

An Analysis of Overcrowding in Northern Virginia Public Schools

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Michael George Barbuti

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

Advisor

Bryn E. Seabrook, Department of Engineering and Society

Introduction

For years now, a hallmark of the public school experience for students in Northern Virginia has been trekking out across the parking lot, while fighting the elements, to reach their next lesson in a poorly heated trailer made of cheap plywood (Elk, 2019). These trailers are the problematic solution that the counties have implemented to combat overcrowding, an ongoing phenomenon that is at the forefront of the minds of parents, teachers, and school administrators in the region (Arlington Schools Brace for Overcrowding from Amazon HQ2, 2019; Shaver, 2018). The research that has been conducted to complete this paper aims to answer the following question: How do the relevant actors contribute to the issue of overcrowding in Northern Virginia Public Schools? The sociotechnical framework that is being used to analyze the question is Actor-Network Theory (ANT), which is ideal for finding the connections between all of the key players that affect the situation. Those key players are large companies, school boards, local government planners, and residential real estate developers. Developing an answer to this question is also leading to an improved understanding of the steps the counties can take to alleviate the ongoing strain on their school systems. Better solutions than the trailer classrooms need to be found so that the health and safety of the students is no longer jeopardized.

Research Question and Methods

The goal of the research and analysis provided in this paper is to develop an answer to the following question: How do the relevant actors contribute to the issue of overcrowding in Northern Virginia public schools? The sources used in the analysis are primarily articles from local newspapers and magazines, such as the Washington Post, Virginia Business, and ARLnow. However, the data detailing changes in housing units is taken from the various county government websites as well as the US Census. The keywords used to guide the research are overcrowding, public schools, the titles of the four actors identified in the network, and Northern

Virginia. Network analysis is the main method used to interpret the research, focusing on how the different actors interact with one another and how those interactions affect overcrowding in public schools. The remainder of this paper discusses each of the actors in the network and the impact they have on overcrowding in public schools based on actions they have taken in the past. The paper also examines how the operations of each actor overlap with and influence those of the other three in the network.

The Current State of Overcrowding

Overcrowding is not an unheard-of threat to school systems, nor is it unique to Northern Virginia. In fact, more than 20% of public schools in the United States suffered from overcrowded classrooms as far back as two decades ago (Overcrowding, Condition of America's Public School Facilities, 2000). A more recent survey conducted during the National Assessment of Educational Progress in 2019 found that "60 percent of fourth-graders and 66 percent of eighth-graders" who participated in the math assessment were students at public schools that had overcrowded classrooms (Cai, 2021). These statistics are tracked because of the negative impact that overcrowding has on the quality of education that a group of students receives. An overcrowded classroom creates more noise and distractions, makes instruction less personalized, and often leads to poor building conditions (5 Ways That Overcrowded Classrooms Affect Education, n.d.). School districts do their best to keep the population of each of their classrooms at a reasonable level so that their students do not suffer from these byproducts of overcrowding. However, the measures that school administrators take are often temporary and fraught with their own issues. A prime example of these inadequate solutions are the aforementioned low quality trailer classrooms that now reside in many school parking lots.

Northern Virginia, which refers specifically to the counties of Prince William, Fairfax, Loudoun, and Arlington, has experienced a significant amount of population growth in recent years, averaging 31,000 new residents annually between 2010 and 2019 (NOVA Releases New Report Highlighting a Decade of Regional Change - Northern Virginia Community College, 2020). The region also saw an economic resurgence during this time period, which sparked further business and residential development (Shaver, 2018). A milestone moment for this progress came when Amazon announced that it would be constructing its second headquarters in Arlington. The decision is bringing at least 25,000 jobs to the area for Amazon alone, and likely many more for companies that will look to position themselves close to the tech giant (Arlington Schools Brace for Overcrowding from Amazon HQ2, 2019). All of this expansion in Northern Virginia has provided the fuel necessary for the overcrowding of the region's school districts.

As of 2019, ten high schools in the Fairfax County Public Schools system were dealing with serious overcrowding (Fox, 2019). In the same year, Battlefield High School in Prince William County was overcapacity by a staggering 46.4% (Prince William County Releases 13th High School Boundary Plan, 2019). A couple of years prior to those situations, in the 2017-2018 school year, nearly all 17 of Alexandria City Public Schools exceeded capacity (Shaver, 2018). These statistics show that this problem is spread all across the school districts of Northern Virginia. Students are suffering everywhere in the region and it is important that something change for the sake of their education and general quality of life.

Understanding Actor-Network Theory

The question that is driving this research is set up to enable the use of the sociotechnical framework Actor-Network Theory, commonly referred to as ANT. A broad strokes definition of the framework, as given by science and technology in society (STS) scholar Darryl Cressman

(2009), is “tracing the complex relationships between governments, technologies, knowledge, texts, money and people.” It is important to note the fact that nonhuman elements are given equal standing with human elements in the network. According to STS sociologist Mike Michael (2017), the significance that is given to these nonhuman actors is often a major critique of the framework. The analysis that is being conducted for this paper avoids that criticism because no nonhuman actors have been identified as particularly significant components of the network. The actors being analyzed are the various school boards, government planners, real estate developers, and large corporations in the region. All of these actors are made up of human decision makers that have affected the level of overcrowding in Northern Virginia public schools.

Punctualization is an internal process of ANT that is vital to the successful use of the framework where the sociotechnical complexities of identified actor-networks are disregarded so that a larger actor-network may be established (Cressman, 2009). There are obviously many different subgroups within the four actors identified for this analysis; however, they must be ignored in order for the research to be appropriately concise and focused. Punctualization opens the door for a lot of criticism of ANT analyses because other scholars are able to argue against punctualizing one actor-network or another based on their personal beliefs (Cressman, 2009). ANT is still effective for analyzing networks as long as the choices made during the punctualization process are sound and thoroughly explained.

Brianna Fuller (2020) used ANT effectively in her analysis of the rise of the opioid epidemic in the United States. Fuller was successful in her use of this framework because she was clear while identifying and defining the five stakeholders in her network and what was important about each of them. More importantly, the connections Fuller drew between all of the actors were described in extreme detail and the reader is able to fully comprehend the role each

of them had to play in the network. The use of an illustration of the network was another brilliant move by Fuller to make sure the reader is able to visualize the connections that exist throughout the network. Fuller's analysis serves as a fantastic example to emulate for this research into the actor-network that is affecting the overcrowding of public schools in Northern Virginia. The actors and their connections need to be just as thoughtfully described and laid out for the reader.

Analyzing the Network

The network of organizations that has exacerbated the state of overcrowding in Northern Virginia public schools is intricate and multi-faceted. All four of the relevant actors that have been identified (local government planners, school boards, residential real estate developers, and large companies) play significant roles in the constantly changing landscape of the public school systems in the region. Smaller components exist within each one of the actors in this network, but it is the final policies and agreements that are made which matter the most and that this analysis concentrates on in order to provide the simplest picture of the situation. There are many different interactions between the actors in the network that lead to influential decisions. Oftentimes these interactions and the choices that follow are heavily motivated by political agendas that do not give due consideration to the repercussions that will harm the students and teachers of the community.

School boards are important governing bodies of the public school systems that consist of elected representatives from the various districts that have been designated within each county. The school board regulates and creates policies for virtually every aspect of the educational experience that the students in their county will have. Overcrowding is most affected by the decisions that a school board makes regarding rezoning, school renovations, and the construction of new schools. Rezoning is an arduous, and often tedious, undertaking that can go through many iterations before a satisfactory solution is found. A major concern that the school boards are

commonly confronted with during the rezoning process is how the new boundary lines will affect the socio-economic makeup of the schools involved. The Loudoun County School Board came under serious criticism from its constituents in 2016 for considering a “rezoning plan that would have concentrated the students from a largely poor, Hispanic neighborhood in two schools” (Balingit, 2016). Similarly, in 2018, the Arlington School Board received backlash for a plan which many believed would cause one elementary school to have a significantly larger amount of students that required free or reduced lunch (Koma, 2018). Both of these situations are prime examples of the difficulty of rezoning and also show that it is important for school boards to try and consider these issues ahead of time so there are no serious delays in correcting the main problem of overcrowding. When rezoning will not be sufficient to ease levels of overcrowding in the county, the school boards must resort to augmenting an existing school or constructing a new school altogether. These projects require extensive planning to ensure that they have proper funding and are being timed correctly based on student population growth estimates (Capital Improvement Program (CIP), 2023). There are currently 22 renovation or new construction projects ongoing at Fairfax County schools (Building Our Future, 2023). This high volume of work demonstrates how vital it is that the school boards make the correct decisions on what, when, and where to build.

Every county and independent city in Northern Virginia utilizes a planning committee or council to establish plans for the future of their locality and make rulings on potential projects that would occur within their jurisdiction. It is not uncommon for negotiations to occur between the proponents of a project and the planning committee in order for a project to receive approval. The negotiations get more extensive when the project seeks to change the designated use for the land that will be developed. Amazon went through a negotiations process with the Arlington

County Board while pursuing approval to construct its second headquarters, nicknamed HQ2, in an area zoned for residential use and also “add about 590,000 square feet of density to 1.56 million square feet that was already permitted” (Sullivan, 2019). Amazon is one of the components of the large companies actor that has been punctualized for the simplicity of this analysis. The stipulations that the Arlington County Board made Amazon agree to before allowing the construction of HQ2 are a great example of how local government planners try to ensure that major projects do not overwhelm their communities. Amazon had to commit to donating \$20 million towards affordable housing in Arlington; opening a 160-child public day-care facility; paying \$14 million to expand an existing public park; making their two buildings extremely energy-efficient and powered by 100 percent renewable energy by 2030; building two new protected bike lanes; turning its ground floor space into retail shops; providing an indoor event space with a capacity of 700 people for the county’s use four times a year; and performing multiple other transportation improvements in the area (Sullivan, 2019). It is astounding to read all of those promises listed out and contemplate how much they will cost Amazon. However, a surprising omission from the list is anything to do with supporting the local school system. Even though, as was mentioned previously, HQ2 is projected to create 25,000 new jobs in the area just for Amazon (Arlington Schools Brace for Overcrowding from Amazon HQ2, 2019). Local government planners contribute to school overcrowding when they coordinate massive projects with large companies without requiring that their locality’s schools be improved to handle the increased demand.

There are instances where members of a school board will advocate against a decision that a planning committee is considering making if they believe that the impact on the school system is not being given due consideration. The Prince William Board of County Supervisors

received public backlash from several members of the Prince William County School Board for being in favor of a proposal to make zoning changes regarding the density limit within the county's rural crescent region (Palermo, 2019). However, that is just about the extent of a school board's capabilities in these situations because they do not actually get any kind of vote in the proceedings. The members of the Prince William County School Board that opposed the proposal did attempt to pass an official resolution condemning the move on the rural crescent, but it failed by a vote of 5 to 3 along party lines with Democrats being the majority (Palermo, 2019). The support for the proposal by Democrats, and opposition by Republicans, would remain a trend in this case as the Board of County Supervisors approved the final version of the plan by a vote of 5 to 2, also along party lines with Democrats being the majority (Palermo, 2022). These two votes show how politicized decisions are within both school boards and planning committees. Unfortunately, these branches of local government are just as susceptible to political squabble and biases as every other level of government, which in this case may result in Prince William County students continuing to suffer from worsening overcrowding. The zoning changes were opposed by several members of the school board in 2019 because initial estimates showed that 10,000 new homes and 7,000 new students could be added to the rural crescent region (Palermo, 2019). These are worrying numbers for a county already experiencing severe overcrowding in its schools. The failed resolution from the minority on the school board argued that this influx of students would require "one additional high school, two middle schools and three elementary schools" for a total cost of over \$391 million (Palermo, 2019). These calculations clearly did not bother the Board of Supervisors because the final version of the plan gave the green light for at least 36,000 new housing units across the county in the spirit of boosting economic prospects and housing stock (Palermo, 2022). Ann Wheeler, the Chair of the

Board of Supervisors and a proponent of the plan, argued that concerns about crowded schools were overblown because the development would occur over a period of twenty years and the county was now better prepared to deal with the issue than in previous years; however, many remain skeptical of these assertions (Palermo, 2022).

Residential real estate developers have been running rampant in Northern Virginia for over a decade. Between 2010 and 2020, the number of housing units increased by the following amount in each county: 21,410 in Prince William; 32,632 in Loudoun; 19,151 in Fairfax; and 13,681 in Arlington (Annual Population Estimates, n.d.; Arlington County, Virginia - Census Bureau Search, n.d.; Arlington County 2010 Census Highlights, n.d.; Fairfax County, Virginia - Census Bureau Search, n.d.; Fairfax County 2010 Census Summaries, n.d.; Loudoun County Housing Units: 2022 Estimate Series, 2022). These figures sum to a total increase of 86,874 housing units across Northern Virginia during those ten years. Residential real estate developers lobbied local government planners to make zoning changes that would allow further housing sprawl, such as the alterations to the plan for Prince William County's rural crescent, which critics called a "developer's debauchery" (Palermo, 2022). These interactions between these two actors where residential real estate developers are able to convince local government planners to accommodate their desires have undoubtedly contributed to the school overcrowding issue plaguing Northern Virginia. The expansion of available housing went hand-in-hand with the population growth in the region during this time period, which was referenced previously. The demand for housing spurred the residential real estate developers into action, and then the creation of more places to live enabled even more people to make the move to Northern Virginia. The synergistic interaction of the population growth and growth in available housing helped

generate the nightmare levels of overcrowding that each county's school system is now experiencing.

Amazon may have made the biggest headlines when it selected Arlington for the location of their second headquarters, but many other large companies made significant decisions to relocate to, or expand their presence in, Northern Virginia. In 2018, the same year that Amazon made its announcement, nine other companies, including household names like Micron, Appian, KPMG, and Accenture, made similar announcements that are projected to result in 4,136 new jobs across Northern Virginia (Overman, 2019). Although this figure pales in comparison to Amazon's gargantuan 25,000 new jobs, it is still worth noting because even 100 new jobs in many areas of Northern Virginia has the potential to impact the level of overcrowding in the nearby schools. More recently, in 2022, the aerospace giants Boeing and Raytheon both announced that they would be moving their headquarters to Northern Virginia (Duncan et al., 2022; Gregg & Armus, 2022). These relocations are not as significant as the others that have been mentioned because neither company is planning on noticeably augmenting their number of employees in the region, for both companies it is more of an address change and new area of focus for executives (Duncan et al., 2022; Gregg & Armus, 2022). However, these two moves still provide evidence of the growing trend of large companies seeking a more meaningful role in the economy of Northern Virginia. This trend is by no means an accident either, but is actually a carefully cultivated scheme by local government planners to turn Arlington, and Northern Virginia as a whole, into a hub for technology companies (Armus, 2022). The local governments strive to land these large companies because of the tax revenue that they can provide as well as the general economic boost their presence provides through job creation and increased spending in the area (Armus, 2022). The strategy has been executed so well that local officials may need

to do little, if any, lobbying of large companies in the future to convince them to make a move, which was the case with Raytheon (Gregg & Armus, 2022). As more and more companies follow this trend, the population of the region will continue to grow because of the attraction created by the new jobs and flourishing economy. The population growth caused by these large companies will force school boards to implement the correct countermeasures in the most effective way possible so that the degree of overcrowding in schools does not worsen.

The economic progress stimulated by the strengthened presence of these large companies in Northern Virginia reveals itself to be the hidden third component of the relationship between the expansion of available housing and population growth mentioned earlier. A booming economy invigorates the efforts of residential real estate developers to provide more housing in the region, and also just attracts population growth on its own. Meanwhile, an increase in the development of housing options gives people more of a reason to come to Northern Virginia. All of these phenomena compound on one another.

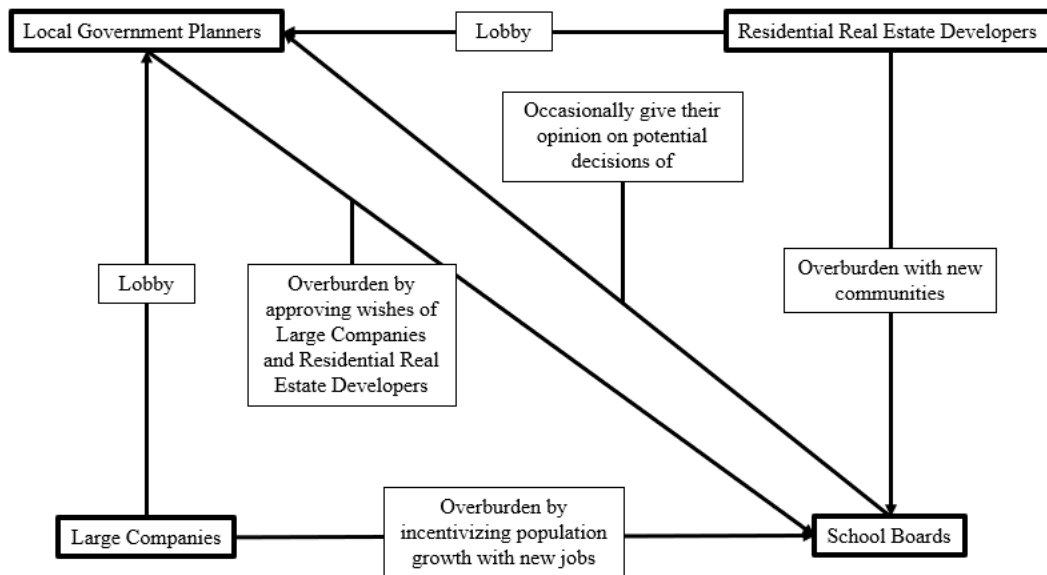


Figure 1. Actor Network Theory Diagram of relevant actors surrounding overcrowding of public schools in Northern Virginia (Barbuti, 2023).

Connections have been drawn between each of the actors identified in this network analysis, these connections are summarized above in Figure 1. All four actors play significant roles in impacting the intensity of overcrowding in the public schools of Northern Virginia, but the most prominent of them is the local government planners because of how much they influence the other actors. The members of these planning committees give residential real estate developers the green light to begin work in new areas of their counties. These planners also entice the large companies to establish major offices in the region and bring incredible amounts of new jobs. These interactions with two of the other actors worsen school overcrowding when the proper accommodations are not made for the school systems as part of the agreements, which has happened too often. The residential real estate developers also interact with the large companies in that they are galvanized to pursue more projects by the moves these companies are making to the region. The school boards in Northern Virginia are not able to have a proactive role in regards to handling overcrowding. Sometimes the board members do choose to speak up about decisions that they see as potentially extremely harmful to their school system, but more often than not they simply have to work with the cards they are dealt and do their best to improve or at least maintain the current levels of overcrowding.

A major limitation of this analysis is that several of the decisions and actions that are discussed have not been fully enacted. More time will need to pass before the results of these choices will be truly evident. For the moment, much of the analytical work has to be slightly speculative regarding how the recent activity of all the actors will impact the overcrowding in the school systems in the years to come. Another limitation of this research is that most of the information was gathered from news and magazine articles, both of which can be subject to bias. Future scholars should conduct interviews or surveys of the numerous people that make up each

actor in this network to determine their viewpoints on how their actor has improved or worsened the level of overcrowding in Northern Virginia public schools. A second analysis would benefit from those more direct insights.

Conclusion

School boards, local government planners, large companies, and residential real estate developers are all connected as groups that alter the level of overcrowding faced by students, teachers, and administrators of the public schools in Northern Virginia. The issue is a growing problem that is often exacerbated by the interactions that these four actors have amongst each other. The school boards implement a lot of countermeasures to try and reduce overcrowding, but every other actor needs to give more consideration to how their decisions are hurting the school systems. If they do not, the quality of the public school educational experience in Northern Virginia will continue to suffer.

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