New York Tech Dossier: Insecure Frontier Jobs? Staying Relevant in New York's Tech Ecosystem

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Series: **New York Tech Dossier: The Dark Side of New York's Tech Economy**

"Frontier" jobs in digital technologies promise lucrative career paths, but Max Papadantonakis's research suggests that these paths are insecure.

In the past five years, New York has become one of a few cities in the US with a large concentration of highly paid "frontier" jobs. Frontier jobs involve producing, installing, maintaining and deploying new generations of digital technologies, and they have become attractive paths for workers, especially college-educated men, who envision lucrative careers in tech (Autor 2019). New York City's tech ecosystem employs close to 300,000 tech workers in addition to supporting an additional 250,000 jobs; it generates $125 billion in total spending in addition to $5.6 billion in annual tax revenues (HR&A 2017). Since 2010, the tech sector has expanded rapidly, with almost half of such jobs located in computer systems design businesses (DiNapoli and Bleiwas 2018).

My research, based on 30 interviews with software engineers in New York City, explores how software engineers, who produce high-end technologies, experience precarity because of rapid technological change. What can the case of New York's software engineers tell us about how precarious work is experienced, and how its impact varies across different groups and social classes? Moreover, what does the case of software engineers tell us about the city's economy, if even highly paid workers in demand are insecure?

Workers in New York City: different skills, common insecurity

On both ends of the city's labor-market hierarchy, workers find themselves in precarious working conditions, with temporary work contracts, uncertainty, and isolation from protective frameworks of social insurance (Ross 2009). This is especially true for New York's gig economy, where workers dealing with algorithm-approved acceptance and response rates in companies like Airbnb, TaskRabbit, and Uber are experiencing volatility (Ravenelle 2019; Rosenblat 2018). Finally, jobs that are marketed as "cool" and part of the city's cultural industries, like music-industry personnel and craft-cocktail bartenders, have also been characterized by increasing precarity (Frenette and Ocejo 2018).

On the higher end of the labor-market hierarchy, members of what Richard Florida (2002) called the "creative class" also appear to experience precarity. Software engineers, designers, and other such workers, although enjoying such perks as "unlimited paid vacation," comfortable work environments and six-figure incomes, experience insecurity due to the risk of becoming obsolete in an age of changing technologies. Additionally, these workers perceive precarity and risk as natural,

adopting an entrepreneurial mentality, and accepting the blurring of the division between work and leisure. Such venture labor (Neff 2012) and aspirational labor (Duffy 2017) has inspired scholars to speak of an "entreprecariat" (Lorusso 2016), a group of highly skilled, creative workers who are motivated to be entrepreneurs while lacking full-time jobs.

Big tech companies like Google and Facebook, which employ 7,000 and 1,000 workers in New York respectively, have been characterized by employees as "cult-like" work environments (Rodriguez 2019) and use a two-tier system that treats contract and temporary workers as expendable, offering them lower salaries, second-rate benefit plans, and no paid vacation (Wakabayashi 2019). Some of these observations echo previous work by scholars like Ross (2004), who described some of these companies as "high-tech sweatshops." Recently, workers have staged walkouts in some of the city's largest tech companies in order to address gender and racial inequality, sexual harassment in the workplace, and unethical business alliances with the military (Conger and Wakabayashi 2019). Such developments have inspired scholars to explore the interconnected (and intersectional) nature of dimensions of inequality, particularly in the tech sector (Alfrey and Twine 2017; Twine *forthcoming*).

Software engineers in New York City

Software engineers are a key subset of tech workers directly involved in the production and design of new digital technologies. There is rising demand for them, not just in software companies but across an array of industries (such as finance, media, education, and health), including startups and large firms (HR&A 2017). The US Bureau of Labor Statistics (BLS 2019) estimates the annual mean salary for software developers in New York was $116,830 in May 2018. In fields such as artificial intelligence where there is huge demand for highly qualified engineers, salaries can be even higher. The BLS also projects these jobs, throughout the US, to grow 24% from 2016 to 2026, much faster than the average for all occupations. Yet preliminary research shows that software engineers labor under enormous pressure doing work that is uncertain, unstable, and insecure.

High-wage insecurity

William is a 35-year-old senior application developer and tech leader. He works 40–65 hours a week in one of the city's major financial firms, earning more than $200,000 a year. Sometimes this number goes up to 60–70 hours a week before project deadlines. He spends significant time reading blogs and sharpening his skills. Although he has worked at the company for over 10 years, William, who identifies as Caribbean-American, feels insecure about the future:

> What is the shelf life of an engineer? In college, you can stay up and hack till the sun goes up. As you move forward in life, you get different responsibilities and different priorities, you must keep up with the latest reactor, distribute systems, AWS, Java scripts… it takes a toll on you. The average age of engineers working in Facebook, Google and Amazon is about 28. I ask myself the same question repeatedly: "Am I good enough?" If you are not insecure, you can get blindsided. You do not want to be in a position that [*sic*] a new person comes in and does the job better than you… you must stay on your toes.

The changing nature of programming languages and tools concerns all tech professionals in New York, who fear that they will be replaced by younger workers trained in coding bootcamps, intensive programs that offer people with little exposure to computer work the opportunity to learn the latest front-end or back-end engineering technologies (e.g. Node, React, Python) in 12 weeks. New York has more bootcamps than any other US city (Zukin *forthcoming*). Although these programs pride themselves on high job placement rates (General Assembly 2018; Flatiron School 2018), critics suggest that they are mass-producing engineers who will struggle to remain relevant in an age of deskilling (Bailey 2017).

Tech professionals like William put in extra work time to remain up to date with the newest technologies and programming languages, either through free online resources or the city's many public tech meetups and hackathons. Such commitment to skill learning is seen by some as an important part of a "tech culture," and by many as a professional necessity to network and keep learning (Neff 2012). Events like hackathons have become important corporate-sponsored events in New York for both students and veteran software engineers, with companies and sponsors using tech workers' love of coding and rituals of collaboration to facilitate and institutionalize innovation (Zukin and Papadantonakis 2018).

Competing with younger workers

For older workers it becomes increasingly difficult to constantly learn new skills, produce more code after the working day, and network in public events. Kareem, a 44-year-old African-American full-stack engineer, explains that there is a lot of ageism in the tech ecosystem:

> It is harder for older people to compete with some of the young ones. The languages have changed, as well as the products offered. You are constantly forced into renewing yourself, in searching, in discovering. When you are young, this is exciting and cool. You can burn yourself out and you enjoy it. You want to be ahead of the curve and look back at what you achieved. But when you get older, this becomes very tiresome. I have sacrificed a lot of time, and a lot of my life for this profession.

Rashid, a 40-year-old back-end engineer from Bangladesh, expressed his disappointment at his treatment by some of the largest tech firms in the city:

> A lot of tech companies are unwilling to pay market rates for their current engineers even though those current engineers have extensive experience with their […] business. We are more valuable than fresh hires. I don't think they realize the damage that their negligence does to their institutional knowledge and their culture.

According to Derek, a director of software engineering at Goldman Sachs who recently left Facebook, management prefers younger software engineers who will not obstruct quick deployment of code and the streamlining of finished products and applications:

> Managers would rather hire junior software engineers because they do not want to deal with people who have strong opinions. If we hire someone else who is senior they are already set in their ways, and they have very strong opinions that you always need to argue with. So, you want modular people that you can just have them [*sic*] do these tasks, just assign them, this is what I want to do, do it, do as I say.

Precarious frontier jobs?

Despite the optimism surrounding the rapid growth of frontier jobs in New York, these interviews show that a portion of highly skilled, highly paid tech engineers face increasing insecurity due to rapidly changing technologies. Some tech workers seek out managerial tracks to secure more stable careers. Managerial roles, however, require new sets of skills, like social and leadership skills. Such requirements pressure workers to invest additional time and effort in coping with new responsibilities. When supervising teams and reporting to higher-ups who do not share their technological vision, software engineers are forced to conform to a reality much different from the one they signed up for. In an age of rapid technological change, the digital technologies that attracted workers to meaningful work are abandoned in pursuit of job stability. We do not know how this will affect New York's "tech ecosystem."

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