FACTORS THAT MAKE JOURNALISTS CHANGE HYPOTHESES DURING INVESTIGATIONS

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Abstract

Journalists always go into investigative reporting with hypotheses, but few researchers have studied how journalists change their hypotheses when working on investigative stories. This research, through in-depth interviews with 14 journalists, found out that journalists changed their hypotheses because of additional information that they got from human sources, data and documents. This research also found that the original hypotheses usually came from wrong or unprovable tips, previous news stories on the same topic, editors' guidance, social movement, previous reporting experience, personal experience, and journalists' passion in revealing the hidden truth. In the end, to avoid having the wrong or unprovable hypotheses, this research suggests journalists being very cautious when trying to apply past experience to the new story ideas, carefully treating editors' guidance and tips, especially tips not coming from the insiders, and being reserved when trying to apply the social and journalistic conventions.

Key Words

Hypotheses; Investigative Reporting; News Production; In-Depth Interviews

Chapter One: Introduction

Investigative reporting does not come out of nowhere. It may come from a tip, a whistleblower, data, documents, observation, etc. Before getting ready to dive into the long and in-depth investigation, journalists need to build something that connects the investigative pitch and the investigation. This bridge is their hypotheses.

This study focuses on the factors that make journalists change their hypotheses during their investigations and the formation of journalists' original hypotheses.

There are few studies about the hypotheses in investigative reporting and almost none talk about how journalists change their hypotheses in investigative reporting. So, this research aims to fill in the gap.

Beside the academic importance, this research is also helpful to journalists in practice.

Why is it important to scrutinize the hypotheses that investigative journalists make? Hypotheses are the basis of the investigation. Investigative journalists usually spend weeks, months, or even years on a single piece of work. If the hypotheses, the bases, lead them down the wrong path, their long effort may be in vain. So investigative journalists need to be very careful with what hypotheses they make and always be willing to adjust them when necessary.

Studying the hypotheses in investigative journalism is very important in understanding the news production process and how journalists pursue objectivity. The pursuit of objectivity permeates every detail of the news production process, including how the journalists make and change their hypotheses.

The change of hypotheses is tightly related to the objectivity of the reporting. When journalists stick to the wrong hypotheses, their conclusions tend to be wrong as well. So, figuring out how other journalists changed their hypotheses in investigative reporting and where these

original hypotheses came from would be important for journalists to reflect their own process and help them be more objective in their reporting.

This research idea actually came from my own reporting experience. Many times, I found things did not work out as I thought. So, I started to realize that I did expect something before I began my reporting process. What was contained in the "I thought" intrigued me. I realized my own expectation, my own hypothesis in my reporting was usually the mixture of rational working ideas and irrational stereotypes, even biases. So, I began to think about if other journalists share the same problem. I hypothesize that journalists changed their hypotheses in investigative reporting because they had cognitive biases when making the original hypotheses. But, after conducting the research, my conclusions changed.

This research, through in-depth interviews with 14 journalists, found out that journalists changed their hypotheses because of additional information that they got from human sources, data and documents. This research also found that the original hypotheses usually came from wrong or unprovable tips, previous news stories on the same topic, editors' guidance, social movement, previous reporting experience, personal experience, and journalists' passion in revealing the hidden truth. In the end, to avoid having the wrong or unprovable hypotheses, this research suggests journalists being very cautious when trying to apply past experience to the new story ideas, carefully treating editors' guidance and tips, especially tips not coming from the insiders, and being reserved when trying to apply the social and journalistic conventions.

Chapter Two: Literature Review

Investigative reporting starts from a hypothesis in many cases, according to The Investigative Reporter's Handbook (Houston & Horvit, 2021). Hypothesis is "a proposed explanation for a phenomenon" (Baig & Khann, 2014). Though there are few studies about the hypothesis in investigative reporting, there are studies about how perceived knowledge and biases influence news production. Besides, much research about cognitive biases has provided theories to what may be contained into the hypotheses.

Studying the factors that make journalists adjust their hypotheses during the investigation is examining how journalists think about the stories in their news gathering process. Studies about objectivity have measured perceptions in news production (Tuchman, 1972). What is more, though studies directly related to the hypotheses in investigative reporting are scarce, some researchers have given insight into journalists' hypotheses in all types of reporting.

In studying objectivity as a ritual in the newsrooms in 1972, Tuchman pointed out that, though journalists tried many procedures to achieve objectivity, they still could not reach objectivity because of several reasons. Hypotheses that journalists make can be related to perceptions they have, so this study provided an important insight into the issue that this research is about.

About two decades later, in 1989, Stocking and Gross published a book about the cognitive bias in news production. Their book, *How do journalists think? : A proposal for the study of cognitive bias in newsmaking*, is fundamental in studying the hypotheses in news production. It raises the awareness of paying attention to the cognitive biases in news production. As the authors mentioned in the book, previous research had focused too much on the environmental reasons that cause inaccuracy in news. The book suggested that researchers

should pay more attention to the journalists themselves instead. The book mentioned that although people are willing to be objective, they still tend to find information in ways that confirm their initial beliefs. As the authors put at the end of the book: "the contemporary cognitive perspective will not have an effect unless investigators of news work see its potential." (Stocking & Gross, 1989, p.87)

The book also identified biases that may occur in the cognitive process when journalists process information: categorization, theory generation, theory testing, selection of information, and integration of information (Stocking & Gross, 1989).

One year later, Stocking published more research on journalists' hypotheses with another author, LaMarca. In *How journalists describe their stories: Hypotheses and assumptions in newsmaking*, the authors let 11 journalists describe their stories and observed their description. They found that all journalists did have hypotheses and assumptions about what they covered without any exception. The authors also differentiated hypotheses and assumptions. They used the definition of hypotheses that they are "tentative beliefs, i.e. beliefs that are open to question and subject to activities designed to verify or falsify them." (Stocking & LaMarca, 1990, as cited in Snyder, 1984) Then, the researchers concluded that the interviewees' beliefs could be categorized into three types: descriptive beliefs, which are falsifiable descriptions, such as "the council may have made its decision"; evaluative beliefs, which are subjective judgements, such as "the decision may be a poor one", and prescriptive beliefs, which are exhortatory statements that a course of action is good or desirable, such as "the council should endorse another solution" (Stocking & LaMarca, 1990, p.296).

Stocking's two studies are among the most related studies to this research. They defined the hypotheses that journalists make and explained the role that cognitive biases play in making hypotheses.

Since previous research related journalistic hypotheses to cognitive biases, I also would like to use cognitive biases as the theory in my own research. It is thus necessary to review the literature related with cognitive biases.

Cognitive bias has been well studied in psychological science.

One definition of cognitive bias is, "mental errors caused by our simplified information-processing strategies" (Heuer, 2007). Behimehr and Jamali also used this definition in their study on relations between cognitive biases and some concepts of information behavior (Behimehr & Jamali, 2020). Cognitive biases are also defined as "judgment errors that people commit due to irrational thought processes," according to Ruth's study (Ruth, 2020). Similarly, Sills defined cognitive biases as errors in people's thinking that impact people's process of making decisions (Sills, 2020). Cognitive biases come from "subconscious mental procedures for processing information", according to the definition from the Central Intelligence Agency (Central Intelligence Agency, 2015). Out of the cognitive biases, people draw specific conclusions, which are formed from past information stored in people's brains (Sills, 2020).

Sills' research also introduced three types of cognitive biases: confirmation bias, anchoring bias, and over confidence bias. Confirmation bias is about picking the information supporting people's preconceived beliefs. Anchoring bias is that people tend to use one piece of information to shape the decision-making. When making difficult decisions, people's anchoring biases usually come from existing values, previous memories and similar decisions. Overconfidence bias is that people tend to think they make excellent decisions so that they may

ignore potential risks or negative effect of the decisions. This article also mentioned ways to improve people's decision-making, including thinking about data, availability, environment, reflection, relational impact and awareness.

Similar to this, Behimehr and Jamali's study, using qualitive research methods, studied how cognitive biases influenced the information behavior of graduate students and identified some cognitive biases that could happen during the information behavior.

The researchers noticed several cognitive biases that impacted the graduate students. One is availability bias, which means people prefer accessible information sources to sources that have high quality but are not accessible. The second cognitive bias noticed is reactance, meaning when people feel coerced, they will react to the coercion by increasing the willingness to the behavior that is restricted. The third one is Willingness to Return theory. Similar to the availability bias, Willingness to Return means people are more willing to turn to sources that were successfully used in the past. Fourth, these students' information behavior was also influenced by the combination of ambiguity bias, status quo bias and stereotypical bias. Ambiguity and status quo biases mean people want to avoid unfamiliar information sources and keep using the unchanged sources, while stereotypical bias means people are afraid to be judged by stereotypical opinions when they seek information. Besides, the students' information behavior was also influenced by information bias, which is the tendency to request unnecessary or unhelpful information, especially when people are facing uncertainty. Lastly, students demonstrated attentional bias: people pay more attention to certain aspects of information.

Beside cognitive biases that the studies above mentioned, an article from the Business Insider listed 58 cognitive biases. Many of them are related to the hypotheses in investigative journalism. Below follows a synthesis of related cognitive biases.

1. The first group of related cognitive biases is about how people only rely on certain information, but not the whole information, to make decisions. For example, anchoring bias means people over rely on the first piece of information they get; Confirmation bias means people tend to only listen to the information that confirms their perceptions; Halo effect means when people feel positive about someone in one aspect, they tend to feel positive about this person in regards to other aspects; Ostrich effect means people tend to ignore the dangerous or negative information; Recency means people tend to think the most recent information is more important than the previous one; Selective perception means people's expectations influence their perceptions and they only see things in a particular frame; Salience means people tend to focus on the most recognizable feature; Status quo bias means people tend to use the sources they are familiar with; Negative bias means people tend to emphasize more on negative incidents rather than positive. With the cognitive biases above, journalists may make hypotheses based on what the first source or the whistleblower tells them, or make hypotheses based on only one tip. Journalists may also over emphasize the outlier. For instance, availability heuristic talks about how people sometimes overestimate the information that is available to them and ignore the fact that the available information may just be an outlier. Stereotyping is also a cognitive bias that can be included in this group: people expect one group of people share certain qualities without having enough information about individuals in this group. Journalists' stereotypes may make them make the wrong hypotheses.

2. The second group of related cognitive biases is about how people's decisions-making is related with their emotions. After heuristic talks about how people's decisions are influenced by their current emotions.

3. The third group of related cognitive biases is about how the past or future influence the present. Observer-expectancy effect is about how people's expectations influence the perception of the results. Similarly, conservatism bias means people use long time to believe the new evidence since they are still trapped in the prior evidence; Outcome bias means people judge a decision on its outcome rather than how the decision is itself right now. In investigative stories, the patterns of making hypotheses in the past may influence journalists' hypotheses.

4. The fourth group of related cognitive biases is about how people's decisions-making is impacted by others. Bandwagon and herding effects tell that people tend to believe some beliefs once a group of people are persuaded by these beliefs. Journalists may be influenced by editors or the readers when they make hypotheses.

5. There are also some other related cognitive biases that cannot be categorized into any group. Frequency illusion, which is people have the illusion that something appears everywhere, may make journalists exaggerate the frequency of something and therefore make the wrong hypotheses; Fundamental attribution error, meaning people tend to conclude the reasons why something happened as the intrinsic quality of someone instead of the situation where that person is in, may lead journalists to wrong hypotheses in which they ignore the surrounding environment or social background; Scope insensitivity, meaning people fail to realize the real scope of something, may be the reason why journalists wrongly hypothesize the scope of something; Journalists may also rely too much on the experts when making hypotheses, which reflects the cognitive bias of seersucker illusion, which means people tend to rely too much on experts' opinions. There is another bias that may explain why journalists keep moving on in the investigation without realizing the biases: people's failure to realize they have cognitive biases is a bias itself, which is called bias blind spots.

Another article, about how to reduce cognitive biases, can also be helpful when studying why journalists change their hypotheses in investigative reporting. Christian says that journalism schools could teach new journalists how to avoid cognitive biases (Christian, 2013). The author suggested that journalism schools should help students foster good cognitive habits so that they can have better professional skills. These cognitive habits, according to the author, include thinking about how we think; counterarguing the story; considering the Fault Lines, which are race, class, gender, generation and geography, five prisms through which U.S. people see the world (Christian, 2013, as cited Maynard Institute, 2011); taking another's perspective; employing the contact hypothesis; creating reportorial accountability through feedback (Christian, 2013).

Beside cognitive biases, some studies used other theories to explain what may be influential in the hypotheses that journalists make in producing the news. For example, Shoenberger and Rodgers measured how the perceived health reporting knowledge influenced journalists' health coverage. Their study, Perceived health reporting knowledge and news gathering practices of health journalists and editors at community newspapers, found that journalists with higher perceived health reporting knowledge may be better at reporting in a more thorough way and make judgment more independently than journalists with lower perceived health reporting knowledge. Also, the authors found that journalists with higher perceived health reporting knowledge rely on a more diverse number of sources to form the basis of a story idea (Shoenberger & Rodgers, 2017).

The literature review here has identified well-established research into cognitive biases, but they are seldomly related to the news production process in journalism; few studies about the use of hypotheses in journalism; and almost none regarding investigative journalism.

Given the existing gaps mentioned, my research on the factors that make journalists adjust their hypotheses during the investigation in investigative journalism should bring useful information.

Chapter Three: Professional Analysis

Factors that make journalists change hypotheses during investigations

Journalists usually go into investigative stories with initial working ideas, or hypotheses. However, many of them did not stick to the same hypotheses all along the investigative process. After 14 in-depth interviews with journalists with more than 13 publications (or independent journalists), based in or coming from the U.S., Canada and Russia, this research found that journalists usually changed their hypotheses in investigative reporting because they gathered more information from human sources, data, and documents. Also, the original hypotheses usually came from wrong or unprovable tips, previous news stories on the same topic, editors' guidance, social movement, previous reporting experience, personal experience, and journalists' passion in revealing the hidden truth.

Human sources lead to new reporting angles

The research found that almost all journalists interviewed had changed their hypotheses totally or partly based on the additional information gathered from human sources. These sources included people directly involved in the stories and experts with knowledge about the reporting topics.

When Brad Hamilton, the editor-in-chief at the Hatch Institute worked on a story about the erotic massage parlors for the New York Post, Hamilton and Hamilton's reporting partner thought human trafficking was involved. But after spending four months talking with people in the industry, customers and experts, they realized that most people they spoke to got into this industry voluntarily and employees weren't required to provide sexual services. In the end, an investigative story idea turned to an explanatory story about the erotic massage industry.

In Hamilton's words, "We set out to expose something, and we wound up chronicling something."

Hamilton's change of the story idea was totally based on interviews with sources: "The fundamental element of any investigative story is talking to the people who are involved, the people from all sides of it. … And so, the more we talk to people, the more we realize, this isn't at all what we thought it was."

Hamilton also said, "You can look at data and you can look at reports, and that's the best way to find answers to things? It's not. It's just not. It's helpful. It always can be helpful to look at data, and reports. … I highly recommend it. But when you want to find out what's really happening, hey, there's a bunch of people gathering on the corner over there. What's going on there? Well, the only way to find out is to go over and talk to them. What are you guys doing here? Right? How you find out the real deal about things is you talk to people. Now sometimes they lie to you. But the more people you talk to, the better you get a sense of what's real."

Similarly, when working for *the Los Angeles Times*, Pulitzer Prize-winning journalist David Cay Johnston, now the editor-in-chief of DCReport.org was tipped that a young man was the killer for a crime. But when Johnston talked with the young man face-to-face, that young man cried. Through the talks with the young man and other witnesses, Johnston realized he did not commit the crime at all because he was proved to be in a house which was not the crime scene when the crime happened. And Johnston found the real killers later.

USA TODAY journalist Kenny Jacoby worked on a story about how Louisiana State University was mishandling sexual misconduct cases. "It was from a tip from a father of a female athlete there who said that his daughter was being beaten up by a football player and LSU was covering it up. And he thought that LSU was covering up other incidences." So, at first,

Jacoby thought that he would focus on cases among athletes. But after he talked with sources from social media, he realized LSU covered up the sexual misconduct cases not only for athletes, but for all students.

Kaiser Health News journalist Laura Ungar once worked on how lead tainted drinking water in hundreds of schools and daycares across the U.S. for USA TODAY. In that story Ungar did not expect that many places were not required to test lead. It was through talking with experts and residents did Ungar found this perspective of the story.

"It was talking to a whole lot of experts, and just going to some of these places and talking to them," Ungar said in the interview.

Also, Canada-based journalist Chloe Rose is writing about a policy in which the federal prisons in Canada reduced dental care for all inmates from one dental checkup every year to one dental checkup every five years. Rose thought dentists would have been sympathetic about inmates but through interviews with dentists Rose found that most dentists interviewed did not care about their health.

"In the story, I've interviewed a couple of dentists who really went fully on the record saying, you know, inmates are animals, and they never took care of their teeth before they entered prison. So why are we doing it? These are people who have taken an oath to take care of people. And they're just going on the record saying that they don't think these people deserve care," Rose said in the interview.

In the examples above, journalists got more information from human sources by talking with them. The example below will show how a journalist got more information through the on-the-scene experience provided by human sources.

In another story by Rose she wrote that after the legalization of marijuana in Canada, many people grew cannabis in rental apartments, which caused troubles for landlords. Rose "didn't want that story to seem like it was sympathetic towards the landlords." After she started her interviews, she changed her approach. She understood how landlords had to deal with cannabis grown in the basement of their apartment buildings.

"That's such a powerful scene of her (the landlord that Rose interviewed) walking downstairs and sort of seeing the light, the rows of pot and like the destroyed building that she's been owning for years and years," Rose said.

Sometimes, it was also important to talk with human sources even with enough data. Pulitzer Prize-winning journalist Matt Carroll once worked on a story about how many pounds of waste was recycled in each house and found that the data in two towns stood out because they were about ten times higher than the average. So, Carroll expected that there were mistakes in the data. This was the case for one of the towns: people mistakenly added a zero after the real number. In another town, however, after talking with the residents, Carroll found that the town was flooded, which destroyed the washers and dryers in their houses. And the heavy washers and dryers were all recyclable so the total pounds of recyclables in this town went way higher than other towns.

A reporter that Carroll worked with on another story realized she misunderstood the data by talking with people who gave her the data. She worked on a dataset about complaints towards police officers and saw that certain police officers had lots of complaints. But after talking with the police, she realized that, every time there was a hearing, the police would put another checkmark in the dataset and it looked like it was another complaint, but it just meant there was one more hearing against this officer.

So, we can see that human sources influenced journalists' changes of hypotheses in investigative reporting in three ways: talks between human sources and journalists gave journalists more information to make journalists change their hypotheses; human sources created on-the-scene experience for journalists which gave journalists more information on changing their hypotheses; human sources helped journalists have better understanding of the data which made journalists change their hypotheses.

Data and documents cause reporters to change course

Jacoby and his colleagues worked on a story co-published with ProPublica about how the police misused the Marsy's Law. Marsy's law was designed to protect victims so that they could be protected from harassment by their attackers. For example, victims should be notified about release or escape of the accused under Marsy's Law. But the police sometimes used it as a shield law to hide their identities from using force, which means that when the police used force sometimes, the police cited Marsy's Law to hide their identities. In this story, Jacoby and his colleagues changed their hypotheses because of the use of data and documents.

The first hypothesis was that they thought the misuse of Marsy's Law as a shield law for police using force was a problem in all states enforcing the Marsy's Law, but by requesting copies of police reports where officers had killed private citizens in all states that have Marsy's Law, they found that the misuse only happened in specific states, Florida, South and North Dakotas. Then, after they had a close reading of each law in these states, they found out the reason why the misuse only happened in these states: they found the particular provision that allows the police to use Marsy's Law as a shield law in Florida, South Dakota and North Dakota's laws. The second hypothesis was that they expected that this kind of misuse happened

only in fatal shootings. However, by reading the police reports, they found that the police invoked Marsy's Law as a shield law also in cases where the shootings were not fatal. The third hypothesis they had was that the police invoked the Marsy's Law on their own when they were embarrassed. But it turned out that it was usually the police department that invoked the Marsy's Law on behalf of the police officers. They found this out through the data that they collected by a survey to different police agencies.

Independent journalist Brandon Roberts once reported that most people killed by the local police in Vancouver, Washington were those with unaddressed mental health needs. At first Roberts wanted to look at the racial disparity in the dataset and noticed that police officers often shot unarmed black men. But with a closer look to the dataset and the over-1000-page long police records, Roberts realized that the police shot but did not kill any of them. Instead, "People that they killed were purely people with behavioral health issues, most of whom were having a crisis in that moment when the police showed up or gotten involved in some way." So, the story was pivoted from a racial disparity angle to a behavioral health angle.

Spotlight PA journalist Joseph Darius Jaafari made a wrong hypothesis when writing about how different county jails in Pennsylvania tracked the COVID-19 pandemic.

"I didn't expect two things. One, the counties that I didn't expect to do well, were doing very well. And the counties that were doing very poorly, I expected to be doing very well," Jaafari said in the interview.

Jaafari figured this out by filing a Right-to-know request, a local version of Freedom of Information Act request. And Jaafari then ranked the performance of different counties with the data and found out the result.

Johnston mentioned many rules suggested to other journalists in the interview. One of them is, get the document. Johnston quoted another journalist and government administrator, Wallace Turner, who won a Pulitzer Prize in 1957 while working for The Oregonian in Oregon, "If it's important enough for you to write about, somebody already wrote it down. Your job is to mine that great mountain of bureaucratic paperwork to find the golden nugget, which will get your byline onto the front page of the newspaper."

Sometimes, journalists said that all three -- human sources, documents and data – pushed them to change course.

For example, when Kaiser Health News journalist Lauren Weber worked on the story co-published with the Associated Press, hollowed out public health system faces more cuts amid the virus, Weber and the reporting team at first just expected that public health in general had been neglected, but they did not know the extent of it. The reporting hypothesis started to evolve after they got to look at the data and talked with about 150 sources. So, the evolution of hypothesis in this story was from the combination of data and human sources.

Sometimes, journalists got an alert that some hypotheses might be wrong by checking the data or documents, then they validated the alert by talking with human sources, such as insiders or experts.

When still a student, Midwest Center for Investigative Reporting journalist Madison McVan once thought that university staff overspent in travelling. But after obtaining the travelling expense data through open-record requests, McVan realized that there was no outrageous spending. Then, McVan talked with those that had higher expenses and it turned out that their spending all made sense.

Other times, journalists got tips from human sources which made them start to think twice about the original hypotheses. Then they used data or documents to challenge the hypotheses even further.

When Matt Carrol and the Spotlight team of *the Boston Globe* covered the Catholic Church sexual abuses, they at first just realized that it was a cover-up story for certain priests but did not expect the scale. It was the tipster, former priest Richard Sipe who tipped them that there were much more priests than they thought who abused children. Sipe suggested the Spotlight team paying attention to all the priests who had a pattern of always having sick leave.

"He (Sipe) was the guy that sort of gave us the big picture," Carroll said in the interview.

Then, via checking the church records and court documents, the Spotlight team managed to prove that those with a pattern of sick leave were indeed those who sexually abused children.

So, in this case, one important human source made journalists realized the potential problem of their hypothesis and documents that journalists found proved what the sources suggested.

One journalist mentioned they seldom changed their hypotheses during the investigative process, but they usually did a good job testing hypotheses early in the pre-reporting process. Center for Public Integrity journalist Joe Yerardi mentioned in the interview that they usually perform extensive pre-reporting, which combined story search, data search and talks with experts.

"I mean, you do your research. You do your research beforehand. You do a story search--Has there been previous reporting about this topic that they think that something might be going on?" Yerardi said.

Where journalists' original hypotheses in investigative reporting came from

This research found that journalists' original hypotheses that got changed later usually came from: wrong or unprovable tips, previous news stories on the same topics, editors' guidance, social movement, previous reporting experience, personal experience, and journalists' passion in revealing the hidden truth.

Wrong or unprovable tips

In David Cay Johnston's crime story mentioned above, Johnston got the wrong tip. Broadcast journalist Shay McAlister who is with WHAS11, dropped a story about community judges because the tip that the judges were corrupt could not be proved. Similarly, Madison McVan was tipped that religion group Project Blitz was responsible for introducing a legal bill in Missouri. But McVan could not prove what the source said despite of doing the research and reporting with due diligence. In the end, McVan had to change the original reporting hypothesis.

But McVan also mentioned that in many cases the information from human sources was reliable. McVan pointed out that sources with insider information are more likely to provide accurate tips than outsiders.

"Because when the information comes to you from inside, it usually turns out to be true," McVan said.

McVan said that the tip on the religion bill story "wasn't a tip from like someone who worked at Project Blitz and had inside knowledge, it was just an outside observer." However, when McVan worked on another story about meatpacking in which McVan did not change the story hypothesis, the sources were insider sources such as workers themselves, labor advocates, or immigrant rights advocates who have connections with workers.

Brad Hamilton said in the interview, “During my time at *the New York Post*, there are many stories where you get a tip, you think it's interesting, you feel like it's going to work out. And then, you know, most of the stories don't work out, because you just can't get the information, you can't answer the question, you're lacking an understanding of it, or there is an assumption that you made, you know, that doesn't turn out to be true.”

To avoid believing in the wrong tipsters, Matt Carroll advised, “You have to be prepared to abandon your hypothesis, if the facts don't support it.”

Previous news stories on the same topics

It’s common for journalists to get ideas from other stories they read or watched, but these story ideas might not work out in their own experience.

McVan in the end did not go with the hypothesis that university staff overspent because this could not be proved. But how did McVan get into this idea in the first place? McVan came up with the story idea because other journalists in other places did the same story.

Brad Hamilton’s hypothesis that human trafficking happened in erotic massage parlors came from another journalist Nicholas Kristof’s reporting on violation of human rights overseas. But it turned out that Kristof’s experience did not fit into Hamilton’s story.

Editors’ guidance

Sometimes, editors’ guidance was also one of the factors that formed journalists’ hypotheses.

Southern California News Group journalist Beau Yarbrough said their editor once learnt that some people in the Los Angeles County waited for the leftover COVID-19 vaccines prepared for people eligible to make appointments but there was leftover because those people did not show up for the appointments. The editor suggested Yarbrough checking other counties

for similar stories but through the investigation Yarbrough just could not prove that the same thing happened in other counties.

"So that was an example of the editors came in with an idea that this must be happening based on the fact that it's happening in one place, they want to extrapolate it out to be multiple counties with this," Yarbrough said

Social movement

Social movement influenced some journalists' hypotheses as well.

As mentioned above, Brandon Roberts wanted to focus on social disparity when looking at the police shooting data. Roberts mentioned the reason why: "The whole reason I started even looking into this police stuff is because the Black Lives Matter." So, we can see that social movement influenced how Roberts made initial hypothesis when checking a dataset in investigative reporting.

But Roberts also mentioned, "But if you have a data set, and it doesn't fit in with the obvious question that you're going to ask, the data shouldn't be useless, you know, maybe for a specific story, but it shouldn't be totally useless."

Previous reporting experience

Previous reporting experience can often give journalists great story ideas, but it may also lead to wrong hypotheses.

Yarbrough worked on another story in which the hypothesis was that the suicide rate would not change dramatically, but it turned out that the adults suicide rates turned down dramatically. Yarbrough mentioned they originally expected the suicide rate would not change much because of their familiarity with the community.

“We're used to getting the police blotters coming in and the press releases from the police department and hearing the phone calls from family members of victims or of the accused of stuff. So, we have a pretty good sense of how often crimes happen in the community,” Yarbrough said.

Also, Yarbrough once worked on a one-year project about four suicide deaths that made a large impact in the community. “If suicide rates had really spiked up dramatically, it would have had a much bigger rip, I was expecting to have the same sort of effect,” Yarbrough said.

So, it was previous reporting experience that made Yarbrough have the original hypothesis.

Personal experience

Personal experience played an important role in some cases.

Chloe Rose and Joseph Darius Jaafari said that they had biases coming from personal experience in making hypotheses in their stories.

When working on the dental care in prison story, Rose thought dentists would be sympathetic towards inmates because Rose has a very good dentist.

“I guess, just because I've lived a very privileged life. And I've always assumed that, like, my dentist has my best interests at heart, you know.”

Again, when writing about how cannabis planting hurt the interest of landlords, Rose did not want to sympathize with landlords at first: “I don't have a lot of sympathy for landlords personally in my life.”

In another case, Jaafari does not trust the police, personally.

“And not just because like, we should be skeptical of any American government official, but just because my own bias is like, I've had experience with police, but I can't trust them,” Jaafari said.

Facing this, what Jaafari usually does is to still give a voice to the police: “But I still gave them enough due diligence where I can say I gave you a shot, right? Because at the end of the day, I still feel uneasy about trusting police spokespeople or trusting police officials, because I don't think I'm getting the truth all the time, if at all. However, the only way that you can combat that bias and understand that bias comes from also my past experience reporting on police for so many years, is that you give them so much time that you would give any of your sympathetic sources. So, I spend days with my sources, and I offer to spend days with police, like it seems to be only fair, that if I'm going to spend four days with the person who says they were beaten by police, I should be spending four days with the police.”

Journalists' passion in revealing the hidden truth

The research also found that journalists' hypotheses sometimes simply came from their willingness to reveal the hidden truth.

McVan said, “When people talk about bias in journalism, like you think about like politics, or, you know, like left versus right. And it wasn't even a bias like that. I think it was just that like I as an investigative reporter wanted to have a really cool investigative story. And so I really wanted like, I really wanted to uncover this like hidden thing.”

McVan also said, “It's just inherent to the job of an investigative journalist that you're looking for wrongdoing. And that kind of comes with an assumption. But I think a good investigative journalist can go in with that assumption, but it can change based on the evidence. I think, when you're unwilling to let it go, or unwilling to like change your hypothesis, you know,

that's where you end up making accusations left and right that don't really have evidence, and that's not what I ever want to do."

Conclusion

Journalists normally start their stories with hypotheses, or working ideas, that shape their initial reporting. This research shows how it's typical for these to change during an investigation, as the reporter discovers new facts from people, documents and data. It's important for investigative journalists to constantly check whether their hypotheses hold up as they report, or whether they need to pivot to another story.

Essentially, it was the additional facts that journalists gathered during their investigative process that made them change their original hypotheses. The additional facts did not necessarily mean opposite or conflicting information. Journalists just pivoted to a better story with a bigger picture of what they were investigating. The additional information came from human sources, data and documents.

These investigative reporters said they get their initial ideas from a variety of sources: wrong or unprovable tips, previous news stories on the same topics, editors' guidance, social movement, previous reporting experience, personal experience, and journalists' passion in revealing the hidden truth.

Where the original hypotheses came from can be grouped into different categories: previous experience, others' influence and social and professional conventions. Previous experience includes previous news stories on the same topics, journalists' previous reporting experience, and journalists' personal experience. Others' influence includes wrong or unprovable

tips and editors' guidance. Social and professional conventions include social movement and journalists' passion in revealing the hidden truth.

So, to avoid having the wrong or unprovable hypotheses, this research gives journalists four major suggestions.

One, journalists should be very cautious when trying to apply past experience to new story ideas. Past experience might be useful in pitching story ideas, but it can also lead journalists to the wrong hypotheses that would only be suitable to the past rather than current stories. However, it is encouraged for journalists to check stories reported in the past as part of the pre-reporting, which may stop journalists from adopting the wrong hypotheses.

Two, journalists should treat editors' guidance and tips carefully, especially tips coming from outsiders. Usually, it is the tips from outsiders that give journalists the wrong or unprovable hypotheses. However, the tips can become much more trustworthy when they come from insiders such as people directly involved in the incidents.

Three, journalists should be reserved when trying to apply the social and journalistic conventions. Social and journalistic conventions might provide valuable angles for journalists to examine specific social problems. However, social problems are so complicated that the fixed conventions might not fit into the narratives that best expose or explain the problems.

Four, journalists can also minimize the possibility of unnecessary hypotheses changes by doing a better pre-reporting, which is doing story search and data search and talking with experts before officially starting an investigative project.

Appendix I: Weekly Field Notes

Jan. 22, 2021

I've been doing my internship for SupChina for a month. During the first half month, I mainly worked on a big spreadsheet--a database with information about some famous Chinese companies. I researched various information about these companies, such as their revenue, total assets, employee numbers, locations, sanction they received, stock exchanges they are on, ownership information, etc. It was no fun doing this boring spreadsheet, but I did learn a lot about these influential companies, which were helpful to my other work later.

I didn't know SupChina hired me to do business stories for them until I started my work. I thought they wanted me to use my data and investigative skills. But when my boss introduced me to the team, he said I was a business reporter for the team. So, I started to be a business journalist for the first time, unexpectedly. I used to hate business journalism but I have been changing over these recent years. I even had business journalism class last semester. What I learnt was indeed helpful to what I am doing now.

I finally started writing stories lately. I published three stories up to now, and will publish another soon. They are all business stories: one about a commercial policy, one about companies' IPO, one about the delisting of a juice company and the other about GDP. And I'm working on another two stories now, a quick one and a long one. Most stories were assigned but I pitched the juice story myself. I tried to write the juice story in a "feature" way, though my editor deleted all those "stylish" sentences. As for the GDP story, I did it with data visualization but after I finished my work they told me they had people specializing in data visualization so they didn't use mine and are still working on the graphics. Though I didn't do a bad job, I did

realize how much I need to improve in data visualization. I am self-learning it during my free time this semester.

My boss encouraged me to pitch investigative stories. He also mentioned his own ideas. I will start researching his ideas or coming up with my own ones next week.

I'll also help with their daily business newsletters starting from next week. It's good that they included me in this new project. It shows they do enjoy working with me, I guess.

The company is just a startup which is not organized enough sometimes. For example, I sometimes needed to promote my stories to my editors to let them edit my stories. But it's fine. People are usually less visible when they are at the entry level. A good thing about working for a startup is that I can know how they try to make money. I am on the call with all team members every Monday, Wednesday and Friday. They always talk about business strategy to make more people subscribe to SupChina or join SupChina's events. It's interesting to learn their strategies to attract audiences.

As for the research part, I just got started. I will have my first interview this Saturday. I will interview investigative journalist Kenny Jacoby with USA TODAY. Hope things will go well.

Jan. 29, 2021

For the research part, my first interview went pretty well. I never mentioned "assumption" or words like this. I just used "ideas." The interviewee totally understood what I meant and talked about how he had three assumptions about the story and why and how he changed these assumptions. So I am glad we changed the interview questions, getting rid of words like "assumption."

Another takeaway is that I think I can let journalists choose the stories they want to talk about. I doubt if my first interviewee intentionally chose a story in which he changed his working ideas a lot, since many times, he almost started answering my questions even before I finished my whole questions. If that was the case, it showed the benefit of letting journalists know the theme of my research and letting them pick stories accordingly.

As for the internship, I only published one story this week, though I was busy all the time. I pitched and wrote two new stories this week, but they were all delayed to be published (or die) in the next week. One of them needs extra reporting. I also helped with gathering and summarizing the news for the newsletters and did some research.

My biggest regret this week was that I did not pitch the Game Stop story, while my colleague who is not on the business beat did. I just thought this happened in the U.S. But I forgot how many people in China invest in the U.S. stock markets. Now I know--Chinese are everywhere. China can be related to anything. So every story can have a perspective about China. I should remember this.

SupChina is more like a porter of content that others created, without enough original stories. In one story, my editor even discouraged me to interview sources and would rather use secondary sources. Take the Game Stop story as an example, the journalist, though sensitive to the news, in the end only had a story with screenshots of what people were talking about on Chinese social media. This was not the first time she did this. She did a story like this also on Biden's inauguration day. And this kind of story was encouraged by leaders and editors. I wish I could do more original and really influential stories such as hardcore investigative stories. But SupChina doesn't seem to care about the originality; they care more about how many clicks a

story gets. They talk about the clicks a lot on Slack and in the meetings. I could understand it; SupChina is just a startup that really needs clicks.

It is good to work for a startup in some way, though. I got the chance to do all sorts of tasks, from research to beat reporting, from news gathering to data visualization. So I should still be able to learn from this internship. Also, I should stop complaining and create my own original story as soon as possible.

Feb. 7, 2021

This week I published two stories, one about Webull and the other about Deloitte. Both were done with colleagues. They are both quick stories, though longer than the ones I did myself. As for longer stories, I am still working on a private equity story, hopefully finishing the research next week.

I did feel more involved in this team since I was invited to one of their events this week; I talked more in the group meetings; and I contributed many good ideas in the brainstorm meeting. But I still feel that my work as well as all the editorial work in SupChina lacks originality. And this week I finally realized how much I value originality in my work as a journalist.

I will try to do the quick stories faster so that I can have more time to do longer, more in-depth stories. I should leave with clips I like, even if I don't stay here long. I actually need to work overtime to do that sometimes. I am trying to adjust my attitude and persuade myself that working overtime is fine.

The interviews for the project went well again. I did two interviews with two journalists at Kaiser Health News. And I plan to do two more this week.

I found that even though I didn't mention "hypothesis," one of the journalists I interviewed used this word in our talk. Also, she always said "what surprised me"--this made me realize that this phrase could be another signal of hypotheses. I could also ask journalists what surprised them the most and how she found out the surprise, if they could not give me a good answer to how they changed the working ideas.

Also, an important finding was that journalists change their hypotheses usually not because of anything related with biases such as cognitive biases. Instead, what they mentioned the most were data and talking with sources. So actually I found, at least according to these three journalists I have interviewed, journalists change their hypotheses in the investigative process based on more and more facts that they collect.

Now, the research result might not be that surprising or thought-provoking. So, I am thinking, in later interviews, I should go deeper into "how" instead of "what"-- I should focus more on how the data and sources influence the change of hypotheses.

Feb. 14, 2021

This week I only published one story which was on Clubhouse, but I did spend enough time on a longer piece on private equity in China. Hopefully this story can be published next week or so.

The internship went better after I realized I should spend more time on my own on longer and more in-depth stories. I saved time in stories and left time for those other tasks.

I only managed to make one interview this week, with Joe Yerardi who works at the Center for Public Integrity. Interestingly, Joe seldom changed working ideas or hypotheses. But I

think this view is still valuable to my study, since Joe mentioned that they usually do a good job in the pre-reporting.

I am reaching out to more journalists. I know I should speed up.

Feb. 19, 2021

I think I made fantastic progress in my academic research this week. Thanks to my effort in contacting lots of journalists individually and (especially) the mass email I sent to the IRE and NICAR list, I got to interview three journalists yesterday and today, and six other interviews were lined up this weekend and next week. Plus, I had already finished four interviews before this week. And there are still journalists who said they could help but haven't scheduled a day with me. So I will definitely finish more interviews than we planned.

A Pulitzer winner David Cay Johnston called me after he saw my mass email and gave me a long lesson on how to be a good investigative journalist, which, though off-the-course a little, was pretty impressive. I will also interview another Pulitzer winner, one behind the movie Spotlight, Matt Carroll next week. So they are seasoned journalists that I interviewed or will interview, which is great. I also have had or scheduled talks with young journalists. Besides, I got two appointments with journalists based in Russia/England and Canada. And I managed to interview a freelancer, and the journalist in Russia/England is a filmmaker--all of this could diversify my interviewees. They are not racially diversified, though--mostly white, with only one Hispanic (I guess). Would this be a problem?

Also, some people on the IRE and NICAR email lists emailed me saying, though they were not good candidates for interviews, they would love to read my articles when I'm done. This encouraged me a lot. I'm glad that people like my topic.

I think I just did the best interview so far this afternoon, with freelancer Brandon Roberts. The interview was successful because we went deeper in this interview than in other ones. For example, he mentioned that though data journalists sometimes would tell me they change their working ideas based on facts such as the data, they could actually be biased when they choose what data they use. Also, when talking about his idea-change of a story from focusing on the racial disparities to the mental health issues behind the police shooting, he mentioned that he was influenced by the BLM and he said all journalists were influenced by the common topic trends in journalism. Journalists in the past interviews didn't have "self-reflection" that was as deep as this. So I am trying to figure out what made the conversation deep. I think I should ask more questions about how they think about the ideas' change instead of just asking how the ideas changed. Also, journalists seem acceptable to the word "hypothesis" so I think I can ask questions to let them examine their hypotheses.

I'm also thinking about starting writing early. One is because I really want to make my story published; the other is that I think I might have more questions to ask once I start writing, so if I start late I might miss the chances of asking these questions in the follow-up interviews. Would you think I should write early? Maybe next week?

As for the internship, I didn't publish any story this week. But I was able to work on longer pieces. The research of private equity was done. But I need to wait for my boss to have a look. I am also doing another longer story on bitcoin mining in China. The story is pretty hard to me since I knew literally nothing about bitcoins, no need to say mining. So, fingers crossed on this story. A good thing about the story is that I could interview many sources on this topic. So I finally got rid of my research-only journalism here.

I'm also helping with other quick stuff, such as writing a short explanatory story on the indexes of the Chinese stock market. I'll get it done tonight.

Anyway, things are getting better!

Feb. 28, 2021

This week I did six interviews for my research part of the project. They all went pretty well. Many talked about their mistakes and why they had biases during their investigations, which was helpful for me in teasing out common themes from the interviews.

The most impressive interview was with Andrei Nekrasov, a Russian filmmaker. He at first totally believed his tipster and did the whole documentary based on what the tipster told him. Later, he went through lots of original documents and realized the tipster was actually making up stories just for his own political stand. Nekrasov used to be on the side of the tipster politically, and he admitted that political views did make him believe the tipster. But what he did, reading documents, was exactly an important way of getting rid of initial, wrong working ideas, and this was not mentioned by previous interviewees.

As for the internship, I was still working on the Bitcoin mining story, I actually finished two drafts but editors were always too busy to have a look. I pitched another story on Bitcoin but was rejected. I pitched the idea on how the shortage of GPU influenced other normal businesses, but editors told me it was not necessarily a "China" story. I agreed.

This made me realize that when I pitch a story, I should think more about the uniqueness of this publication, which is China-centered. This sounds natural to think, but in practice, it's also easy to be forgotten.

I will keep trying to pitch story ideas for deeper stories. Hope the Bitcoin story can be a good one.

Mar. 7, 2021

This week I was still working on the Bitcoin mining story. And this has been the only thing I worked on. I spent most of the time waiting for editors to get back to me. Meanwhile, I always tried to pitch other story ideas, especially on the most important event in China these days, the Two Sessions. However, whenever I pitched new story ideas, editors asked me to only focus on the Bitcoin story. But it took a long time for them to read my progress and my revised drafts. So I am kind of in a deadlock these days.

To me, continuing the work on the Bitcoin story means more interviews with sources and more research on the Internet. I sort of appreciate what the editors are doing sometimes -- they are training my patience, which is so important to an in-depth writer.

I sincerely hope my editors could spend some time having a look at my new drafts of the Bitcoin story and the story can be published early next week.

I still haven't had a good investigative pitch. I have to make progress on it next week.

As for the research part, I finished all the interviews, 14 of them in total. They have all been transcribed. I have finished summarizing and doing the primary analysis of 4.5 interviews. I made a plan of summarizing and primarily analyzing the rest before the spring break. I will follow the plan to kick off my analysis.

Mar. 14, 2021

This week, the Bitcoin mining story was finally published. And the explanation of the indices of Chinese stock market was also published. So I pitched and started to work on another story about Chinese online pharmacy.

There is also another story that I helped with but forgot to mention in the previous field notes: a video on Beijingers attitude towards the Chinese vaccine. Recently, I am also helping with another video about Beijingers' attitude toward climate change.

What did I learn from the Bitcoin mining story? First, it's very important to get the right source. My first source was pretty reluctant who didn't give me enough information while my second source, also my main source was very open and gave me the core information. A good thing about both of them is that they are both miners who are real insiders. It's very important to get the insiders talk. Second, background knowledge is crucial, especially on the business beat where there are lots of jargons and people use basic economic knowledge. One Bitcoin journalist at first rejected my interview because he thought I didn't have enough knowledge on Bitcoin to talk with him. I did prepare, maybe not as much as he expected. It's true that he was kind of conceited but it also showed the importance of doing enough homework before the interviews.

I also learnt how to negotiate and cooperate with my editors. I had to remind editors to read my new versions of the story yet be patient with the publishing schedule. And this story was edited by about five editors. Everybody has their own ideas and advice. I took all their suggestions and improved my story.

The research part went ok. I finished analyzing three interviews. I have a question though. I feel, one major conclusion of how journalists change their hypotheses during investigations would be, they change hypotheses based on more sources they interview, more documents they read/a closer read to the documents, and a closer check of data. So basically the

influencers are sources, documents and data. Would this conclusion be too textbook-like and too ordinary? But these three points were indeed the common topics that journalists mentioned in the talks. So I am looking forward to your advice.

Mar. 21, 2021

This week I worked on three short stories and two of them got published: one about online pharmacies in China, the other about the IPO of a company specializing in Internet of Things. I was also working on other tasks, such as cleaning a database, working a longer story about the physical checkup industry in China, helping with the translation of a video and finding news sources for information on private equity and venture capital funds.

My boss told me that they were expecting shorter and quick-turn stories from me. And he hopes that I can turn in stories on a daily basis. So I am trying to do that now. He said their readers do not need information that never existed before; instead, they need stories they have never seen before. Well, this makes sense. It helps me better understand the readership of this company. But I still hope to do longer pieces. For example, the checkup industry story is designed to be an in-depth one.

My editor-in-chief and my boss, who is the COO of the company, seem to have different views of stories. The editor-in-chief looks for news hooks in all kinds of stories we plan to do but my boss approves stories without news hooks. Also, they have different appetites for stories. As a result, my story ideas would get passed in one place but rejected in another. This made my work harder. I am still seeking ways out.

Personally, I am more supportive of my boss since I think we need to spend time on important topics that might not be hot at the moment. If I still cannot figure out how to survive between the two of them, I'll stick to what I believe.

As for the research part, I finished analyzing two interviews. There are still five to finish. I will try to finish two or three before the spring break, finish the rest in the spring break and start writing also in the spring break.

One of the interviews I analyzed provided information that is exactly what I hoped to get. We talked about how new information was influencing the change (or no change) of the working ideas and she also mentioned many thoughts about biases. For example, she said biases don't need to be political biases; investigative journalists' eager to find wrongdoings can cause biases sometimes. I think this interview would contribute a lot to my writing.

Apr. 11, 2021

This week I only worked on two stories and only one got published. The published one was sent to subscribers in a newsletter but has not been published on the website yet. This story was a popular news story published in Chinese originally which was about a man with intellectual disability was killed and cremated as a scapegoat, because the family of another man, an older man, did not want to cremate but wanted to bury the older man, but the local government aimed at a 100% cremation rate.

The other story that I worked on but has not got published was about the shared mobile chargers industry in China. I worked together with another journalist and I was responsible for the research part.

During the spring break and the week before, I published three stories: "Shanghai artificial heart valve startup NewMed raises over $100 million," "Suning.com wants an IPO for Carrefour China — to fund growth or pay debts?," and "China's upstart phone giant Xiaomi enters electric car business — but will the Mi-mobile go?"

These days, I spent most of my time cleaning the company profile database. This database is about to be published soon so there is lots of data cleaning work to do to make it more readable by the script for making the website. Most of the time it was a lot of hand cleaning.

Though with less progress on the internship, I did make a lot of progress on my research part. I almost finished the first draft of the complete project report. I just need to double-check the story link and title with one journalist on Monday. Beside that, almost everything was done. Another exception was the evaluation from my supervisor. I have asked for it from him but he has not finished it--he should be able to get it done on Tuesday or Wednesday. So, I should be able to send David the draft without the supervisor's evaluation by Tuesday and send the evaluation separately by Thursday.

The writing process of the main part of the project report, the analysis part, has been smooth and fast, thanks to the great details provided by the 14 in-depth interviews. I forgot one thing in the interviews, though: I forgot to check the pronouns of journalists interviewed. So I tried to avoid using pronouns in my writing. Seemed it worked! But I am willing to double-check with the journalists I interviewed if I really have to.

Appendix II: Internship Supervisor Evaluation and Self-Evaluation

To whom it may concern,

My name is Bob Guterma, and I am the COO of SupChina.

Frida joined our team as a full-time intern beginning in January 2021 and has worked with us for the four months since then. She has reported directly to our Editor in Chief, Jeremy Goldkorn, although I have worked directly with her myself on a number of projects.

We are a small team working in a startup environment. News production teams tend to be quite chaotic and unstructured, and this is particularly true for a startup. Frida jumped right into the deep end and began working alongside our team very easily and naturally. She felt like a full team member from day one.

She takes instruction very well and had no trouble carrying out tasks that were given to her. More importantly, if and when she had time that was not filled by tasks we had given her, she would proactively bring us ideas for stories and projects. This self-motivated attitude and approach to work is usually reserved for people with many years more experience than Frida.

Of all the work she did with us, the most important thing was being the primary researcher and data manager for ChinaEdge – our company's new database of Chinese corporations. This is a new product that did not exist when Frida joined us, and Frida played a critical role in moving this new product towards launch.

She also wrote numerous pieces of journalism, ranging from "quick hit" news briefs to longer deep-dives on prescient topics such as international finance, technology, and cryptocurrency.

Given the chance, we would gladly work with Frida again, and anyone would be lucky to have her join their organization!

Best regards,

Bob Guterma

Chief Operating Officer

bob@supchina.com

Self-Evaluation

I was a business beat reporter at SupChina, a US publication covering China. It was my first time covering the business beat. At first, I struggled to find story ideas. So, I started with monitoring other news outlets' stories. Then my editors assigned some stories to me. After that, I pitched my own story ideas and did a good job on this beat.

Now, I have covered lots of topics in business, including company news such as IPOs, delisting, funding, malpractice, and companies' new products, industry news such as the Bitcoin mining industry, Internet of Things industry, online pharmacy industry, and macro economy news such as the GDP and business policies.

My favorite story is the feature story I wrote about Bitcoin mining in China. I spent weeks on this story, doing lots of research and conducting several in-depth interviews. I literally knew nothing about cryptocurrency before starting to work on this story. But I ended up being able to have conversations with experts in this field and explaining complicated business terms in a lay-people language in my story. I am really glad for this progress. One of the most exciting things about being a journalist is that journalists are always learning something new. I enjoyed the excitement being a newbie business journalist, being fresh but eager to learn.

Apart from business reporting, I did other work. I spent a lot of time creating and cleaning a database with the information of dozens of Chinese companies. I attended the staff meetings three to five times a week. I also helped with my colleagues in other tasks such as translation.

Since I worked for a startup newsroom and joined all the all-staff meetings where the business team (not business journalism team but business of the company team) joined, I also learnt a lot about the business side of the newsroom, such as how to target the audience with the

right content, how to increase revenues with selected content, how to gauge if the news interests the readers, etc.

I also found out what I did not like. It was good to work for outlets doing stories about China because I could utilize my strengths in Chinese language and cultural background. But it also made me feel the difficulty of doing Chinese news in the U.S.: it was really hard to arrive at the scene and interview the right sources. So, many of my stories lacked originality. I talked about this with people at SupChina a few times and they told me that their readers just need stories that they never read but not stories that never existed, so what I was doing was totally enough. I understand this but it made me think about what I really want to do in my career. I realized that I value originality and depth of the stories the most.

Also, I realized that, though I could handle business reporting and I did stories that both the newsroom teammates and the readers like, such as the Bitcoin story, I still figured that business beat is not where my passion is. I am still more into investigative and data reporting. And if I have to choose a beat, the public life beat and the health beat that I used to work on were more interesting to me.

Sometimes people have to learn in the hard way. But I am glad I learnt it finally, anyway.

Overall, I tried lots of new things as a business reporter, and I grew a lot professionally. I also figured out my future career plan, which is a bonus of this internship.

Appendix III: Project Proposal

FACTORS THAT MAKE JOURNALISTS CHANGE HYPOTHESES DURING INVESTIGATIONS

A Professional Project
presented to
the Faculty of the Graduate School
at the University of Missouri-Columbia

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

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by
XIN QI (FRIDA QI)
David Herzog, Committee Chair;
Mark Horvit, Committee Member
May 2021

Table of Contents

Abstract:

This research will study what factors make journalists change hypotheses during the investigative reporting process. Journalists change their hypotheses because they find that the original ones are not correct and had been based on cognitive biases. The study will use semi-structured interviews with journalists nationwide to examine the research question.

Introduction:

Investigative reporting does not come out of nowhere. It may come from a tip, a whistleblower, data, documents, observation, etc. Before getting ready to dive into the long and in-depth investigation, journalists need to build something that connects the investigative pitch and the investigation. This bridge is their hypotheses.

This study will focus on the factors that make journalists change their hypotheses during their investigations. It will borrow from the theories of psychology, including cognitive biases.

Why is it important to scrutinize the hypotheses that investigative journalists make? Hypotheses are the basis of the investigation. Investigative journalists usually spend weeks, months, or even years on a single piece of work. If the hypotheses, the bases, lead them down the wrong path, their long efforts may be in vain. So investigative journalists need to be very careful with what hypotheses they make and always be willing to adjust them when necessary.

Studying the hypotheses in investigative journalism is very important in understanding the news production process and how journalists pursue objectivity. The pursuit of objectivity permeates every detail of the news production process, including how the journalists make and change their hypotheses.

This study will use semi-structured interviews of journalists nationwide to examine their investigative work. Some potential interviewees have been identified in this proposal, while others will be recruited from a snowball sampling.

Professional Component

I will work for SupChina, a New York-based website that coverers China for the US audience. I will be a both data and investigative reporter constructing their database of Chinese companies and doing some investigative stories about China.

I plan to spend 30 hours per week working professionally and 10 hours on my research. I will spend 16 weeks working remotely in Columbia

I hope to improve my reporting and writing skills, especially data and investigative, through my internship. I will try to use my investigative and data reporting skills and pitch related stories as much as possible.

The goal of my professional research article is to show how investigative journalists start their reporting using hypotheses. Also, it will show which factors lead the journalists to change them. I will offer guidance for investigative journalists to produce better stories.

Potential outlets for my article include the Reynolds Journalism Institute and Investigative Reporters and Editors' publications.

I will file weekly reports by email with my committee that detail my professional work and research progress. In these, I will also report how the interviews have been succeeding.

Literature Review

Investigative reporting starts from a hypothesis in many cases, according to The Investigative Reporter's Handbook (Houston & Horvit, 2021). Hypothesis is "a proposed explanation for a phenomenon" (Baig & Khann, 2014). Though there are few studies about the hypothesis in investigative reporting, there are studies about how perceived knowledge and biases influence news production. Besides, much research about cognitive biases has provided theories to what may be contained into the hypotheses.

Studying the factors that make journalists adjust their hypotheses during the investigation is examining how journalists think about the stories in their news gathering process. Studies about objectivity have measured perceptions in news production (Tuchman, 1972). What is more, though studies directly related to the hypotheses in investigative reporting are scarce, some researchers have given insight into journalists' hypotheses in all types of reporting.

In studying objectivity as a ritual in the newsrooms in 1972, Tuchman pointed out that, though journalists tried many procedures to achieve objectivity, they still could not reach objectivity because of several reasons. Hypotheses that journalists make can be related to perceptions they have, so this study provided an important insight into the issue that this research is about.

About two decades later, in 1989, Stocking and Gross published a book about the cognitive bias in news production. Their book, *How do journalists think? : A proposal for the study of cognitive bias in newsmaking*, is fundamental in studying the hypotheses in news production. It raises the awareness of paying attention to the cognitive biases in news production. As the authors mentioned in the book, previous research had focused too much on the environmental reasons that cause inaccuracy in news. The book suggested that researchers should pay more attention to the journalists themselves instead. The book mentioned that although people are willing to be objective, they still tend to find information in ways that confirm their initial beliefs. As the authors put at the end of the book: "the contemporary cognitive perspective will not have an effect unless investigators of news work see its potential." (Stocking & Gross, 1989, p.87)

The book also identified biases that may occur in the cognitive process when journalists process information: categorization, theory generation, theory testing, selection of information, and integration of information (Stocking & Gross, 1989).

One year later, Stocking published more research on journalists' hypotheses with another author, LaMarca. In *How journalists describe their stories: Hypotheses and assumptions in newsmaking*, the authors let 11 journalists describe their stories and observed their description. They found that all journalists did have hypotheses and assumptions about what they covered without any exception. The authors also differentiated hypotheses and assumptions. They used the definition of hypotheses that they are "tentative beliefs, i.e. beliefs that are open to question and subject to activities designed to verify or falsify them." (Stocking & LaMarca, 1990, as cited in Snyder, 1984) Then, the researchers concluded that the interviewees' beliefs could be categorized into three types: descriptive beliefs, which are falsifiable descriptions, such as "the council may have made its decision"; evaluative beliefs, which are subjective judgements, such as "the decision may be a poor one", and prescriptive beliefs, which are exhortatory statements that a course of action is good or desirable, such as "the council should endorse another solution" (Stocking & LaMarca, 1990, p.296).

Stocking's two studies are among the most related studies to this research. They defined the hypotheses that journalists make and explained the role that cognitive biases play in making hypotheses.

Since previous research related journalistic hypotheses to cognitive biases, I also would like to use cognitive biases as the theory in my own research. It is thus necessary to review the literature related with cognitive biases.

Cognitive bias has been well studied in psychological science.

One definition of cognitive bias is, "mental errors caused by our simplified information-processing strategies" (Heuer, 2007). Behimehr and Jamali also used this definition in their study on relations between cognitive biases and some concepts of information behavior (Behimehr &

Jamali, 2020). Cognitive biases are also defined as “judgment errors that people commit due to irrational thought processes,” according to Ruth’s study (Ruth, 2020). Similarly, Sills defined cognitive biases as errors in people’s thinking that impact people’s process of making decisions (Sills, 2020). Cognitive biases come from “subconscious mental procedures for processing information”, according to the definition from the Central Intelligence Agency (Central Intelligence Agency, 2015). Out of the cognitive biases, people draw specific conclusions, which are formed from past information stored in people’s brains (Sills, 2020).

Sills’ research also introduced three types of cognitive biases: confirmation bias, anchoring bias, and over confidence bias. Confirmation bias is about picking the information supporting people’s preconceived beliefs. Anchoring bias is that people tend to use one piece of information to shape the decision-making. When making difficult decisions, people’s anchoring biases usually come from existing values, previous memories and similar decisions. Overconfidence bias is that people tend to think they make excellent decisions so that they may ignore potential risks or negative effect of the decisions. This article also mentioned ways to improve people’s decision-making, including thinking about data, availability, environment, reflection, relational impact and awareness.

Similar to this, Behimehr and Jamali’s study, using qualitive research methods, studied how cognitive biases influenced the information behavior of graduate students and identified some cognitive biases that could happen during the information behavior.

The researchers noticed several cognitive biases that impacted the graduate students. One is availability bias, which means people prefer accessible information sources to sources that have high quality but are not accessible. The second cognitive bias noticed is reactance, meaning when people feel coerced, they will react to the coercion by increasing the willingness to the

behavior that is restricted. The third one is Willingness to Return theory. Similar to the availability bias, Willingness to Return means people are more willing to turn to sources that were successfully used in the past. Fourth, these students' information behavior was also influenced by the combination of ambiguity bias, status quo bias and stereotypical bias. Ambiguity and status quo biases mean people want to avoid unfamiliar information sources and keep using the unchanged sources, while stereotypical bias means people are afraid to be judged by stereotypical opinions when they seek information. Besides, the students' information behavior was also influenced by information bias, which is the tendency to request unnecessary or unhelpful information, especially when people are facing uncertainty. Lastly, students demonstrated attentional bias: people pay more attention to certain aspects of information.

Beside cognitive biases that the studies above mentioned, an article from the Business Insider listed 58 cognitive biases. Many of them are related to the hypotheses in investigative journalism. Below follows a synthesis of related cognitive biases.

1. The first group of related cognitive biases is about how people only rely on certain information, but not the whole information, to make decisions. For example, anchoring bias means people over rely on the first piece of information they get; Confirmation bias means people tend to only listen to the information that confirms their perceptions; Halo effect means when people feel positive about someone in one aspect, they tend to feel positive about this person in regards to other aspects; Ostrich effect means people tend to ignore the dangerous or negative information; Recency means people tend to think the most recent information is more important than the previous one; Selective perception means people's expectations influence their perceptions and they only see things in a particular frame; Salience means people tend to focus on the most recognizable feature; Status quo bias means people tend to use the sources

they are familiar with; Negative bias means people tend to emphasize more on negative incidents rather than positive. With the cognitive biases above, journalists may make hypotheses based on what the first source or the whistleblower tells them, or make hypotheses based on only one tip. Journalists may also over emphasize the outlier. For instance, availability heuristic talks about how people sometimes overestimate the information that is available to them and ignore the fact that the available information may just be an outlier. Stereotyping is also a cognitive bias that can be included in this group: people expect one group of people share certain qualities without having enough information about individuals in this group. Journalists' stereotypes may make them make the wrong hypotheses.

2. The second group of related cognitive biases is about how people's decisions-making is related with their emotions. After heuristic talks about how people's decisions are influenced by their current emotions.

3. The third group of related cognitive biases is about how the past or future influence the present. Observer-expectancy effect is about how people's expectations influence the perception of the results. Similarly, conservatism bias means people use long time to believe the new evidence since they are still trapped in the prior evidence; Outcome bias means people judge a decision on its outcome rather than how the decision is itself right now. In investigative stories, the patterns of making hypotheses in the past may influence journalists' hypotheses.

4. The fourth group of related cognitive biases is about how people's decisions-making is impacted by others. Bandwagon and herding effects tell that people tend to believe some beliefs once a group of people are persuaded by these beliefs. Journalists may be influenced by editors or the readers when they make hypotheses.

5. There are also some other related cognitive biases that cannot be categorized into any group. Frequency illusion, which is people have the illusion that something appears everywhere, may make journalists exaggerate the frequency of something and therefore make the wrong hypotheses; Fundamental attribution error, meaning people tend to conclude the reasons why something happened as the intrinsic quality of someone instead of the situation where that person is in, may lead journalists to wrong hypotheses in which they ignore the surrounding environment or social background; Scope insensitivity, meaning people fail to realize the real scope of something, may be the reason why journalists wrongly hypothesize the scope of something; Journalists may also rely too much on the experts when making hypotheses, which reflects the cognitive bias of seersucker illusion, which means people tend to rely too much on experts' opinions. There is another bias that may explain why journalists keep moving on in the investigation without realizing the biases: people's failure to realize they have cognitive biases is a bias itself, which is called bias blind spots.

Another article, about how to reduce cognitive biases, can also be helpful when studying why journalists change their hypotheses in investigative reporting. Christian says that journalism schools could teach new journalists how to avoid cognitive biases (Christian, 2013). The author suggested that journalism schools should help students foster good cognitive habits so that they can have better professional skills. These cognitive habits, according to the author, include thinking about how we think; counterarguing the story; considering the Fault Lines, which are race, class, gender, generation and geography, five prisms through which U.S. people see the world (Christian, 2013, as cited Maynard Institute, 2011); taking another's perspective; employing the contact hypothesis; creating reportorial accountability through feedback (Christian, 2013).

Beside cognitive biases, some studies used other theories to explain what may be influential in the hypotheses that journalists make in producing the news. For example, Shoenberger and Rodgers measured how the perceived health reporting knowledge influenced journalists' health coverage. Their study, Perceived health reporting knowledge and news gathering practices of health journalists and editors at community newspapers, found that journalists with higher perceived health reporting knowledge may be better at reporting in a more thorough way and make judgment more independently than journalists with lower perceived health reporting knowledge. Also, the authors found that journalists with higher perceived health reporting knowledge rely on a more diverse number of sources to form the basis of a story idea (Shoenberger & Rodgers, 2017).

The literature review here has identified well-established research into cognitive biases, but they are seldomly related to the news production process in journalism; few studies about the use of hypotheses in journalism; and almost none regarding investigative journalism.

Given the existing gaps mentioned, my research on the factors that make journalists adjust their hypotheses during the investigation in investigative journalism should bring useful information.

Theoretical Framework

The theoretical framework of this study is the theory of cognitive biases. Cognitive biases are "mental errors caused by our simplified information-processing strategies" (Heuer, 2007). They come from "subconscious mental procedures for processing information" (Central Intelligence Agency, 2015). There are dozens of cognitive biases, as it has been detailed in the literature review. The hypothesis of this study is, journalists change their hypotheses in investigative reporting because they find that the original hypotheses are not correct, and the

reasons why they make incorrect hypotheses is that journalists' cognitive biases influenced journalists' decision-making process.

Methods

I propose to use semi-structured interviews. Due to the COVID-19 pandemic, most of the interviews will be conducted via Zoom or over the phone. Video calls via Zoom are preferred since this way I can watch journalists' facial expression that conveys much information.

Qualitative rather than quantitative methods

Qualitative methods suit this topic better than quantitative ones. Assumptions are related to people's thinking process. The subtlety of human minds can hardly be depicted without qualitative methods, even if with the help of quantitative psychology. So, to do this research, I myself need to be an instrument, feeling and decoding the subtlety.

Semi-structured interviews

Generally, journalists need to make quick decisions very frequently, especially when they are on deadline. In-depth interviews give journalists a chance to slow down, recall and reflect how they made the decisions when they were busying in certain stories.

Particularly, the answers to my research questions largely, if not totally, depend on personal experiences.

Previous application or discussion of the same method

Stocking and LaMarca studied the hypotheses and assumptions in newsmaking (Stocking & LaMarca, 1990). They interviewed 11 journalists and let them describe their news stories. Through the semi-structured interviews, Stocking and LaMarca were able to observe and analyze

the way hypotheses and assumptions in the journalists' narratives and made a conclusion that all journalists use hypotheses in newsmaking.

In studying cognitive biases and information behaviors, Behimehr and Jamali (Behimehr & Jamali, 2020) conducted face-to-face semi-structured interviews with 25 students who were chosen through a purposeful sampling process. Through these interviews, they studied how cognitive biases influenced the information behavior of graduate students and identified some information behaviors that could happen during the information behavior.

Despite of the application of semi-structured interviews, some researchers remain critical of this research method. For example, Ryfe's research (Ryfe, 2018) on the role of self-reports in news production critically examined the usage of interviews in studying news production. This article mentioned the actual news production may be different from what the journalists report to the researchers. This is indeed a possible shortcoming of applying interviewing methods in the study, especially using interviews only. A possible solution to avoid this is to combine in-depth interviews with other research methods, such as ethnography or participant observation. This way, researchers can double-check what the interviewees report.

Since I will only have a few months to finish my project, any study based on a short-time observation or interviews can be a very good example. Schneider's qualitative study (Schneider, 2009) on participants of a short environmental workshop used both observation and in-depth interviews. This study shows that interviews and participant observation are still very applicable in journalism studies even if there is a tight deadline.

RQ 1:

This study only contains one research question, which is:

What factors make journalists change their hypotheses (perceived ideas on the stories) during investigative reporting?

The purpose of this study is to analyze journalists' hypotheses in investigative reporting. Especially, the wrong hypotheses are worth paying more attention because study on this will help prevent future mistakes. However, few journalists are willing to admit that they made mistakes during the interview. So, the research question becomes how journalists change their hypotheses. This way, journalists will feel more comfortable talking.

To answer this question, I will first conduct semi-structured interviews with investigative journalists or journalists who have covered some investigative stories. I will ask each of them to prepare one investigative story they had pitched to the interview. I will read the stories before the interviews and personalize my questions to them. During the interviews, I will also ask questions about their hypotheses. I will conduct 8-10 interviews with possible follow-up questions. Each interview will take around 30 minutes. I will record my interview with the Zoom recording or my phone, store them both in my computer and in the Google Drive. I will use otter.com to help me transcribe. I will use my questions as a guide during the interviews.

After the interview, I will first summarize my notes and transcribe interviews. Then I will look for the common characteristics in journalists' answers to my questions, and code the interviews with the common characteristics. After that, I will look for uniqueness in different interviews and think about if the uniqueness is also important in my research. Meanwhile, I will judge my research question critically.

Questions for Interviewees

1. What were your initial working ideas when you first pitched the story? (What did you expect you would find out at first?)
2. Why did you have these ideas and expectation?
3. Did you change your working ideas during your reporting process?
4. Why and how did you change them? Or, why did not you change them?
5. Do you have other examples in which your ideas about the story changed over time?
6. Did any story die because the initial working ideas were proved wrong later? Could you explain more?
7. Is there anything you would like to add?

If whom I interview is an editor, I will add the questions below:

(1) Do journalists working with you often change their working ideas about the stories during the process of the investigative reporting? Could you give me some examples? What were the reasons why they changed their ideas?

(2) Do you view the change of working ideas in investigative reporting differently as an editor, compared to when you were a reporter?

List of Potential Interviewees

I am trying to create a list that covers different sexes, races, beats, print, TV, radio, and digital journalists, local, national and international journalists, Mizzou and non-Mizzou alumni.

1. Alexandra Harney

   Harney is a former investigative reporter at Reuters who had been an investigative journalist for years. Before Reuters, she worked for the Financial Times. One of her

investigative works was the Pulitzer finalist. She focused on international investigations. She was also my former supervisor when I did my internship at Reuters, and we still have very good relationship, so she should be very willing to be interviewed.

2. Elizabeth Lucas

   Lucas works for the Kaiser Health News as a data journalist, a Mizzou alum. She may not define herself as an investigative journalist, but she did have some investigative pieces. I once interviewed her for a class so I think a second interview with her should not be hard.

3. Joe Yerardi

   Yerardi works for the Center for Public Integrity as a data journalist, a Mizzou alum. As Lucas, he may not define himself as an investigative journalist, but he did have many investigative pieces. I once talked with him about an internship on the phone and will interview him for another class assignment so I think he should be able to accept my interview.

4. Marina Walker Guevara

   Walker Guevara was just named as the executive editor at the Pulitzer Center. She used to work for ICIJ where she had lots of award-winning pieces, such as the Panama Papers. I used to talk with her when she was awarded the Missouri Honor Medal and we kept in touch. So I think she should be able to accept my interview.

5. Kenny Jacoby

   Jacoby is an investigative reporter at USA TODAY. Jacoby's investigative stories focus on the sports beat. He is based in Florida. He is the husband of my one of my good friends so he should be able to accept my interview.

   https://www.kennyjacoby.com

6. Ron Nixon

   Nixon is an investigative editor doing investigations on international affairs for the Associated Press. Before joining the Associated Press, Nixon worked as a homeland security correspondent for the New York Times. He was a guest speaker for a class I attended, and I got his email. So I will try to reach him.

7. Cheryl Thompson

   Thompson is the board president of Investigative Reporters and Editors. She is also an investigative correspondent for National Public Radio. I found her on Twitter. I can try to reach her through Investigative Reporters and Editors.

8. Shay McAlister

   I found McAlister on twitter. She is a TV investigative reporter for WHAS, a Mizzou alum. She was a general-assignment and multimedia journalist for WHAS before becoming an investigative journalist.

   https://twitter.com/ShayMcAlisterTV

9. Gillian Freidman

   I found Friedman on Twitter. She was an investigative reporter at Deseret News and now she works as a business reporter covering bankruptcy and economics for the New York Times.

   https://twitter.com/gillianreporter

10. Jeremy Schwartz

    I found Schwartz on Twitter. He works as an investigative journalist for ProPublica and Texas Tribune. He previously worked for Austin Investigates.

    https://twitter.com/JinATX

11. Julia Angwin

    I found Angwin on Twitter. She is the editor-in-chief of The Markup, a technology investigations newsroom. She previously worked for the ProPublica and the Wall Street Journal.

    https://twitter.com/JuliaAngwin

Other interviewees will be recruited by snowball sampling. Besides, I will invite my colleagues in my internship for interviews as well.

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