The importance of knowing the scale(s) at which processes operate to improving our understanding of crime patterns

I am a geographer who has been working in the field of place-based criminology for the last 25 years. In place-based criminology, crime-related processes are associated with either micro-levels of analysis such as individuals, addresses or micro-social elements such as street segments, or with macro-levels of analysis such as states, counties, cities and neighborhoods. In other words, theories are formulated to explain processes associated with micro or macro-level units of analysis, rarely both. Consequently, theories are associated with certain size geographic units of analysis. This situation has both resulted from and contributed to the division of place-based criminology into micro and macro camps. I, and others, believe this is counter-productive to achieving the endgame of better explanation.

To some extent, my own research has contributed to the current situation. Limited by data availability and software, research prior to 1990 was largely restricted to macro -level units of analysis (e.g. states, counties, neighborhoods). Macro-level studies have established that, regardless of areal unit, crime is concentrated in relatively few places and it is associated with a consistent set of area characteristics (e.g. residential instability, concentrated disadvantage, and ethnic heterogeneity).

In the 1980s, new theories were introduced that focused on the importance of micro-level geographies. At the same time new data sources and software provided the tools to test micro-level theories. The combination of theory, data and tools combined to shift the focus down the geographic cone of resolution to processes operating at smaller units of analysis such as addresses and street blocks (both sides of a street between two intersections). The study of place examines the geographic context in which crime occurs including the social characteristics of the people who use a place as well as its physical attributes. The role of event-level processes in producing the observed patterns of crime is also important. Many event-level processes are a function of the actions of individuals. The built environment influences human activity. Together they create an intricate web of constraints that influence who is present, when they are present and why they are present in situations.

The most comprehensive evidence supporting the existence and the importance of micro-level process came out of the Seattle Micro Places project. Funded by a grant to myself and my co-investigator, the project examined one entire city (Seattle, Washington) and was longitudinal (1989-2004). The unit of analysis was street blocks (both sides of a street between two intersections) because they offered a key micro-social geography for individual behavior. We collected 16 years of retrospective

data reflecting the social and built environment. By using both trajectory analysis and multinomial regression we discovered support for the efficacy of both micro-level (opportunity) and neighborhood level (social disorganization) theories at the level of street blocks. Given meta-theoretical concerns around theory and spatial scaling, this was not a foregone conclusion. We detailed our research effort in The Criminology of Place: Street Segments and Our Understanding of the Crime Problem published by Oxford University Press (Weisburd, Groff, & Yang, 2012). Examinations, such as this one, of street blocks that take into account their characteristics, the influence of their neighbors, as well as change over time are crucial to offering meaningful advice to practitioners and policy-makers about what they should do to prevent a street block from declining.

Further research in Seattle examined whether street blocks with similar crime changes over time were concentrated in the same areas or spread throughout the city. The spatial distribution of temporal crime trajectories was most often heterogeneous, regardless of whether the outcome measure was juvenile arrests (Groff, 2006a; Groff, Weisburd, & Morris, 2009) or total crime (Groff, Weisburd, & Yang, 2010). In other words, there was a tremendous amount of 'block to block' variability. Blocks with different crime trajectories were often near one another (e.g. high crime street blocks were often adjacent to low crime ones). Data aggregated to larger spatial units would not have revealed this pattern. This work demonstrated the importance of examining crime trends at very local geographic levels. At a policy level, the research findings reinforced the importance of initiatives like 'hot spots policing' which address specific streets within relatively small areas and suggested practitioners can focus resources on problem places which are predictable (Weisburd, Groff, & Yang, 2014).

Crime and place scholars are beginning to recognize the thorny problem spatial scaling represents (Taylor, 2015) but they lack the methodological framework to tackle this issue. We thought carefully about how the characteristics of street blocks linked to the relevant processes in our theoretical frames. But street blocks are nested seamlessly within the urban fabric and our methods and statistical analysis were inadequate to explore connections between our micro-level units and larger processes at work. Cross-level theories are needed. My goal in participating in this workshop is to draw from the geographic expertise in the group. I think crime offers an interesting and important example of how critical it is to identify the scale of the process. Solving these issues holds tremendous promise for understanding the context of criminal events and for translating that information into immediate, policy relevant recommendations for crime prevention.