

Painting the Town Red: Graffiti and Violent Injury in Vancouver, British Columbia

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Abstract

Interpersonal violence is a significant global health problem that has been shown to occur at elevated concentrations in socioeconomically deprived urban neighbourhoods. The Broken Windows Theory is an oft-cited driver of violent trauma, implicating physical disorder in a range of social problems. Theoretical and empirical research has countered these discourses, although their characterisation of graffiti as a harbinger of urban decline, crime, and violence persists in the popular imagination. To challenge these notions, we conduct a spatial analysis of graffiti and violent trauma in Vancouver, British Columbia, describing their coincident spaces using Ferrell and Weide's (2010) *Spot Theory*. This lens characterises urban space as a field of risks and opportunities, and facilitates a counter-narrative to dominant discourses around graffiti and violence. We present this work as an example of how GIScience methodologies can provide empirical evidence to support theoretical indictments of problematic framings such as Broken Windows, and call for further integration of situated spatial analysis in critical social geographies.

Background and Relevance

The World Health Organization has declared interpersonal violence to be a significant global health problem, one responsible for over 1.6 million deaths annually (World Health Organization, 2002). While Canada has significantly lower rates of violence than the global average, over sixty-six thousand violent incidents were reported in British Columbia in 2011; such figures undoubtedly suffer due to underreporting of domestic, familial, and intimate partner violence (Bowles, Reyes, & Garoupa, 2009; Brennan, 2012). Our previous work has shown higher concentrations of violence in deprived neighbourhoods in Vancouver (Walker, Hameed, & Schuurman, 2014; Walker & Schuurman, 2012), associated with physical features of the built urban environment such as homeless shelters, pubs, and adult businesses. This paper describes a continuation of this research, focussing on the role of graffiti in viologenic space.

Popular discourses around graffiti invoke perceptions of disorder, crime, and violence in urban space. These notions are fuelled by the *Broken Windows* model of urban decline, which posits a psychosocial feedback cycle in which physical disorder (e.g., graffiti, rubbish, damaged buildings) encourages destructive behaviours (e.g., graffiti tagging, littering, breaking windows) that further blemish the urban environment (Wallace & Wallace, 1997; Wilson & Kelling, 1982). While widely adopted in policing, environmental criminologists have criticised this view as a marginalising oversimplification of complex a human-environment interaction (Sampson & Raudenbush, 2004). Similarly, Broken Windows Theory's contingent framings of deprived urban space as viologenic have been criticised theoretically (Doran & Lees, 2005; Gau & Pratt, 2010), but the discourse suffers from a lack of empirical research. This paper uses geographical analysis tools to examine the geographical correlation between graffiti and violent trauma, contextualising their spatial relationship using Ferrell and Weide's (2010) *Spot Theory* of urban space as seen through the graffiti writer's gaze.

The social subculture of graffiti values one's status based on their establishment of an advanced artistic style, ubiquitous presence, and painting of high-risk spaces (Ferrell, 2001). As such, a Spot Theory lens transforms the city into a spatially, temporally, and culturally complex landscape, where potential painting spaces ('spots', in parlance) undergo valuation through a matrix of risk and opportunity. Risk is calculated by the probability of arrest, injury, or conflict with civilians or other graffiti writers, while opportunity is primarily a function of fame: how does a composition, location, and degree of risk contribute to a graffiti writer's status within and beyond the subculture? We argue that this lens enables an alternative to Broken Windows framings of deprived urban space; accordingly, we contextualise both graffiti and violent trauma hotspots using Spot Theory.

Methods and Data

Graffiti data were acquired from the City of Vancouver graffiti database, comprising 6864 incidents at the address level. All reported graffiti that had not been cleared prior to October 2011 were included, i.e., the data reflect graffiti present during that month. Commissioned murals and other legal or non-reported incidents were excluded from analysis. Violent trauma data from the British Columbia Trauma Registry were geocoded at the address of the incident (N=736, years 2001-2008). Incidents included all hospital admissions with an injury severity score above fifteen (see Baker et al. (1974) for a detailed description of this index), as this minimises the effect of minor and unreported cases. Sport-related and self-inflicted incidents were also excluded, as these cases have a significantly different social pathology and context.

Kernel density surfaces were calculated for both datasets, using a 500 metre bandwidth and Gaussian kernel function. These parameters were selected based on the results of Ripley's K multiband clustering, which found a distinct break in clustering values around 500 metres. The resulting density surfaces were overlaid, and their spatially coincident pixel pairs were linearly regressed to examine the strength of the graffiti-violence correlation. Regression residuals were mapped to characterise model fit in the context of our study area and quantified using Moran's I test for spatial autocorrelation.

Results and Discussion

Strong spatial coincidence between violent trauma and graffiti hotspots was observed with a highly significant linear correlation ($R^2=0.53$, $p<0.0001$). However, significant spatial autocorrelation of residuals was also found (Moran's $I=0.78$, $p<0.0001$), indicative of geographical heterogeneity of the graffiti-violence relationship. This indicates that while graffiti is a strong predictor of violent trauma, their relationship varies by neighbourhood.

Three high-incidence clusters were identified in the regression residual plots: the Downtown Eastside; the Club District; and around high-volume metro stations. The Downtown Eastside is often (incorrectly) called 'Canada's poorest postal code', home to many houseless and otherwise socioeconomically deprived individuals. While the endemic drug and alcohol use may serve as a convenient explanation for the violence hotspot, a Spot Theory lens facilitates a more nuanced and situated perspective. What makes this neighbourhood a hotspot for graffiti is the cover provided by an abundant nocturnal population and poor lighting, and the large potential audience afforded by a high density of pubs, and high-volume transit corridor. Similarly, these features were shown in our previous research to correlate with violent trauma hotspots (Walker, et al., 2014).

The Club District is similar in that it offers a large audience, doubling as a crowd within which a graffiti writer might disguise. Proximity to major public transit nodes promotes both access and audience. However, this area differs from the Downtown Eastside in that its residents enjoy a comparatively low level of socioeconomic deprivation; this neighbourhood features numerous mid- and upscale shops and restaurants, evidence challenging the simplistic conceptualisation of graffiti as a harbinger of decay. Our previous spatio-temporal analyses of this neighbourhood suggest that the high concentration of alcohol-serving establishments explain the concentration of violent trauma in this neighbourhood, occurring primarily on Friday and Saturday nights (Walker, et al., 2014; Walker & Schuurman, 2012). Further, the enclosure/encounter model of the built environment and violent trauma suggests that built spaces with a dense concentration of people increase the potential for unfriendly encounters between individuals, particularly in spaces of high-volume alcohol consumption (Stevenson, 2006). Through this model, urban form can be conceptualised as a determinant of trauma, albeit contingent to the temporal dynamics of human agency as situated in space-time (Bourdieu, 1990; Braga et al., 1999; Caplan, Kennedy, & Miller, 2010; Mair & Mair, 2003; Sherman, Gartin, & Buerger, 1989; Stevenson, 2006).

Conclusions

While the results of our spatial analysis demonstrate a spatial correlation between graffiti and violent trauma concentrations in Vancouver, there is no additional evidence (beyond the observed correlation) from our analysis, nor from other empirical studies, to suggest a causal link. Further, their spatial correlation with physically decaying and socioeconomically deprived neighbourhoods is highly inconsistent, and as such, broken windows framings provide insufficient explanation. Spot Theory provides a framework for a 'situated spatial analysis' of urban place, but relies on an understanding of graffiti cultures' unique codes and practices (Ferrell & Weide, 2010; Walker & Schuurman, 2014). Embedded perspectives on writers' risk and behaviours challenge dominant discourses around graffiti and their contingent structural notions of order (Bourdieu, 1990; Giddens, 1991). Urban space thus becomes a field for the exercise of power and resistance (Bourdieu, 1990; Ferrell, 1995; Foucault, 1977; Halsey & Young, 2006).

Our findings, while limited to extensive methods, demonstrate a geographically heterogeneous relationship between the built environment, violence, and graffiti. However, this study is by no means conclusive. Intensive qualitative and theoretical study is required to further characterise their unique geographies. Regardless, we assert the potential of GIScience methodologies to provide empirical evidence for challenging theoretically problematic framings such as Broken Windows and call for further integration of spatial analysis techniques to advance critical social geographies.

References

- Baker, S., O'Neill, B., Haddon, W., & Long, W. (1974). The injury severity score: a method for describing patients with multiple injuries and evaluating emergency care. *The Journal of Trauma*, 14, 187-196.
- Bourdieu, P. (1990). *The Logic of Practice*. Cambridge: Polity.
- Bowles, R., Reyes, M. G., & Garoupa, N. (2009). Crime reporting decisions and the costs of crime. *European Journal on Criminal Policy and Research*, 15(4), 365-377.

- Braga, A. A., Weisburd, D. L., Waring, E. J., Mazerolle, L. G., Spelman, W., & Gajewski, F. (1999). Problem-oriented policing in violent crime places: a randomized controlled experiment. *Criminology*, 37(3), 541-580.
- Brennan, S. (2012). Police-reported crime statistics in Canada, 2011. Ottawa: Statistics Canada.
- Caplan, J., Kennedy, L., & Miller, J. (2010). Risk terrain modeling: brokering criminological theory and GIS methods for crime forecasting. *Justice Quarterly*, 28(2), 360-381.
- Doran, B., & Lees, B. (2005). Investigating the spatiotemporal links between disorder, crime, and the fear of crime. *The Professional Geographer*, 57(1), 1-12.
- Ferrell, J. (1995). Urban graffiti: crime, control, and resistance. *Youth Society*, 27, 73-92.
- Ferrell, J. (2001). *Tearing Down the Streets: Adventures in Urban Anarchy*. New York: Palgrave.
- Ferrell, J., & Weide, R. D. (2010). Spot theory. *City*, 14(1/2), 48-62.
- Foucault, M. (1977). *Discipline and Punish: the Birth of the Prison*. London: Allen Lane.
- Gau, J., & Pratt, T. (2010). Revisiting broken windows theory: examining the sources of the discriminant validity of perceived disorder and crime. *Journal of Criminal Justice*, 38(4), 758-766.
- Giddens, A. (1991). *The Consequences of Modernity*. Cambridge: Polity.
- Halsey, M., & Young, A. (2006). 'Our desires are ungovernable': writing graffiti in urban space. *Theoretical Criminology*, 10, 275-306.
- Mair, J., & Mair, M. (2003). Violence prevention and control through environmental modifications. *Annual Review of Public Health*, 24(1), 209-225.
- Sampson, R. J., & Raudenbush, S. W. (2004). Seeing disorder: neighbourhood stigma and the social construction of "broken windows". *Social Psychology Quarterly*, 67(4), 319-342.
- Sherman, L., Gartin, P., & Buerger, M. (1989). Hot spots of predatory crime: routine activities and the criminology of place. *Criminology*, 27(1), 27-56.
- Stevenson, M. (2006). Building safer environments: injury, safety, and our surroundings. *Injury Prevention*, 12, 1-2.
- Walker, B. B., Hameed, S. M., & Schuurman, N. (2014). A GIS-based spatial-temporal analysis of violent trauma hotspots Vancouver, Canada: identification, contextualisation, and intervention. *BMJ Open*, 4:e003642. doi: doi:10.1136/bmjopen-2013-003642
- Walker, B. B., & Schuurman, N. (2012). Environmental correlates with violent injury. *Geomatica*, 66(4), 103-111.
- Walker, B. B., & Schuurman, N. (2014). The pen or the sword: a situated spatial analysis of graffiti and violent injury in Vancouver, British Columbia. *The Professional Geographer*, *Forthcoming*.
- Wallace, R. G., & Wallace, D. (1997). Resilience and persistence of the synergism of plagues: stochastic resonance and the ecology of disease, disorder and disinvestment in US urban neighbourhoods. *Environment and Planning A*, 29, 789-804.
- Wilson, J., & Kelling, G. (1982). Broken windows: the police and neighbourhood safety. *Atlantic Monthly*, March, 29-38.
- World Health Organization. (2002). World Report on Violence and Health. Geneva: World Health Organization.