

The article summarizes recent research linking changes in a neighborhood's position in the overall urban mosaic with changes in violence. Baltimore neighborhoods in the 1970s, which were either becoming further entrenched in an underclass status or gentrifying, experienced increasing levels of relative violence. Evidence indicated that declining relative status or declining stability was linked to these increases in violence. This article explores the theoretical and policy implications of an ecological perspective on the shifting violence levels. Policymakers concerned with stemming violence can use an ecological orientation to develop proactive policies and assist in resource allocation decisions.

Ecological Change, Changes in Violence, and Risk Prediction

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Criminal justice has a well-developed tradition in the area of risk prediction. Since the 1930s researchers have worked on developing instruments to predict whether or not offenders are likely to recidivate when released on either parole or probation. More recently, researchers have developed similar guidelines to predict whether or not arrestees are likely to appear at trial if released on bail. Although these instruments predicting recidivism and failure to appear at trial are far from perfect, they are better at predicting these events than are clinical judgments.

This article summarizes recent research predicting neighborhood changes in violence over a decade. We used an ecological perspective to ground our methods and some of our predictions. We found that some of these changes were predictable. These findings raise the following prospect: Criminal justice researchers may be able to expand their risk prediction efforts to the level of communities. Admittedly, risk prediction at the community level is not a straightforward expansion of individual offender or arrestee risk pre-

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diction approaches. Crossing levels will require some adjustments. Nonetheless, the overall approach may prove fruitful. And if it does, it may help policymakers and service personnel concerned with preventing increases in violence.

This article includes the following sections: First, we briefly relate the most recent human ecological research predicting crime and delinquency; next, we develop a specific theoretical and methodological human ecological framework for predicting violence changes in Baltimore neighborhoods in the 1970s; we then summarize our major results; and finally, we discuss how ecological data can be used to inform policymakers concerned with violence, noting what kind of information is needed, and the questions which could be addressed.

HUMAN ECOLOGY, DISORDER, AND VIOLENCE

Researchers have confirmed static and dynamic linkages between the ecological fabric of communities and disorder levels (Bursik, 1988). They have developed a multistep model linking a neighborhood's relative position in the overall urban mosaic with small-scale social control processes and resulting disorder levels. Cross-sectional investigations link community economic levels and minority populations with violence levels (e.g., Harries, 1980; Munford, Kazer, Feldman, & Stivers, 1976; Schmid, 1960) although there are numerous interpretations of the latter (Taylor & Covington, 1988, p. 555). More recently, a range of studies examining dynamic linkages between community fabric and violence have confirmed that declining economic status and increasing non-White populations were associated independently with increasing delinquency over the period of a decade (Bursik, 1986a). In other words, as a neighborhood changes its position in the overall urban mosaic, and the status and/or racial composition of its population changes, disorder levels likewise change. Increasing delinquency over a period is not only linked with the changes occurring during a period but with prior compositional characteristics of a neighborhood (Bursik, 1986b); the linkage is also conditioned by the particular historical period in which the changes are observed.

Most of the neighborhood-level studies have focused on delinquency as an index of disorder. Studies of violence per se have, in general, focused on larger agglomerations, such as cities or SMASs (e.g., Messner, 1983; Sampson, 1987), and have been cross-sectional rather than longitudinal. In the study described here, we focused on changes in violence at the neighborhood level, developing an ecological perspective and method to inform the investigation.

FOCUSING ON NEIGHBORHOOD CHANGES AND VIOLENCE: ELEMENTS OF THE ECOLOGICAL APPROACH

The ecological orientation suggests several methodological and theoretical corollaries.

Methodological Corollaries

Overall neighborhood structure should be considered. An ecological model suggests that changes occurring in a location are going to reflect a neighborhood's overall fabric; elements or dimensions of a neighborhood's character cannot be examined in isolation.

The current study used factorial ecology to describe elements of neighborhood fabric (Berry & Kasarda, 1977). Factorial ecology highlights three independent dimensions of community structure: status, familism or stability, and race and age composition. These same dimensions have been observed in numerous U.S. and foreign cities.

These dimensions describe not only major elements of neighborhood structure at one point in time but the predominant pathways of change over time (Hunter, 1974). Therefore, the current study examined three such pathways of change: increases or decreases in status, stability and race/age composition.

Consider neighborhood's relative position in the urban ecology. Ecologists are concerned with the position of neighborhoods in relation to the entire urban structure; they are concerned with the role of particular communities in the overall urban mosaic. Thus it is appropriate to develop measures that reflect this concern. Therefore, the current study used violence measures based on weighted percentiles. That is, each neighborhood's violence rate was transformed into a weighted percentile score indicating how much more or less violent it was compared to other neighborhoods in the city.

Theoretical Corollaries

There are also several theoretical corollaries to a human ecological framework for investigating neighborhood changes and violence changes. Those most pertinent to our investigation include the following.

Historical context determines the kind of forces for change likely to be operating on a neighborhood during a period of time. The forces for change

operating on the urban mosaic and the neighborhoods therein are a function not only of local dynamics but of the larger historical forces at work during the period (Bursik, 1986a). In our research, we concentrated on the 1970s. Two of the most major changes influencing older, large, eastern U.S. cities during this period were the dramatic growth of the underclass (Wilson, 1987), and gentrification (Covington & Taylor, 1989).

Poverty increased dramatically in the 1970s and became more urbanized than previously (Wilson & Aponte, 1985). An emerging Black urban underclass was indicated by the "deeper 'ghettoization' and solidification of high levels of poverty" (Wilson & Aponte, p. 247). These changes occurred in Baltimore during the 1970s as the gap between best-off and worst-off neighborhoods increased, and low-status, usually minority neighborhoods lost earning power relative to the better-off neighborhoods (Taylor, 1983). Ironically, during the same time frame, a large number of middle-class, predominantly Black neighborhoods also emerged in the city (Taylor, 1983).

During the 1970s, many neighborhoods in Baltimore, as in other major U.S. cities, experienced dramatic increases in relative house values (Covington & Taylor, 1989; Taylor & Webb, 1982). Some two dozen neighborhoods manifested the dramatic increases in relative house value and population changes indicative of gentrifying areas.

But in Baltimore, as elsewhere, gentrification's beginning and end points are not what they seem (Covington & Taylor, 1989; Lee & Mergenhausen, 1984). Areas prone to gentrification are low-status, inner-city areas with worn-out housing stock available for upgrading, and a displaceable population that can be shunted aside for higher-income in-migrants. Such locations also often have a hardened criminal tradition. The process of gentrification itself is not uniform over a neighborhood, but proceeds on a spotty, block-by-block basis, bypassing many segments within the community, thus resulting in a highly diverse, mixed population even after the process is well underway. Even after a neighborhood has been gentrifying for some time, it is liable to continue to attract diverse streams of in-migrants—low-income renters and higher-income owners—and to maintain a portion of its inherited tradition of hardened criminality.

A standard human ecological view of the gentrification process would suggest that it represents an invasion-succession cycle, and that, ultimately, the gentrifying neighborhoods will be completely "made over." But our evidence indicated that even after neighborhoods had been gentrifying for a decade, social problems remained well entrenched (Covington & Taylor, 1989). Since the gentrification process is linked to larger housing market forces which are changeable, gentrification processes in many neighbor-

hoods may stall, and the invasion-succession cycle may not come to completion. Unless individuals similar to the original occupants re-invade the locale, the neighborhoods may experience a prolonged period of high population diversity and the problems that accompany it.

In light of these historical forces, our examination of violence changes concentrated on the neighborhoods which, at the beginning of the decade, we thought would be most likely to experience the changes of gentrification or further entrenchment in an underclass status.

Different types of neighborhoods will change in different ways. Historical and local forces exert differential pressure on neighborhoods. Not all communities will be equally susceptible to gentrification or further entrenchment in an underclass status.

We expected that those neighborhoods most liable to deeper entrenchment in the urban underclass and further ghettoization would be inner-city Black neighborhoods with largely rental, worn-out housing stock, which had been predominantly Black for at least two decades.

We expected that neighborhoods most likely to gentrify would be inner-city, relatively low-income, high crime areas with unstable populations. The housing stock would be low-priced, but not totally worn out.

To identify the types of neighborhoods most likely to experience these forces, we clustered neighborhoods into nonhierarchical groups based on their beginning-of-the-decade scores on status, stability, and race/age composition (Taylor & Covington, 1988). Neighborhoods were put into the same group if they had a similar profile across these three dimensions.

The analysis yielded one cluster of neighborhoods (Cluster 14) which we judged most likely to experience further entrenchment into the urban underclass during the decade. The neighborhoods in this cluster scored very low on status and stability and very high on the race/age dimension, being predominantly Black and having large proportions of children in the population. We identified a second cluster (Cluster 4) which might also slide further into the underclass during the period. This latter cluster was different from the former in that neighborhoods were of slightly higher status and significantly more stable.

Two groupings of neighborhoods (Clusters 2 and 7) were judged likely to gentrify over the decade. Neighborhoods in these two groups were low on status, but did not have sizable minority or youth populations. They were also low on stability. The lack of children and the predominance of renters suggested a displaceable population.

In short, we identified groups of similar neighborhoods, based on 1970 characteristics, which we judged most susceptible to two of the dominant

urban forces at work during the 1970s—the growth of the underclass and gentrification.

Faster, more extreme change will be associated with more violence. Ecological theory suggests that rapid change, regardless of the directionality, will be problematic. Drastic alterations in a community's populations, according to social disorganization theory (Bursik, 1988), shreds the microlevel fabric of community life, weakening local social ties and, concomitantly, informal social control. Collective, indigenous efforts to combat resultant increases in disorder will be less likely to emerge in such circumstances. Thus, if as a result of extant forces, neighborhoods susceptible to these pressures alter their relative position vis-à-vis other communities in the urban mosaic, disorder will increase and the amount of increase will be related to the amount of change.

According to social disorganization theory then, neighborhoods experiencing changes in stability due to forces spurring the growth of the underclass and of gentrifying areas will manifest increasing interpersonal violence as within-community controls weaken. According to this model, changes in community stability are most likely to be associated with increasing violence.

A different dimension of community change—changes in status—is highlighted by a different theory. *Relative deprivation* theory suggests that when individuals perceive that others are better off, they experience a sense of injustice which encourages violent crime (Cloward & Ohlin, 1960; cf. Taylor & Covington, 1988, Note 1). Thus decreases in relative status of a neighborhood will be the most violence-inducing as residents perceive an increasing gap between their own means and the means of those around them.

In sum, for both gentrifying and entrenching underclass neighborhoods, we expected degree of stability change to be linked with degree of violence change. In neighborhoods becoming more firmly underclass, declining status might also be associated with increasing violence.

ECOLOGICAL CHANGE AND VIOLENCE CHANGE IN BALTIMORE NEIGHBORHOODS IN THE 1970S

The following subsections describe the major patterns observed linking ecological change with violence change. For measures of violence, we relied throughout on reported crime. The change measures—degree of ecological change and degree of violence change—were independent of beginning-of-the-decade levels. The changes were thus “unexpected,” given beginning-of-the-decade violence levels. All analyses controlled for violence changes in

adjoining neighborhoods. We discuss only partial correlations greater than .30 (for more details on these results, see Taylor & Covington, 1988).

Underclass Neighborhoods

Changes in murder. In the lowest status, least stable minority cluster of neighborhoods (Cluster 14), degree of ecological change and violence change were linked. In this grouping of neighborhoods, as relative status declined more noticeably, relative murder levels increased more substantially. This pattern supports the argument that changes in relative deprivation help fuel changes in violence.

In the second cluster of minority neighborhoods (Cluster 4), which was deemed not as likely to become more predominantly underclass over the decade as Cluster 14, declining status was not as clearly linked with changing murder levels. Close examination of the data suggested that the somewhat higher level of stability of the neighborhoods in Cluster 4 may have buffered the effects of declining status. In other words, the fact that the population was less transient in these locations helped block the emergence of higher relative murder levels as relative status in these neighborhoods dropped more noticeably.

Changes in aggravated assault. In those neighborhoods most clearly developing a more underclass character over the decade (Cluster 14), declining stability was the ecological change parameter most clearly linked to increasing relative assault levels. The role of stability change in this cluster of neighborhoods suggests that social disorganization theory, as compared to relative deprivation theory, better explained the assault changes.

Gentrifying Neighborhoods

Changes in murder. In both clusters of gentrifying neighborhoods (Cluster 2 and 7), increasing stability was strongly associated with increasing murder levels. Changes in murder were more strongly associated with changes in stability than with changes in status, suggesting that social disorganization processes rather than relative deprivation processes would better explain the connections.

We could not clearly determine which process provided a better explanation because, given the nature of gentrification, stability changes and status changes were very strongly linked. Because we were studying a small number of neighborhoods, we were unable to unequivocally separate the effects of status change from stability change. Nevertheless, the pattern of

results before and after removing outliers suggested stability change was more closely linked to assault change.

Changes in aggravated assault. In both clusters, increases in assault were more clearly linked with increasing stability than with increasing status levels. Both clusters showed a strong positive connection between changes in relative stability and changes in relative assault levels. We noted with interest that some of the neighborhoods where status and assault increased the most were "dollar house" neighborhoods. In these locations, the city encouraged large-scale housing renovation, and some were close to low-income public housing sites.

Empirical Summary

The ecological model that we investigated appears in Figure 1. We examined links between ecological change and unexpected violence changes in Baltimore neighborhoods in the 1970s. The overall ecological structure of certain neighborhoods at the beginning of the decade made it likely that they would be influenced by large-scale change forces unfolding over the decade. The two forces examined were the worsening of the underclass and gentrification. Ecological theory suggests that rapid change abrades community fabric. Neighborhoods changing more rapidly during a decade shift their relative position in the urban mosaic more dramatically during that period. Thus, among gentrifying neighborhoods and among neighborhoods becoming more entrenched in the underclass, we expected and found degree of change linked to degree of increasing relative violence. The more dramatically their roles in the overall fabric of city community life are altered, the more violent they become in comparison to other city neighborhoods.

HOW CAN THESE FINDINGS BE PUT TO USE?

For two reasons, criminal justice researchers and practitioners have an excellent opportunity to develop tools predicting where increases in violence will be most sizable in the coming decade. First, as of this date, the 1990 Census is being conducted, and results should be available to municipalities within 2 years. Thus current information will soon be available for describing community fabric. The factorial ecology method employed here represents one widely used and easily applicable approach for characterizing neighborhood structure. Second, in 1989, we saw dramatic increases in murder rates in several major cities. For example, murders in Washington, DC, were

Historical and local forces ----->	Neighborhoods in susceptible group experience ecological change; degree of shift in neighborhood's role in overall urban fabric
Ecological structure of neighborhood at beginning of period makes it susceptible to forces ----->	linked to degree of change in relative violence level

Figure 1: Ecological Model

double the level of 2 years earlier (Apple, 1990). The public and officials are more concerned than ever with containing or reducing this violence. In short, at the present time, there is more opportunity and public support for developing violence risk indices than before.

PREDICTING AND INTERVENING WHERE VIOLENCE WILL MOST INCREASE IN THE NEXT DECADE

Criminal justice practitioners and researchers, in collaboration with city officials, should be able to use 1990 census information, on a neighborhood level, to “type” neighborhoods. If they then consider the national and local forces likely to be at work in the coming decade, they may be able to generally predict where violence will most likely increase in the coming decade. Further, if they track changes in stability and status in these particularly susceptible types of neighborhoods, they can focus on neighborhoods where the most rapid changes are happening, and which are thus most at risk of increasing violence. It will be more feasible to monitor changes in status and stability as the decade unfolds because officials need only concentrate on the types of neighborhoods at risk due to their ecological fabric at the beginning of the period.

These general predictions can be used in several capacities to inform policy formulation and service delivery. For example, assume that the forces leading to increasing concentration of poor and female-headed households among urban, inner-city minorities are liable to continue or perhaps intensify in the coming decade. Using the technique described here, researchers can (a) identify the clusters of neighborhoods likely to enter the underclass, or to become more entrenched in an underclass status during this period; (b) closely monitor status or stability changes there using tax or real estate data; and (c) focus stabilization or prevention programs on the neighborhoods experiencing the most dramatic changes. Assuming that the requisite political

will and capital exist, politicians can focus on neighborhood improvement or stabilization efforts, or coordination efforts with local neighborhood groups, in exactly these neighborhoods most at risk. In short, urban officials can generally attend to the subset of urban neighborhoods most at risk for rapid ecological change and increasing violence levels, and then concentrate services or prevention programs in exactly the at-risk areas where the rapid changes become evident.

Of course, before officials can deploy such strategies, convincing evidence of links between ecological change and violence change must be obtained. Thus researchers will need to demonstrate to those officials, based on findings from immediately preceding decades, that such connections obtained in the 1970s and 1980s.

But even if local researchers provided such satisfactory preliminary evidence to local officials, implementing a strategy to blunt increasing violence in neighborhoods at risk due to their ecological structure at the beginning of the decade has numerous risks. First, the prediction of risk is by definition probabilistic. Thus, for example, there is no certainty that relative murder and assault rates would rise in a *particular* neighborhood becoming more firmly underclass over the decade and experiencing sharp declines in relative status. There is always the chance that, due to particular local, contextual factors, violence could increase dramatically in a neighborhood whose structure at the beginning of the decade does not put it at risk for experiencing rapid change. Officials are simply estimating that, in the long run, the chances of violence sharply increasing is higher in the neighborhoods whose beginning-of-the-decade structure places them at risk, as compared to other locations. Probabilistic predictions do not always hold for every case. We see this in the risk prediction work with individual offenders; sometimes, low-risk releasees commit serious offenses and political heat results. Nonetheless, if officials use such a focused intervention strategy, they will have the best chances of actually stemming subsequent increases in violence.

This approach assumes that urban officials know what remedies are needed in a neighborhood to help stabilize it or buffer it from the effects of rapid change. In all locations, and under all fiscal conditions, this assumption may not be warranted. For example, urban officials seeking to stabilize a neighborhood on the verge of joining the underclass may not have the requisite funds needed to help establish, say, co-op housing in the neighborhood. Nevertheless, the approach advocated here is concerned largely with more effectively localizing *whatever* programs are available to stabilize neighborhood and help prevent further increases in violence. This approach is independent of the type of program delivered or service offered. Regardless

of the program elements, the concern with ecological risk helps to allocate these program elements for maximal benefit.

Finally, a potentially more troubling assumption with the approach advocated here can be stated as follows. We assume that ecological forces working on particular neighborhoods, altering their overall fabric and thus their violence levels, can be stemmed by deliverables provided by urban officials. We assume that policy can blunt impacts of large-scale, subsocial forces.

This assumption appears reasonable because we have seen evidence of its reverse: Urban policy can speed up certain ecological processes. In one cluster of gentrifying neighborhoods in Baltimore, the neighborhoods experiencing the most dramatic shifts in status in the 1970s were locations where city officials had deliberately sought to improve housing stock by providing vacant houses at low prices and renovation loans with easy terms. If focused urban policies can speed up certain changes in targeted neighborhoods, it seems reasonable to expect them to slow the same or related processes in targeted neighborhoods.

CONCLUSION

Using beginning-of-the-decade characteristics and considering major trends in the region, urban officials can identify those particular neighborhoods most at risk of swift ecological change during the present decade. As the decade unfolds, they can monitor changes in neighborhood fabric using real estate and tax information, and concentrate service delivery on those neighborhoods within the group experiencing the most sizable shifts in status or stability. By concentrating service delivery on locations most at risk, officials can maximize their chances of controlling further escalations in neighborhood violence levels.

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