

Visual Methods of Geographic Analysis of Gentrification in Columbus, Ohio

Research Thesis

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by

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## Introduction

In an attempt to chronicle the process of gentrification, visual records of Franklinton, Columbus were captured in conjunction with statistical and theoretical analysis. Franklinton is a neighborhood on the west side of the Columbus, Ohio, metropolitan area in Franklin County. In recent years, the Franklinton neighborhood became known as a largely impoverished and run-down area, however the physical and social landscape of Franklinton is changing through the process of gentrification. This study focuses on analyzing and capturing these patterns of gentrification occurring between 2010 and 2017 in order to determine how a visual method, in this case photography, can be used to communicate issues of a changing geosocial landscape.

Classically, the issue of gentrification is discussed from a Marxist perspective, defined as a cyclical revalorization of lower-class areas with a big negative capital flow that are viewed as potential places for reinvestment to which capital could return. Postcolonialism, then, examines the spatiality of exclusion and looks at historical social patterns to determine access to and development of desirable urban infrastructure. There are multiple dimensions to any spatial issue and using a variety of perspectives allows readers to comprehend the concept of gentrification from a non-totalizing point of view.

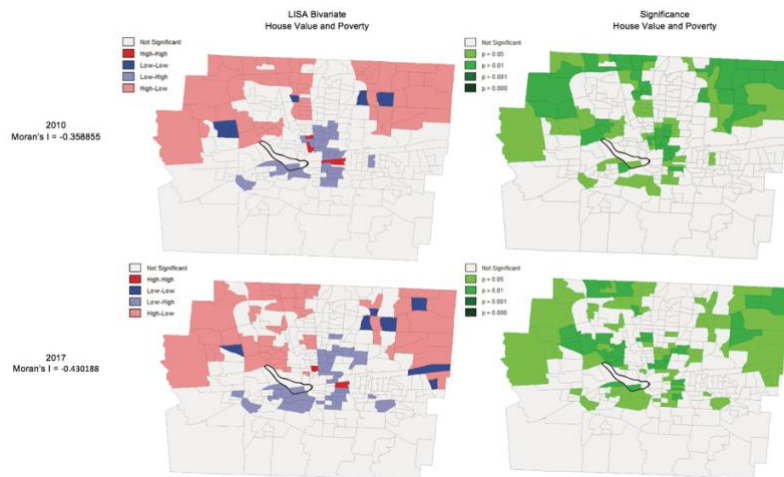
Marxism serves as a totalizing critique of the capitalist class structure. All things can be viewed in terms of production and consumption, complying with the perspective's principle outlining the understanding of the flows and accumulation of capital and uneven development. Marxism examines overarching structures and particularly suggests class as a root cause for any geographic problem. This perspective first emerged in the field of geography in the 1970s as a response to and critique of spatial science and absolute analyses of space. Marxists posit that the spatial science tradition focuses too much on the outcomes of capitalism, rather than the root causes (Harvey, 2006). In order to develop insights about urban gentrification, the Marxist perspective entwines the spatial division of labor—the division of class workers (Massey, 1994), with the mobility and fixity of capital (Harvey, 2006) resulting in disinvested areas that become prospects for gentrification—often the areas with desirable qualities like proximity to recreational areas. A review of Marxist case studies will be used to analyze gentrification, specifically: the rhetoric of capitalist restructuring, the dispersion of poverty and spatial fracturing stemming from authored “landscapes of fear,” a phenomenon that arises out of deliberate political policy. These result in displacement for some and new infrastructure for others (Addie, 2013, Massey, 1993). The development of urban space into green areas and businesses suggests ownership of empty lots. When vacant parcels are prevalent in a given urban landscape, access and potential ownership, as well as disinvestment and poverty are dually highlighted (Foo, 2013).

Postcolonialism surfaced in geography in the 1980s with a Marxist heritage and influences from both poststructuralism and feminist geography (Young, 2001). Postcolonialism investigates the public sphere as a structure of exclusion, where many marginalized groups—like those people already living in gentrifying areas—are disconnected from others. The economy and the social sphere become intertwined (Mitchell, 1998). Postcolonialism reconsiders history and social patterns from a subaltern (or those who have been oppressed by colonialism) perspective. The problem of the present is viewed as rooted in a colonial past. Postcolonial issues are prevalent in the rural Global South, yet overarching inequality due to past colonial practices can be viewed in the urban Global North (Swyngedouw, 2003). Gentrification patterns in cities displace people marginalized by colonialism, just as those living in neighborhoods with empty lots and few recreational green spaces are likely to be lower class and non-White (Dale, 2009). Colonial

structures, then are visible in America’s backyard (and are not limited to singular locales) via race relations and consequently, gentrification. They are impacted by class and capitalist inequality as caused by the past. This perspective then is more specifically a Marxist postcolonial view, as the subaltern are such due to capitalist class structures created by a colonial past.

Postcolonialism is often viewed as a hybrid because of its impactful influences with its emergence ultimately seen as a reaction to discursive, Eurocentric histories that ignored the material impacts of colonialism in the present. This prompted subjective language usage such as Orientalism and the idea of the Eastern “Other,” as well as terminology such as “third world” (Young, 2001). The perspective pushed people to address subaltern histories and pair Marxist thinking of class structures with the question of why? —thinking specifically of the construction of marginalized political hierarchies.

Franklinton, in theory, exemplifies a gentrifying area, with an influx of young people moving into and refurbishing empty homes next to newly-built recreational spaces and businesses. Before selecting the neighborhood, however, it was necessary to provide evidence of change in Franklinton specifically, as compared to the surrounding metropolis and county. *Figure 1* provides the results of a bivariate local spatial autocorrelation test completed for Franklin County data in 2010 and 2017. Looking at median house value and percent of households below the poverty line, the bivariate test uses k-nearest neighbors (k=5). Spatial autocorrelation is based on Tobler’s first law and determines whether or not a relationship between location and attributes exist. The k-nearest neighbor method is defined by contiguity and was selected so that each tract would be compared to not only the other Franklinton tracts, but also those surrounding them. K=5 because an even number could lead to ties. In both 2010 and 2017, the timeline of this study, an overall negative correlation exists between median house value and the percent of households below the poverty line, meaning there is some regularity to where the clustering is located. A global Moran’s I value was found for both years (2010 = -0.358855, 2017 = -0.430188) and a local function was performed afterwards to determine where clustering occurred. The tracts that make up Franklinton are highlighted in the figure. The southwestern corner of Franklinton is the tract with the majority of residences and is shown in *Figure 1* to be a site of significance, being in a clustered area of low housing value and high poverty. In accordance with Marxist gentrification theory, this area fills the requirements of a perfect locale for the process to begin. Franklinton is shown in *Figure 1* to have the required determinants at significant levels, particularly in 2017, suggesting that this gentrification is still underway.



*Figure 1.*

Photography can provide both a topological and topographic view of a landscape by highlighting the social and the physical. Such a subjective field must be supported by theory and fact to verify the legitimacy, just as analysis of any other kind (Harper, 2003). What is most important in visual analysis is understanding how the issue at hand is being communicated to others (Rose, 2008). This again reflects the importance of using multiple methods of analysis so that conclusions drawn from observing photographs are backed by multi-scalar fact. Furthermore, when viewing a photograph, viewers and researchers alike must reflect upon their own experiences, knowledge and assumptions before determining what is actually being conveyed; asking how have they been communicated the notion of “gentrification” before and acknowledging bias on a systemic and personal level (Rose, 2008).

## Methodology

The study is threefold, focusing on geographic theory, statistical analysis of economic and urban housing trends and the photographic interpretation of the analysis. Each of the components aids in supporting the others and together they create a cohesive visual methodology of geographic analysis in the Franklinton neighborhood.

## *Theory*

The mobility of capital and crisis is a product of capitalism. The world develops unevenly because of a cycle that begins with capital intensification (Harvey, 2006). Capital intensification is becoming the norm, as money is often poured into technology that may initially be expensive, but ultimately saves money because it reduces labor. Higher unemployment causes underconsumption—or overproduction—occurs. A common spatial fix, then, is to expand capitalism to other external markets, which will also eventually face crisis due to capitalism (Harvey, 2006). This can happen on a variety of scales and conditions can vary across space. Economic activity builds over time like sedimentary rock, so areas that are negatively impacted by the spatial division of labor will eventually be the locale for the next round of investment due to the movement of capital (Massey, 1993).

Gentrification occurs through simple, cyclical movements of monetary investment due to capital crises. Different spaces are facing unlike steps in the cycle of disinvestment within the same urban area. When a neighborhood is facing disinvestment, there is opportunity for capitalists to provide low investment and reap higher returns. For a Marxist, gentrification is not related to the amount of businesses in a given area, it is about the return of capital to a disinvested area. Just as capitalist crisis will ensue, the extension of capitalism and mobility of capital will, too. The only representation of capital fixity is in infrastructure and buildings. As capital continues to travel through the built environment, there will be neighborhoods plagued by empty homes and lots, which then presents capitalists with investment opportunities, and thus gentrification occurs.

The spatial pattern, however, is not just about economics, which is why Marxist postcolonialism presents a necessary conversation: class relations in the United States today are linked to its colonial history and the uneven power relations that the country was literally built upon. Structural questions can be answered in a less totalizing way than Marxism, because postcolonial Marxism examines various demographic factors as integral parts of each other.

Gentrification strikes areas that are poorer and with higher populations of minorities than others, because the colonial past has resulted in not only unequal economic power, but also in a

fractured dispersion of poverty. In America specifically, non-whites were barred for property ownership for decades after the U.S. fought for independence, and once ownership was allowed it was conditional and limiting. City planning has continued to perpetuate this divide, sorting neighborhoods into low-skill and high-skill (those who had access to education) workforces and continuing the accumulation of capital into specific spaces due to the creation of “landscapes of fear” (Addie, 2013). This dividing of space is caused by what postcolonialism critiques: divisive, Orientalism-esque language that perpetuates the idea that persons with darker skin somehow belong in “third-world” areas and poorer urban conditions; this also continues the idea that gentrifying space can be taken from those living in it, just as colonized lands were taken from their peoples.

When examining gentrification in a visual nature, one must consider indicators that cannot be determined by studying a population’s race. Suggesting class or social status according to skin color would present an inherently biased and problematic study. After considering the various geographic theories that gentrification may include and how each functions socially and economically, a set of theoretical indicators of gentrification was selected to be tested for statistical evidence of the process.

### *Statistical Analysis*

Using data collected by the United States Census Bureau’s American Community Survey (ACS) five year estimates, theoretical indicators of gentrification were tested for statistical evidence of the revalorization of the neighborhood. Franklinton is comprised of 3 census tracts: 3904942, 3904943 and 3904950. The selected data was collected between 2010 and 2017. The variables selected are as follows: total population, average age, percent unemployed, median and mean income, percent in poverty, total number of houses, percent occupied and vacant houses, percent owner occupied homes, percent renter occupied homes, median house value and median gross rent. Using the statistical analysis software R, all of the data was run for normality and variance before being used for correlations and regressions. The correlations that were shown as nonsignificant were not used for regressions. The median house value was ultimately determined to be the best indicator of revalorization and therefore used as the base comparative value. Paired and non-paired t-tests were run first to determine if Franklinton’s demographics had changed at all. Once the significance was confirmed, it was possible to continue with the tests that could be paired with theory to suggest gentrifying patterns.

<b>Variable</b> <i>(Median House Value = Base Comparative Variable)</i>	<b>Correlation Coefficient</b>	<b>P-Value</b>
<i>Total Population</i>	.464	<.05
<i>Average Age</i>	-.695	<.05
<i>Percent Unemployed</i>	-.645	<.05
<i>Median Income</i>	.913	<.05
<i>Percent in Poverty</i>	-.780	<.05
<i>Total Houses</i>	.571	<.05
<i>Percent Occupied Houses</i>	.565	<.05
<i>Median Gross Rent</i>	.862	<.05

*Table 1.*

Table 1 shows the strength of each correlation, a result of each of the selected variables being run with median house value as their base comparative variable. Median income and percent in poverty were both found to have some of the strongest correlations, with higher income being correlated with higher house value and lower poverty being correlated with higher house value. While this may seem obvious, these patterns cannot be assumed, particularly when looking at a gentrifying neighborhood. The correlations reflect all three census tracts that encompass Franklinton (3904942, 3904943 and 3904950) and are comprised of American Community Survey estimates from each year between 2010 and 2017. As a result of this, Figures 2 and 3 demonstrate some heteroscedasticity reflecting outliers in less-populated tracts and a general lack of data points due to the relative infrequency of data collection and the risk of inaccuracy of lesser intervals between collection. The outliers remain in the data as it is important to recognize the distinguished difference between the tract 3904942 on the eastern side, for example, and tract 3904950 on the western side. Tract 3904942 holds the Columbus Museum of Science and very few residences, but is a location filled with recreational, cultural and ultimately desirable spaces, whereas tract 3904950 holds the bulk of residences. Figure 2 again confirms Table 1's statistics by showing the relative linearity between median house value and the other chosen indicators. The regression lines help to inform the potential future trends of the issues at hand, allowing for further conclusions about the state of and timing of the topographic and topological changes of the gentrification.

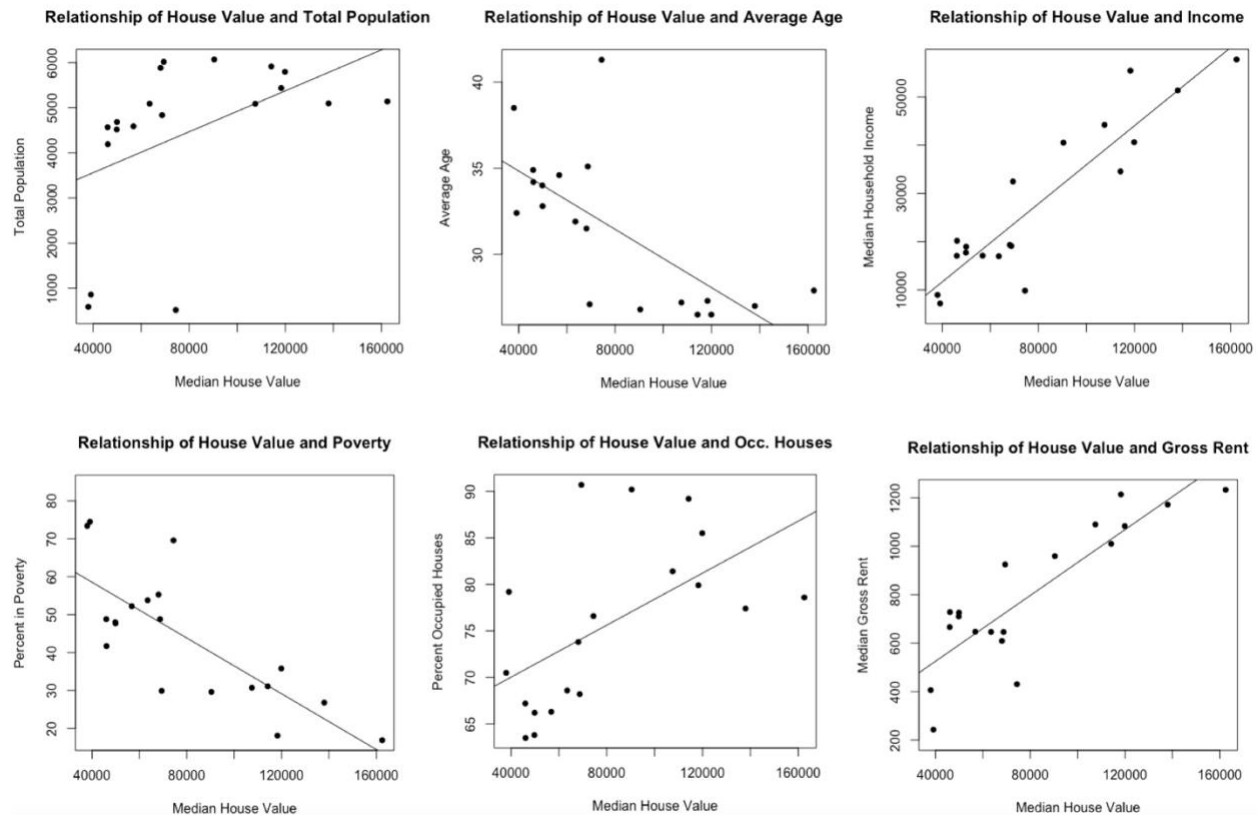


Figure 2.

Figure 3 demonstrates an example of a residual plot for the relationship between median house value and median income. As demonstrated in Figure 2, this is a strong, linear, positive correlation ( $\text{corr} = .913$ ,  $p\text{-value} < .05$ ), however this residual map highlights the relative heteroscedasticity of the data. In a typical analysis, an expected outcome for such a strong linear correlation would be limited dispersion around the regression line (center), however due to the small number of data points, it can be expected. Residual plots seek to measure the ability of this model to be a predictor for the future relationship of the selected variables, a metric that can be measured by an r-squared value. The r-squared for this model is 0.825 ( $p < .05$ ), meaning the model is well suited for the data. A longer time frame would likely provide less heteroscedastic results but would ultimately mean extending the length of suspected time for the gentrification process.

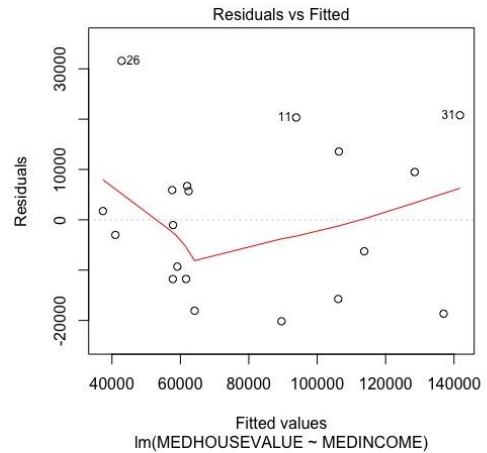


Figure 3.

When combined with spatial autocorrelation and Marxist postcolonialist theory, such statistics allow for a better understanding of the actual indicators of gentrification and lay an important groundwork for visual methods of analysis. The gentrification process is a largely visual one, but photography requires analytical support in order to be nonbiased.

### Visualizations

The collection of images occurred after thorough statistical and theoretical analysis of gentrification and Franklinton's revalorization specifically. There are three primary census tracts that make up Franklinton, however only one of them (3904950) holds the bulk of residents as tracts 3904942 and 3904943 are almost entirely made up of the science museum and the Scioto River, respectively. Due to this, the majority of the visual analysis and photo collection occurred in tract 3904950.

Using a Nikon d5500 and a Nikon d850, photographs representing the lived areas of gentrification were taken. Rather than focusing solely on boarded up homes and cracked sidewalks, the photographic process took a more feminist-geographic approach by spending more time walking and talking through the neighborhood and capturing spaces that reflected postcolonialist theory. Taking into account viewer's potential interpretations of the imagery and how physical space be photographed to reflect an influx of capital and people, this element of the study focuses on taking the theoretical analysis a step further by visually marrying it with the above statistics.



Photo 1.

Empty lots from disuse or abandonment are common in Franklinton, as shown in Photo 1 and Photo 2. Images like these become more usual in the western reaches of the neighborhood,

whereas most of the lots in eastern Franklinton have use as parking and seating areas for the many breweries and distilleries in the area. The entirety of Franklinton is a food desert, but moving further west reflects that deeply. Photos 3 and 4 depict two of the options listed on mapping

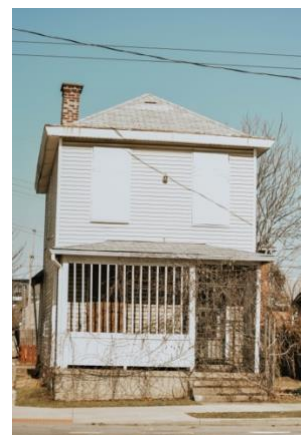


applications for “grocery stores”, with *Photo 4* capturing a Dollar General. The nearest grocery store is a Kroger located across the Scioto River, nearest to East Franklinton, where the fewest residents live. The eastern reaches of the neighborhood are where the majority of construction has been taking place. There are many newly-built restaurants and recreational spaces in the east such as Land Grant Brewing (opened in 2014), Brewdog Franklinton (opened in 2018) and Strongwater Food and Spirits (opened in 2014). Photos 5, 6 and 7 were all captured in the area surrounding the cluster of eateries. The area is scattered with more expensive vehicles and young families, whereas just across the street (*Photo 8*) is entirely empty houses and cement lots. The discreet differences between city blocks that have been selected for gentrification and those left behind become more apparent.

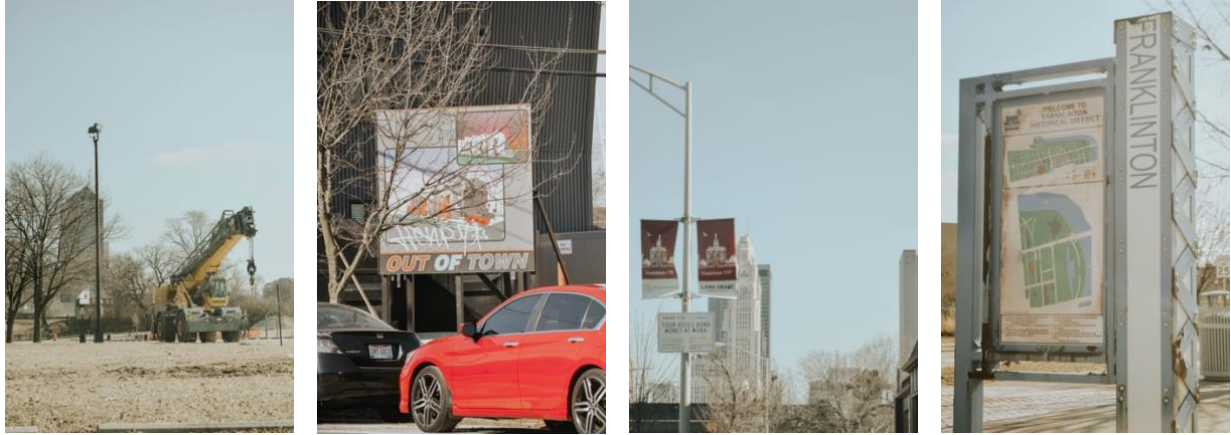
There are a few relationships between shareholders that become more evident through photographs. Statistics and theory cannot capture the topological impacts of gentrification as photography can. *Photo 9* depicts the relationship of outside investors and the residents of Franklinton, with empty lots being closed off to locals to make room for new construction. *Photo 10* shows the same process further along: the new housing is built but not yet occupied. Current residents spray painted on the sign advertising the new build, and an expensive car is parked outside. Photos 11 and 12 display city signage. On a street

filled with new buildings—most of which remain unoccupied, a sign from the City of Columbus reads “Your Voted Bond Money at Work”. When entering the western side of Franklinton, *Photo 12* displays the welcome sign which highlights only the eastern part of the neighborhood.

*Above: Photos 2-4, Below: Photos 5-8*







*Photos 9, 10, 11, 12*

## Conclusions

As capitalist crisis continues to spread, further impacts of the visual postcolonial perspectives will become more evident. As shown by bivariate local spatial autocorrelation, the gentrification process in Franklinton is underway and must continue to be observed and acknowledged through visual methods of analysis such as photography. Capital intensification will perpetuate, leading to further job loss and ultimate disinvestment in fixed infrastructures. This will lead to opportunities for capital reinvestment, but where that occurs will be determined by prior human actions such as the impact on the land uses and the physical bodies in space, or whether or not a group of persons is economically and socially vulnerable enough to be removed from a gentrifying area. Such topological indicators can be viewed through census data analyses and should continue to be monitored for changes to the observed pattern. Marxist foundations provide the basic indicators of gentrification, but the addition of new perspectives is essential in fully comprehending the multiple social scales that are interacting, as well as the authored organization of space.

Photography is important in the simple accessibility to knowledge that it provides. Although backing a potentially biased method like this with theory and statistical tests is important, it is not necessary to have a background in either in order to understand the message of the images. Future studies could continue to use such methodology to gain access to a lay audience and tell a data-based story through images. By capturing the discreet dueling of developers and residents through photo, Marxist postcolonialist theories and census trends are confirmed. The accessible statistics show that Franklinton is projected to continue to gentrify and further data can be collected and analyzed through image. Revalorization and gentrification are parts of a cycle and by providing photographic evidence of that cycle throughout time, it will be easier to recognize gentrification indicators and perhaps understand the repercussions of such.

It is important to note that, due to the introductory nature of this methods paper and the limited availability of American Community Survey 5-year estimate data, there is a clear margin of error and significant room for future studies.

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