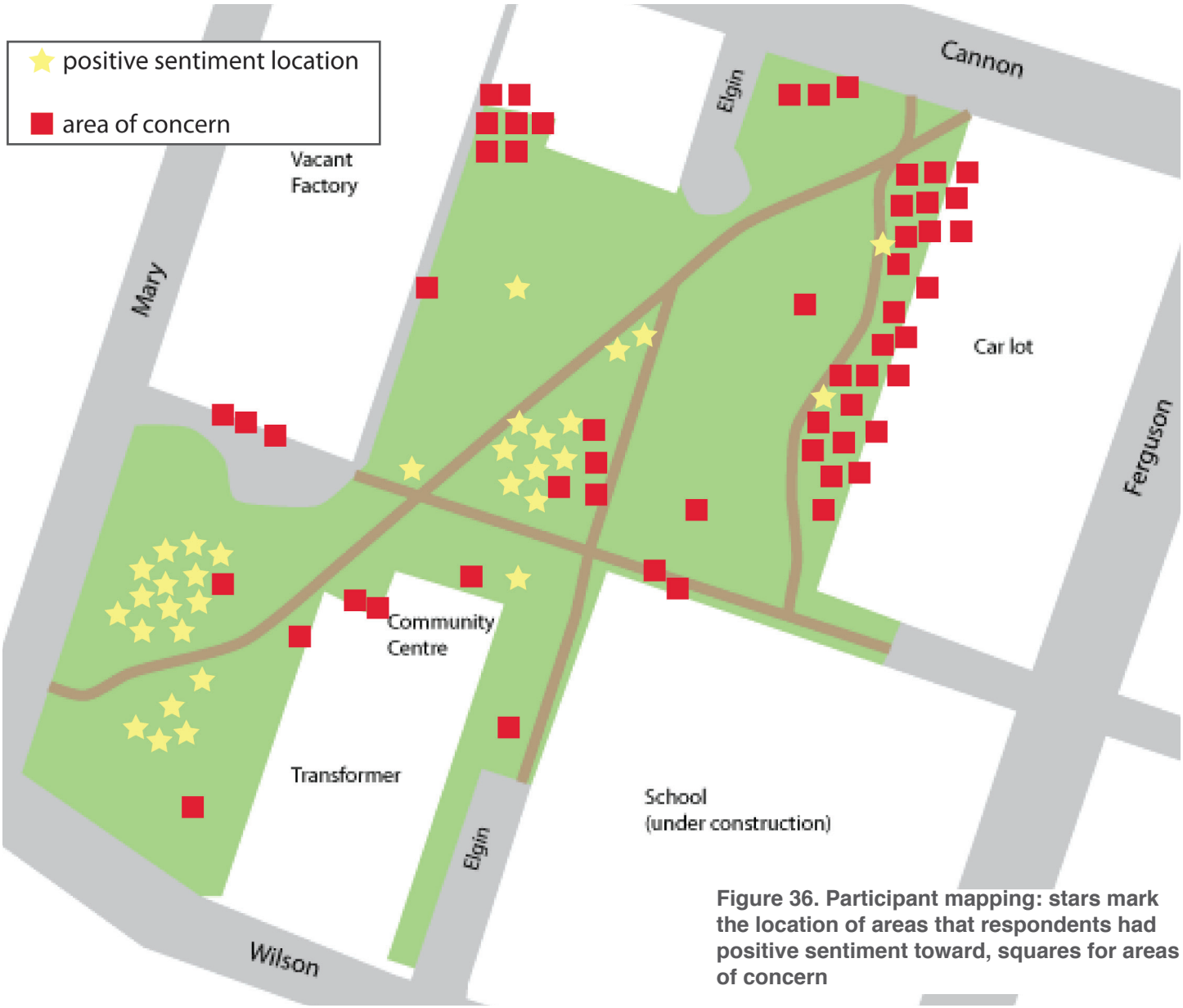


Figure 36. Participant mapping: stars mark the location of areas that respondents had positive sentiment toward, squares for areas of concern

called ‘contested spaces’. While examining contested space is a useful academic endeavour, and may provide useful insight for this study, it nevertheless is a difficult and time-consuming venture. Hence, I have opted to not consider the issue of contested space in this paper.

Overall, the responses show clear distinctions between areas that are ‘liked’ and areas that are ‘of concern’. The skateboard park area and kids area are both on the positive side, whereas the north corner, and the area by the car lot, are clearly ‘of concern’. The central area of the park by the fountain received mixed responses, though the areas ‘of concern’ are at its eastern edge.

E.4 Semi-structured Interviews

While intercept interviews are relevant to understanding user perceptions of the park, they may not be able to ‘pull-out’ all the most pressing issues or options as well as experts can. In addition, park users may not be able to explain the reasons why certain areas are ‘liked’ or ‘of concern’. Therefore, to support this earlier work, I set out to interview a number of experts, and completed seven semi-structured in-depth interviews with: two active local residents (one male on January 7th, 2010 and one female on January 3rd, 2010), a long-time skateboarder of the park (January 3rd, 2010), a local resident/business person/artist (January 10th, 2010), a Crime Prevention Through Environmental Design (CPTED) Officer with the Hamilton Police (January 19th, 2010), a Public Works Official with the City of Hamilton (January 8th, 2010), and local councillor Bob Bratina (January 8th, 2010).

It is worth noting that I am aware that positionality (i.e. the viewpoint or ‘lens’ through which one sees the world) strongly influences an individual’s desires, opinions, and responses. This concept is related to that of ‘the gaze’, which acknowledges and discusses the different interpretations one can have of an image, depending on ones gender, cultural background, sexuality, age, etc. As an example, it is well known that the colour red represents ‘danger’ in western societies, but ‘luck’ in Chinese culture. As such, reaction to a red flag will be different depending on the ‘position’ of the viewer. Yet, even this simple example demonstrates how complex positionality and ‘the gaze’ can be, and as such I have opted not to consider positionality in interpreting the results of the expert interviews. However, remaining cognizant of these concepts, I purposely sought to interview experts from a variety of positionalities while simultaneously attempting to prevent duplication of any position. Therefore, aggregating results is better justified than if any particular position was over-represented. Therefore, I have aggregated the results, and the most commonly mentioned statements and ideas are displayed in chart 2.

In addition to the ideas and statements about the park in chart 2, some other valuable information was also

obtained via the interviews. As mentioned earlier, the Public Works Official explained the redevelopment process for neighbourhood parks, which involves a points based system (the higher the score, the more likely a park will be redeveloped) (January 8, 2010). In order to be considered and 'scored' on the system, a park must first 'make the list' of potential projects. Beasley Park is 'on the list' for redevelopment. One way to 'make the list' is to have a local councillor champion the idea, which Bob Bratina says he has done (January 8, 2010). After making the list, a score is tabulated based on the time since last redevelopment, potential health concerns (which score many points), demand and lobbying by local residents, and other factors including external funding sources (Public Works Official, January 8, 2010). This information will be useful to disseminate to the community group I am working with.

Statement or idea	Frequency
field improvement/expansion for sports	7
expansion over car lot would be good	6
community centre great	5
enclosed'/'broken up' park (problem)	5
restrict 'hiding places' (incl landspacing)	5
skateboard park great, activates park	4
police presence high or good	4
transformer a problem for the park	4
area by car lot is a problem	4
social services too concentrated in area	4
lots of people w/ problems, homelessness	4
neglected/needs more attention	3
aware the city has limitations	3
drugs are a problem	3
things better than they used to be	3
improve/expand skateboard park	3
fencing needs improvement	3
move kids area to other location in park	3
fountain area need improvement	3
w/o attractor, empty (north area)	3
factory buildings is beautiful, an asset	3
traffic a problem (noise, safety, etc)	3
community interaction important	2
some people feel unsafe in park, not me	2
idea that park is unsafe is misconception	2
kids area needs to be more visible	2
basketball courts should be put in	2
use community centre	2
kids area too close to skateboard park	2
alleyway should be closed off	2
park has issues other parks don't face	2
graffitti is great	2
no real concerns with park, like it	2
more programming needed	2

Chart 2: Simplified expert interview comments

The fact that Beasley Park is on the City's list for future improvement suggests that this project is both timely and relevant. Additionally, councillor Bratina is currently working to have the City purchase the car lot (Lockwood Motors) in a willing buyer/willing seller arrangement in order to expand the park and add a sports field (January 8, 2010). This idea also happens to be the only one common to all interviewees. (Note that while the goal of this research is not to evaluate future options, I have nevertheless conducted a comparison VGA of the existing park against the future option of expanding over the car lot by special request (refer to appendix A)).

Among the other interesting feedback learned from the interviews are the following:

- The skateboarders have taken repairs of their facilities into their own hands as the City is too slow to do this, and often does it incorrectly. The skateboarders have had no choice but to do this, for safety reasons (ruts in the pavement are dangerous when skateboarding) ("skateboarder", January 3, 2010).
- The bureaucracy for obtaining even small grants to

hold community events is a barrier, as is the process and expense in obtaining permits for these purposes. Community groups often operate without seeking permits for this reason ("active resident - female", January 3, 2010).

- Graffiti and the aesthetics of the Victorian-era factory building are an asset to the park. Wedding photos have been taken in front of it many times ("local resident/artist", January 10, 2010; "active resident - male", January 7, 2010).

- The transformer is a major obstacle in the park, and the potential to move it or reduce its size is sought ("active local resident - male", January 7, 2010).

- The one way street system is loathed and detrimental to the park and neighbourhood, with its original installation called an 'idiot manoeuvre' ("local resident/artist", January 10, 2010; "active resident - male", January 7, 2010).

- The problems faced by the park are the city's problems, and not the park's; but they are visible and manifest because the park is a public space ("Public Works Official", January 8, 2010; "skateboarder", January 3, 2010).

- The *concentration* of social services (homeless shelters, food banks, mission services, youth-at-risk groups, halfway houses, etc) are a problem and should be more dispersed across the city ("active local resident - female", January 3, 2010; Bob Bratina, January 8, 2010; "CPTED Officer", January 19, 2010; "Public Works Official", January 8, 2010).

- The park's shape causes some of its problems as there are a number of 'entrapment areas'. In addition, a berm near the children's area, and some shrubbery offer some opportunity for anti-social behaviour ("CPTED Officer", January 19, 2010).

F.1 Synthesis of 'Human-Input' with 'Theory-driven' Methods

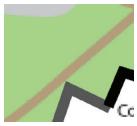
Having now completed all the human-input methods, as well as the theory-driven methods, I can now synthesise the two methodological perspectives into a more concrete set of results. It is the intersecting of these two approaches which provides robust predicting power for identifying areas to improve (or areas to leave as they are). It is important to acknowledge that there are many more results that could be discussed here that will be neglected due to space considerations. Instead, the focus will be on a few key results where a high number of methods demonstrated similar outcomes. These are discussed below.

F.1a Corner by the Community Centre and Transformer

The corner by the Community Centre should be improved. Methods suggesting this:

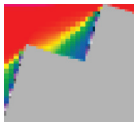
Observation: personally witnessed public relieving in this area of the park

Interfacing: area is 'dark' (i.e. the area offers limited opportunities for natural surveillance)

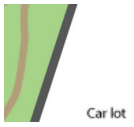


Observation: personally witnessed public drinking, garbage dumping, and public relieving here

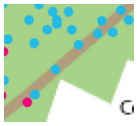
VGA: area is 'cold' (i.e. the area has a low level of intervisibility)



Interfacing: area is 'dark' (i.e. the area offers limited opportunities for natural surveillance)



Snapshots: area was never occupied during any time period



VGA: from outside, area is 'cold' (i.e. the area has a low level of intervisibility)

Participant mapping: identified multiple times as an 'area of concern'

Snapshots: area generally avoided by females

Intercept interviews: graffiti 'tagging' identified as an issue (4x), and this corner is subject to such tagging

Participant mapping: identified multiple times as an 'area of concern'

Semi-structured interviews: 'hiding places' need to be eliminated mentioned 5/7 times. 'Transformer a problem' mentioned 4/7 times. In addition, this spot was identified by "CPTED Officer" as an 'entrapment area' that would aid unsavoury characters to conduct anti-social activities (January 19, 2010).

F.1b The Area by the Car Lot (Lockwood Motors)

The area by the car lot was identified in several of the methods as an area requiring improvement.

City plans: the City aims to expand the park

Semi-structured interviews: Bob Bratina is working to have the city expand the park over the lot (January 8, 2010). The idea of 'expanding the park over the car lot' was mentioned 6/7 time in the semi-structured interviews, and 'area by the car lot a problem' 4/7 times.

F.1c The Corner by the Alleyway

The corner in the north end of the park by the alleyway is identified multiple times as an area requiring improvement.

History: the area once had a distinct built form, but the

urban fabric has been slashed without repair. The few remaining houses here face away from the park

tractor even over distance

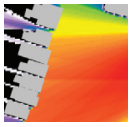
Observation: well used

Interfacing: area is ‘dark’ (i.e. the area offers limited opportunities for natural surveillance)

Interfacing: some ‘bright’ areas (i.e. the area offers natural surveillance

VGA: area is ‘cold’ (i.e. the area has a low level of intervisibility)

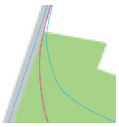
VGA: area is ‘warm’ (i.e. the area has a high level of intervisibility)



Behaviour mapping: area avoided

Behaviour mapping: the skateboard park is heavily used as such. No evidence of anti-social activities

Behaviour tracking: while the alleyway is here, it is seldomly used



Behaviour tracking: the highest volume of people who pass through the park, pass by the skateboard park

Participant mapping: identified multiple times as an ‘area of concern’

Participant mapping: identified multiple times as an area ‘liked’ by users.

Semi-structured interviews: ‘hiding places’ need to be eliminated mentioned 5/7 times. ‘Alleyway should be closed off’ mentioned twice.

Intercept interviews: the ‘skateboard area’ was the top identified positive area of the park (and the top identified aspect overall)

F.1d The Skateboarding Area

The skateboard area of the park is the greatest asset the park has, and was identified as such in several methods.

Semi-structured interviews: ‘skateboard area great/ activates park’ mentioned 4/7 times, and ‘improve/expand skateboard park’ mentioned 3/7 times

History: first skateboard park in Hamilton, and an at-

F.1e General Finding - Correlation between VGA Around the Park and Participant Mapping

One key finding was not area-specific: the strong correlation between the VGA around Beasley Park and the participant mapping exercise. Areas that are 'warm' (i.e. more intervisible) in the VGA are also areas that participants 'liked', and similarly, 'cold' (i.e. less intervisible) areas were 'of concern'. Perhaps most interesting are the areas that are 'lukewarm', as these areas had some respondents on both sides (see comparison figure 37). This suggests that changes in levels of intervisibility affect general perception of the park. This also suggests that VGA may be a more useful or efficient method for evaluating the park, as it can predict intervisibility - including surveillance and safety potential, as examples - as well as the sentiment of park users to different spaces within the park.

G.1 Options, Suggestions, Recommendations

This paper has carried out a system of 'tests' to evaluate Beasley Park, which has led to a number of results. From these results, a number of options, suggestions, or recommendations can be made, but it is important to note that this paper does not attempt to measure the success of any of these options. Instead, the options, suggestions, and recommendations need to be evaluated using a similarly robust system of 'tests' to predict their outcome before implementation. *These represent the next steps for conducting research on Beasley Park.* Post-implementation evaluation of any change made to the park is also necessary. Visibility graph analysis is one test that can be used as a predictor tool in 'testing' these potential design changes. As an example from the work completed, I can predict that the shape of the school building (under construction) is less than opti-

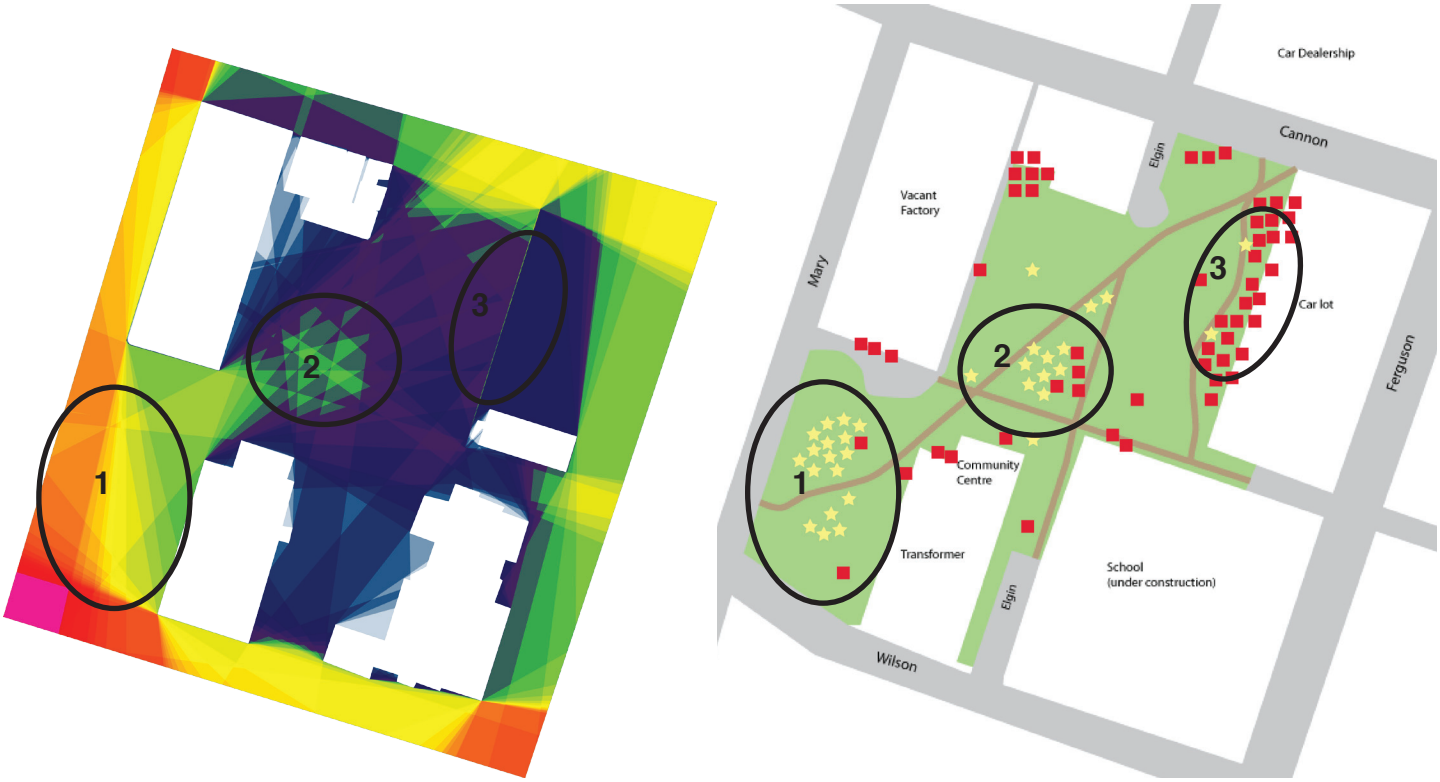


Figure 37. Correlation between VGA around, and participant mapping excercise

mal, based on the 'cold' park-facing section (refer back to figure 27). The building's 'C' shape creates a recess that makes visibility (and surveillance) difficult.

G.1a Corner by the Community Centre and Transformer

This area is relatively small, and some of the options for improvement will be relatively inexpensive. Among these options:

1. "CPTED Officer" suggests that this corner be blocked off by putting the community shed in this space, and shape it such that it appears as a triangle from above (to seal off the corner) (January 19, 2010).
2. Light the area well with white lights (currently yellow) such that facial recognition is enhanced and risks for conducting anti-social behaviour increased.
3. When the new community centre is built (under construction along with the new school), expand the current one into the corner space, and find an alternate use.
4. Put in windows from the existing community centre to face onto the corner, to increase the sense of surveillance.
5. If the existing community centre remains vacant, ensure it is removed to eliminate the threat posed by this 'entrapment area'.

G.1b The Area by the Car Lot (Lockwood Motors)

This area has political support for change, as local councillor Bob Bratina is actively lobbying the City to purchase the car lot for the expansion of Beasley Park. Efforts for improvement are bolstered here as a result. Among the options:

1. Trim/remove shrubbery along this fence, as it limits visibility and surveillance.
2. Enforce a requirement for this fence to be iron bars, such that it can be seen through (currently opaque sheet-metal). Remove barbed wire (decorative spikes atop iron bars are more attractive, have the same effect, and do not suggest that the area has an issues of vandalism/theft). This will improve perception of the area.
3. Pave the pathway, as it is of lesser quality than others in the park.
4. Expand that park over the car lot if possible (this is perhaps the most difficult option, but most likely the best option, and worth exploring).

G.1c The Corner by the Alleyway

It is difficult to predict and select options for improvement here without first knowing the future of the adjacent abandoned factory. However, a few options for improvement include:

1. Gate the alleyway, with access limited to those homes near to it.
2. Place an activity generator nearby to activate the space. The area near the corner is not well used, and has no programming.
3. Encourage homeowners near to the corner to replace

opaque wooden fencing, with iron bar fencing to eliminate part of the 'hiding space' that otherwise exists there.

4. Extend Elgin into the park, and build new homes to recreate an outward-facing, defensible series of buildings (see figure 38). Gate the alleyway for the use of adjacent homeowners only.

Figure 38. G.1c Option 4 concept

G.1d The Skateboarding Area

This area is functioning well. As such, it should be maintained, but improvements in other areas will likely have greater impact. However, there remain options for improvement:

1. Repair skateboarding surface, as the existing surface has ruts and cracks which can be dangerous for skateboarders.

2. The City should form a greater alliance with the Hamilton Skateboard Authority and strongly consider their input in any redesign.

3. Consider the potential for enhancing this positive element. Explore the possibility of acquiring all or part of the abandoned factory for use as an indoor skateboarding facility (with other uses on upper floors).

H.1 Study Limitations

With options, suggestions, and recommendations explained above, it follows that a few caveats regarding the study's limitations be mentioned. Among them are the study's lofty aims given a short timeframe. As councillor Bob Bratina puts it, "I should quit and do Beasley as a job itself. I'd have years worth of work" (January 8, 2010). Time limitations affected the collection of intercept interviews, behaviour mapping, and behaviour tracking sections, as these were limited to the month of October. Observations of the park would best be conducted at different times of day, over different seasons. Different days of the week were considered, but the only difference observed was the number of vehicles around the park (this was attributed to construction work on the school). Use of the park will also likely be affected by the re-opening of the school as well. Time limitations also prevented further interviews with experts in park design, as well as with more in-depth interviews with users of the park. Analysis of use by age or ethnicity may also have been useful, and while that data was collected, it was not analysed. Finally, further investigation into the potential for shrinking or moving the transformer station may have led to new options for the park as well.

In addition to time constraints, there are also some limitations with individual methods. Limitations regarding VGA were explained in section C.8a. As for the

other methods, block size analysis and permeability are both difficult to analyse due to the relative nature of 'too much' versus 'too little': there are no exact measurements for how large a block should be or numeric values for optimal permeability. Siksna (1997) has attempted to suggest optimal measurements for block sizes, but the frame of his argument is shaky at best. As with several of the methods used here, they are of little use on their own, but can explain much when used together. In the case of permeability, it became clearer that the area around Beasley Park is overly permeable only after comparing the previous state of the city with the current, with the perception of the area, and with the direction of greatest movement through the park (having movement split through as well as around blocks is an indicator of an overly permeable space).

I.1 Closing

The multi-method, evidence-based approach to evaluating Beasley Park and determining new design options was developed in order to 'hedge' the bets of the limitations mentioned. The study was driven by an unfortunate (and largely inaccurate) portrayal of Beasley Park as dirty and unsafe, with the aim of uncovering potential design changes in the park that may improve the park in terms of its perceptions (especially of safety and comfort). Beasley Park does face a number of challenges as a result of its location wedged between three structures atypical for a park - a car lot, transformer station, and factory. It also faces challenges from being at the centre of the highest concentration of social services in the City of Hamilton, as well as from its history of past uses which have contaminated the soil.

The study used a synthesis of the two main method types - human-input and theory-driven - to analyse results and determine potential improvement options. From this, five key results were identified, though many more are possible using the same data. Future work should be undertaken to evaluate which new options for Beasley are most relevant, and which will work best. The approach to this future work should also be evidence-based as this type of research helps "...designers be confident that layouts proposed for intended uses will in practice, serve those uses (and users) well and be likely to be used as predicted" (Golicnik and Thompson, p38, 2010).

Despite the improvement potential of Beasley Park, its success will be impeded by the state of the greater city of Hamilton. Over-permeability as a result of significant tears in the urban fabric of the city (and associated loss of density), and the imposition of super-blocks, are factors affecting the actors and atmosphere of the park. This is exacerbated by social and economic challenges facing the city. Some of the methods used in this paper (such as behaviour tracking, permeability analysis, and VGA) could be scaled up to the city level to analyse potential improvements to the city overall, and this

may offer direction for alternative research that is less directly related to Beasley Park.

Altogether, Beasley Park is like a microcosm of the larger city of Hamilton - depending on your perspective, it is either historic, beautiful, interesting, and bursting with potential, or old, ugly, boring, and washed-up. Luckily for Beasley Park, those who hold the first perspective are dedicated, active, and determined to see it meet its potential.

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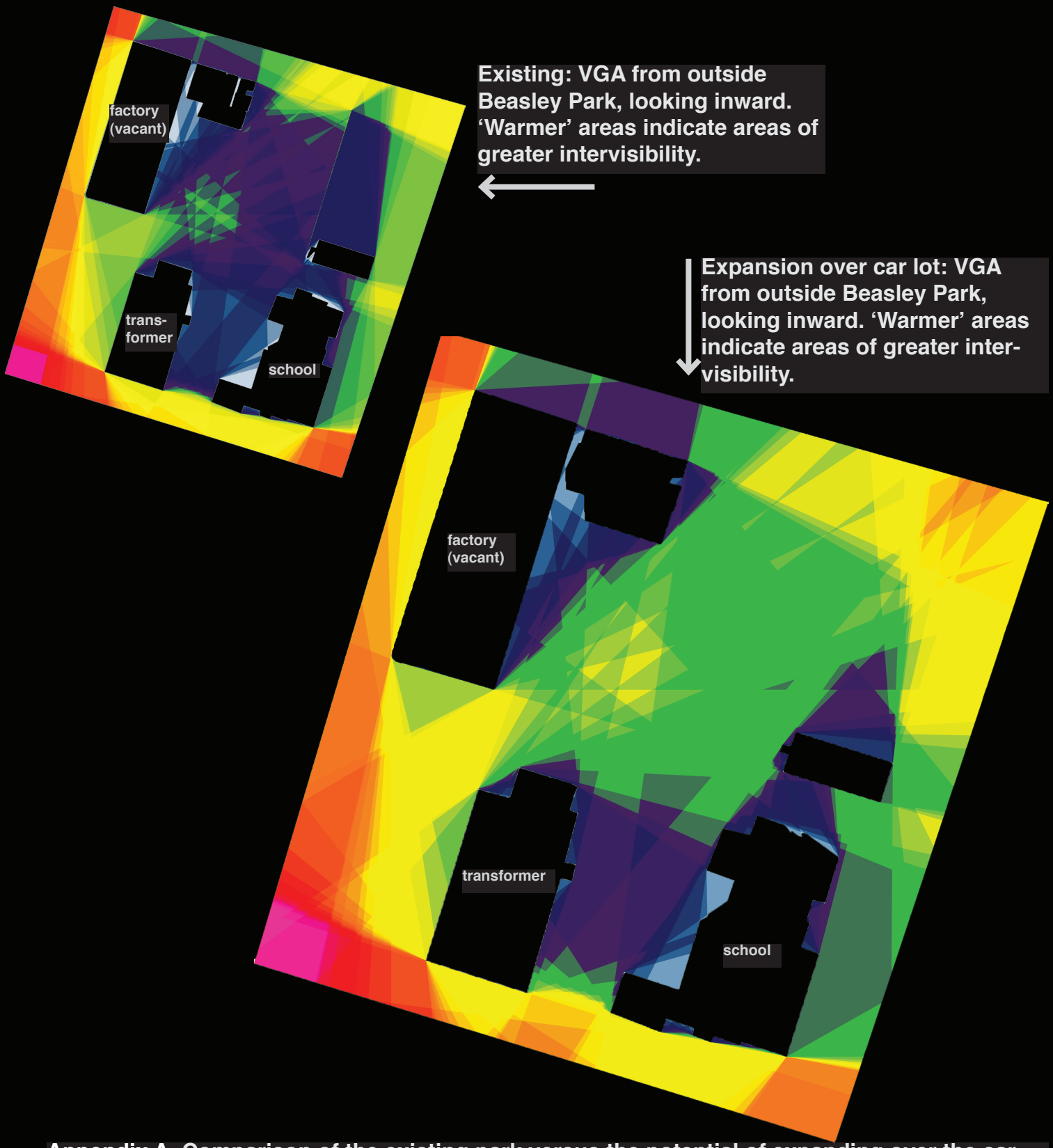

Appendix A. Comparison of the existing park versus the potential of expanding over the car lot using visibility graph analysis. Note the significantly 'warmer' (i.e. more intervisible) areas of the park (especially in the centre), as a result of expanding over the car lot. In consideration of the other evidence presented in this paper, this suggests that park users will have greater 'positive sentiment' toward more areas of the park, and activity will increase in the central areas of the park as well. The greater visibility afforded by this potential expansion will also result in increased surveillance, which should naturally result in reduced anti-social behaviour and decreased fear of crime. This analysis assumes there will be no visibility barriers, such as opaque fencing, or new buildings, in the car lot expansion area.