A NEW ERA IN CLIMATE CHANGE COVERAGE: CAN APPLYING SOLUTIONS JOURNALISM ALTER AUDIENCE ATTITUDES?

by

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Abstract

Climate change has become a central focus in mainstream media, and for journalists, it has become a new beat to cover, analyze and report. This research aims to fill the gap left in the application of solutions journalism to climate coverage within journalistic norms. The research aimed, through textual analysis and grounded theory, to find the key frames and context of solutions stories covering carbon removal. The findings represented that solutions journalism stand out in the field as positively-valenced pieces, with descriptive, striking language. In turn, leading to representing communities in a new light that could set the groundwork for the future.

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Introduction

Think of a problem that you are facing in your life. It can be as simple as what to have for lunch or as complex as your approach to a personal conflict you are having in your life. Now, see if you can think of a solution for this problem. Does finding the solution come as easy as finding a problem? Now think about the issues facing the climate crisis.

Now try to think of a solution.

Problems and crises shape our current media in the terms of how issues as large as the climate crisis are approached, down to how the subsections of topics within this very broad issue are addressed in the media. This research will not be avoiding the fact that problems exist, but rather pose a solution to the normative journalistic approach of utilizing less negatively-valenced frames in climate change coverage. Journalism, at its core, acts as an essential role in democracy, seizing the power of the fourth estate — acting as watchdog, mediator and advocate to the crisis that faces communities and states around the world (McNair, 2009). However, it can be presumed that a lot has changed in our country and around the world since journalism first surfaced in the realm of communication, and its norms were first formulated. It can be noted that in turn, journalism must adapt to our modern public sphere in order to address the problems we currently encounter. This research investigates the emerging field of solutions journalism in its application to the carbon crisis. It will not only look into the state of current journalistic methods, but the potential solutions to how the watchdogs can adapt to better serve their communities. It is not a lack of news that now burdens the journalistic community, but rather how norms may lead to problematic coverage. Through solutions journalism, the current study probes an alternative to the format in which it is presented.

With a simple search on Lexis Nexis, the collective term "climate crisis" appeared in articles 10,000+ times between the January 2017 and March of 2021. With so much coverage, it begs the question: How do we write about the climate crisis? And how does this approach translate to news consumers? The way information is translated to the audience is crucial and, in many ways, changing. This change comes on the shoulders of crucial research done before it, employing agenda-setting and framing theories (i.e., Weaver, 2007; McCombs & Shaw, 1972). However, the current study will be addressing these questions while focusing on Solutions Journalism as a possible new norm for coverage of the climate crisis.

What is Solutions Journalism

Solutions journalism, at its bones, is the incorporation of solutions into the mainstream of media. In journalistic work, this often involves presenting a community or societal problem along with a local solution that is addressing this problem. In February of 2020, Elizabeth Tompkins, Intelligence Director at Solutions Journalism Network (SJN) described solutions journalism as such:

> *Or,* does your news diet provide you with a healthy balance of rigorous journalism that moves productive conversation about the possible paths forward? Journalism that cultivates complexity and ensuing debate? Journalism that covers relevant trends, rather than trending irrelevancies? News that sheds light on a problem and how that problem is being addressed — somewhere, somehow, in part or in whole? (2020)

Solutions journalism is defined by SJN as "rigorous, compelling coverage of responses to social problems" (Learning Lab). The key difference here is that this form of journalism is pursued in response to a social problem, oftentimes presenting a form of a solution. Solutions

journalism really began in mainstream journalism in the 1990's. SJN was founded in 2013 and it began a collective movement to incorporate solutions journalism into mainstream media (SJN n.d.). The movement toward this new wave of journalism raises many important questions, in terms of how can these mainstream solutions be provided in a way that answers people's questions, educates the public, and, ideally, prompts some action in the face of societal problems and social injustices.

In retrospect, the questions of concerns with journalists and their values often comes to mind, especially when presented with the misuse of the power of the fourth estate. It should be noted here that solutions journalism does not conflict with the ethical principles set up by the Society of Professional Journalism (SPJ). These ethics are (1.) Seek Truth and Report (2.) Minimize Harm (3.) Act Independently (4.) Be Accountable and Transparent (SPJ n.d.). The solutions journalism standards work within this overarching umbrella of SPJ. Without acting within the principles set within these standards, it is often not considered journalism. It can be noted that there are assumptions of the overall basis in standards of journalistic practices however these ethics are set in place to draw a standard for appropriate journalistic standards.

At a recent Solutions Journalism Network event, David Bornstein, co-founder and CEO of SJN, reflected on the possibilities that solutions in application to standard journalistic newswork could add to the realm of journalism. Bornstein said:

> We used to say when we started the Network that the problems scream and the solutions whisper. And in a way it's true, I mean, the problems are always clamoring for attention. You know usually way more about the nature of the problem than about the different approaches that are being taken [to a solution](Raghavan, 2021).

The way in which news is written is important and affects the way in which the receiver absorbs that information.

According to SJN, solutions stories can be crafted in three steps (Hotz, 2021):

1. Identify the issue or questions of concern.

2. Ask what is missing from the public conversation.

3. Start finding candidates or profiles for solutions stories.

However, it can be met with many misconceptions, including being disregarded as "puff" pieces or stories with little consequence or importance to the communities they serve. Yet, there are limitations, according to SJN, on what is considered a solutions journalist piece. First, it is not about presenting theory, but rather reporting on an action, a process, a solution, that is already in place (Hotz, 2021). For instance, in the realm of renewable energy you have the theory of tectonic plate activity, but more importantly the Icelandic natives have the ability and science to harness tectonic energy; making the country fully compliant with the Paris Climate Accord (Worldland, 2017). Next, the solutions journalism piece in question does not present the information as a "silver bullet" or cure all for the issue at hand — especially since particular solutions do not work for all communities. Rather, it uses data and sources to see where the solution does and does not work. To be seen as a solution piece, the network pushes that presenting a solution to a problem is not an afterthought, but rather a core part of the piece. And finally, it is not a piece on a simple act of kindness, rather it addresses the root cause of a problem; the piece even gives the potential of being replicated in a comparable community with a similar issue or crisis (Hotz, 2021).

Yale Climate Connections, a news outlet specifically geared toward addressing issues and news surrounding climate change, wrote that, "It's possible to avoid catastrophic climate change

by ramping up solutions that already exist today" (Report: Existing Solutions, 2020). By telling these stories, solutions journalism offers an avenue to reframing coverage of global warming and can likely impact the perception of the climate crisis. The current study proposes this hypothesis based on established media effects theories and the influence of journalistic norms, and will examine how these theories and norms may be applied in the new era of journalism.

Media Effects Theories

Agenda Setting, Priming and Framing

Past research has proven that (1.) the media can function as a prime, or trigger for attitudes toward an issue (Ewoldsen & Rhodes, 2020), (2.) that those attitudes — or set of emotions, beliefs and subsequent behaviors — can be influenced by how that issue is framed by the media (Scheufele & Tewksbury, 2020), and (3.) the media can determine how salient or important that issue is to the audience (Weaver, 2007; McCombs & Shaw, 1972).

Agenda setting theory, as stated by McCombs and Shaw in their 1972 Chapel Hill study, predicts a cause-and-effect relationship between media exposure and audience perception and often shows a correlation between issues that take center stage in the mass media and how important those issues are to their audiences. Thinking about this in terms of the issues pervading the realm of the climate crisis, there has been an increase in fluctuation in seasonality slowly over time, such as the record freeze in Texas has been attributed to increased seasonality caused by human destruction of the environment (Moser, 2020). This event pervaded the media agenda, and subsequently, the public agenda. Certain high-profile stories or events, such as the one just mentioned, shape the audience's perception of an issue, especially if it is covered extensively.

Priming, at its core, is the theory that people do not accumulate their perspectives based on a broad band of diverse information; rather individuals cumulate their ideas from a small subset of readily available information (McDonald, 2009). Priming is an extension of agenda setting for two reasons. First, both priming and agenda setting find their roots in memory-based models of information processing. Second, these models assume that people form beliefs or perspectives based on information that is more accessible when they make decisions (Scheufele, 2020). For the purpose of the current study, priming effects will not be assessed on the basis that the other two theories are more appropriate for this initial research. Indeed, framing theory, and its application to newswork, is essential in understanding the impact of news on public perception of issues.

In their 1993 study, "Framing analysis: An approach to news discourse. Political Communication," Pan and Kosicki compared framing to the other rhetorical models, such as script, thematics and rhetorical structures. The players in this research included journalists, sources and audiences. They concluded that:

> Framing differs significantly from these accessibility-based models. It is based on the assumption that how an issue is characterized in news reports can have an influence on how it is understood by audiences. Framing is often traced back to roots in both psychology and sociology (Pan & Kosicki, p. 55-75).

Scheufele (2020), noted that while arguments have been made that framing impacts the way news is absorbed, it also affects both the "volume and character of news messages on a particular issue" (p. 12). There are two major types of framing. The first is known as equivalency framing, which states the language of a given text, story, advertisement, etc. is assimilated into an equitable language onto the reader's opinion (Druckman, 2001). This can include a positively

valenced framed or negatively valenced framed article, in which the overarching tone of the piece has a positive or negative connotation. Emphasis framing, on the other hand, is the approach of providing certain emphasis on a given subject or topic in the work (Druckman, 2001). Both of these aspects of framing can have an impact on the opinion of the reader/listener after absorbing the information. The given frame(s) that journalists use play a role in the way the information is presented and how the reader attaches meaning to that news.

Social Cognitive Theory

Albert Bandura first formulated social cognitive theory when observing people with snake phobias. Bandura noted that patients observing individuals in their same situations conduct behaviors parallel to their own — such as handling snakes — was more effective in treating their phobias than persuasion or watching an expert handle the snakes (1986). The basis of this theory is the practice of observational learning, imitation and modeling. In particular, there is a model called reciprocal causation model; showing the interaction between the person, the behavior and the environment. Other theories have been developed upon this idea; for example, when Bandura and his colleagues used a doll and behavioral situations to show that children would mimic the behavior of a teacher. The idea is that when presented social situations, individuals respond strongly when given an example to imitate and a model to follow (Bandura, Ross & Ross,1961). This theory is applicable to journalists by providing the individuals solutions. This is not to say the media audience will literally apply these solutions themselves, but it is important that they witness these examples in coverage of the climate crisis as that exposure can influence their attitudes toward this issue.

Cultivation Research

Beyond the use of more discrete media effects theories that predict incremental effects and psychological theories, like social cognitive theory, that help explain the impact of media on an audience, media effects researchers capture big picture effects through cultivation research (Busselle & Van de Bulck, 2020). For example, there is a growing sense of misinformation and distrust in the news media. This misinformation "undermines collective sense making and collective action" (West & Bergstrom, 2021). This can be incredibly dangerous to the persistence of knowledge when it comes to instances of national health, national security and democratic political action. This mistrust and misinformation does not fall at the feet of the data, research and science, which act as a backbone to strong journalistic pieces. Rather, as West and Bergstrom (2021) state in their research:

> This is not to say that science is broken. Far from it. Science is the greatest of human inventions for understanding our world, and it functions remarkably well despite these challenges. Still, scientists compete for eyeballs just as journalists do (p. 1).

These misconceptions regarding science have caused a strong distrust in science and the media that reports on scientific issues. Putting both on the same scale, adding perhaps a lack of understanding of each entity by the audience, many media critics also place blame for this distrust in common journalistic norms that create "newsworthy" stories. In addition to the notion that journalists elaborate on the truth, many believe journalists highlight the worst in mankind for the idea of "if it bleeds it leads" (West 2021).

Distrust in the press is not new. People all around the world often find the news "biased and belittling, dull and depressing, overly negative, and overly complicated" (Lewis, p.1). The sense of distrust in the news media was amplified during the Trump presidency. Pew Research

Center found between the years of 2018 and 2019, Republicans expressed a greater sense of distrust in the media than Democrats (Stocking, 2019). However, criticism of journalism not only comes from political players, there is criticism from within the communications community as well. Peter Vanderwicken, former senior vice president and head of corporate communication at J. P. Morgan & Co, said in Harvard Business Review:

> The U.S. press, like the U.S. government, is a corrupt and troubled institution. Corrupt not so much in the sense that it accepts bribes but in a systemic sense. It fails to do what it claims to do, what it should do, and what society expects it to do (1995).

There is a large problem in journalism about the question of trust and the way in which information is portrayed.

Climate Change Coverage in Journalism

The climate crisis was not always as salient to Americans as it is today. According to a survey conducted by Gallupin (2002), 61 percent of Americans thought global warming was an actual occurring event, compared to 48 percent in 1997 (Corbett & Durfee 2004). The April 2020 report, *Climate Change in the American Mind*, revealed that 73 percent think global warming is happening, while only 10 percent think global warming is not happening. The data in this report are based on a nationally representative survey of 1,029 American adults, aged 18 and older (Leiserowitz et at., 2020). This shift in the recognition of climate change, which I will furthermore refer to as a climate crisis, is prevalent in our current media representation of the issue. From the perspective of journalistic representation, nearly every major news publication has an environment or climate focused beat.

In *The Media and Public Life*, John Nerone discusses the concept of "tests of capacity" (2015, p. 221–230) This is when public events, issues, crises, or debates come to the forefront of media; in the sense it becomes a "test" for journalists to consider the story in the perspective it has on their community at that time. In Nerone's work, he represents the crises that have faced the public sphere in chronological order in modern times. This includes, but is not limited to; social classes, slavery, the legacy of slavery, war and climate change. It can be seen here that many of these themes are recurring and persistent in the public scope today. Risto Kunelius of the University of Tampere, Finland makes the argument that climate change will be our "test of capacity." The argument that Kunelius presents is that climate change is not just a crisis, a short, single-strategy addressable issue that faces our time. Rather an ongoing, all-encompassing event that will mark the very beginning of a new era of society (Kunelius, 2018).

> The stakes are massive, the risks and uncertainties severe, the economics controversial, the science besieged, the politics bitter and complicated, the psychology puzzling, the impacts devastating, the interactions with other environmental and non-environmental issues running in many directions. The social problem-solving mechanisms we currently possess were not designed, and have not evolved to cope with anything like an interlinked set of severity, scale and complexity (Dryzek et al., 2011, p. 3).

The media's role in influencing attitudes toward climate change is more important now than ever before. Nicholls and Kestin determined that, "Most people and organizations . . . receive climate information through the media. It is crucial, therefore, that organizations and individuals with a climate change message develop improved methods for delivering their message through the media" (1998, p.417-420).

Moving on this framework, the media, including journalists and press, hold a large responsibility to communicate and educate the public on current information. More specifically, it's their duty to educate their readers on the status of climate change and humans' alarming role in causing it. However, in other literature, there is the alternative view that individuals gather many of their viewpoints on a given subject based on personal experiences. Researchers argue that citizens lack "civic knowledge, they acquire information from personal experience, daily life, personal contacts, [as well as] news media, and political campaigns" (McDonald, 2009). This is commonly known as an individual gut reaction, another example of priming in terms of the theory stated above. Network models of memory, on which priming theory is based, posits that concepts are represented in memory as nodes. When we encounter a media prime — be it an image, video or story — it can activate a node (e.g. a story about the COVID-19 virus can trigger what memory you have associated with the word, "virus"), as well spread activation of a whole network of nodes, and multidimensional constructs, depending on how elaborate the memory is. Related nodes to "virus" could be "doctor," for example. Like priming a well, once activated, these memories — and the attitudes associated with them — are accessible. When they are chronically accessible through excessive coverage, we enter the realms of agenda setting and cultivation. What is powerful about this effect of messaging is when we read something that aligns with our gut — or accessible attitude or schema — we can strongly assimilate with the message and even act on it (Ewoldsen & Rhodes, 2020). For instance, this media effect can be seen in the August, 2015 public reaction to the viral video of a turtle with a straw in its nostril (Rosenbaum, 2015). This instance showed for many the tragic and abusive human relationship with the environment. Most individuals who came across this messaging recognized that harming an animal, especially one that is classified as endangered, is wrong.

Framing Climate Change

The framework above is known as the external frame of communication (McDonald, 2009), or the way in which we read and react to information. To create and produce effective media that reaches the audience in which you are serving, the journalist will have to have an understanding of "internal schema" (McDonald, 2009). This can be seen as the audience frame of thought. Frames can help journalists structure stories, provide meaning for audiences, and can shape what information people have accessible from memory after reading the story.

> In this way, then, construct accessibility can operate as the mechanism by which message framing affects the audience's perceptions of the issue. However, construct accessibility can also limit the influence of media frames on how people interpret a story (Ewoldsen & Rhodes, 2020, p. 85).

When the audience's accessible constructs are contrary to how a message is framed, the message is less effective. Understanding one's audience, whether that be local, state or national, must come into play. Having a frame that does not accurately represent the information or story can in turn hurt the information itself. For instance, having a positively valenced frame when writing about the tragedy of a tectonic plate crushing homes and killing livestock in Iceland would not only represent the information inappropriately, but insult the community it was published in.

It is crucial here to mention the representation of information as it often appears in a journalistic format. The objectivity principle, which has long been an journalistic norm, often presents both sides of an issue — giving equal time and weight to both parties — , which can misrepresent the information when presented to the public.

[T]he news media in the United States are so intent on hearing both sides in a debate that they often are virtually incapable of showing where the majority opinion lies. In the climate debate, this means the same old skeptics can take up their position and receive equal time against an overwhelming majority of scientists (Becker 2005).

The framing of a given issue is crucial to the reader, but ensuring that representation is accurate is a journalistic duty. Knowing what we know now about climate change, equating the argument of climate skeptics to climate scientists is not only incorrect, it can be seen as unethical. This is often referred to as false equivalence, and has been ousted in most science reporting communities. John Schwartz, science reporter from The New York Times focusing on climate change, noted in an interview that

When it comes to talking about whether climate change is happening, there is no need for a both sides discussion…. By the time I became a full time climate reporter, we had decided among ourselves and gotten approval from our editors to simply say 'There's no other side here. We don't have to quote people whose arguments can prove to be specious' (Schwartz 2021).

Applying Solutions Journalism to Theoretical Solutions

In McDonald's (2009) work, she found that there are a couple of ways to address climate change by employing media effects theories. The findings of her research lead her to state the following suggestions to journalists:

1. Reference climate change as a nonpartisan issue.

2. Frame the issue as a disaster prevention and preparedness.

3. Frame the story as one particularly solvable by technological fixes.

4. Provide context, simply.

5. Increase salience by relating the topics to peoples lives.

6. Improve accessibility for low-information rationality audiences.

All of these rules are crucial to the accurate representation of the climate crisis in journalism, and solutions journalism, at its core, could provide direction for addressing many of her suggestions. For example, an article published by The Washington Post by Gabriel Popkin, "Planting crops — and carbon, too," presented solutions to the pressing issue of carbon in the atmosphere. The article posed the solution combining the information scientists and farmers gathered to offset carbon emissions.

In the paper, *Social Movements to Address Climate Change* (Sprain et al., 2009), challenges and possibilities appear as "image events" or as a social-movement strategy to gain public attention and build a movement. Leah Sprain and her fellow researchers found that a large challenge for activists is that journalists or media outlets will not always be there to cover a movement. The promising perspective that journalists offer is a new way to cover issues that face our communities, or build an agenda (Nisbet, 2008; Nisbet et al., 2010). Indeed, Nisbet (2008) notes that,

> News organizations are profit-driven enterprises that are chiefly concerned with
> transforming complex events into appealing stories for their news consumers. Faced with
> financial, political, and time pressures, journalists routinize their daily work by relying on

news values such as prominence, conflict, drama, proximity, timeliness, and objectivity

(p. 2).

Few stories are revealed through enterprise or in-depth reporting (Nesbit, 2008). Therefore, it requires extra effort to report on people, organizations and technologies that are providing solutions to climate change challenges. Linda Stein in "The Marching Forest of Shoreline Takes it to the Streets" stated that:

> We need all voices … When people see that others are putting themselves on the line about this issue, it helps give them courage to join in. The more people we can reach, the easier the rest of the work will be … We want the whole world to see that we citizens in the U.S. mean business about global warming … Let's take to the streets! If we all stayed out of our homes, who would know? (2007).

As mentioned before, for the purpose of this research, we will be looking specifically at framing and agenda setting. Large questions that look to be revealed in the textual analysis of this research is why is this text effective and how is that effect achieved. Specifically, we will be applying agenda setting and framing to the emerging concept of solutions journalism in the coverage of carbon removal in global media outlets.

The literature leads to these research questions:

RQ1: What words and climate terminology are being used in solutions journalism on the topic of carbon removal?

RQ2: What frames were being used in solutions journalism on the topic of carbon removal?

RQ3: What is more commonly being used in solutions journalists covering carbon removal, positive or negatively-valenced frames?

RQ4: Did the demographics of the authors stand out in terms of the typical journalistic community in comparison to the reporters who took a solutions frame?

Methods

The purpose of this study is to look into the emergence of solutions journalism and what it brings to the realm of mass communication. Specifically, looking into the impact that solutions journalism could have on coverage of the climate change issue. To assess such coverage, the current study utilized a textual analysis based in grounded theory. Grounded theory is a "qualitative research design in which the inquirer generates a general explanation (a theory) of a process, action, or interaction shaped by the views of a large number of participants" (Creswell et al., 2007). This theory uses qualitative data, and finds explanations in the processes of information and the communication at hand (Glaser & Strauss, 1967). There are two major sectors to grounded theory, the first of which is the more systematic procedure. This consists of coding data into categories, building off of the data collected (or observed) in which case often comes to a visual (Creswell et al., 2007). The second is known as a more selective form of coding; the researcher takes the model and creates a proposition to assemble the research in order to find the interdependence between the grouping and the model (Creswell et al., 2007). It can be noted that the research presented in this study relies heavily on grounded theory, with the frames and prevalence of certain terms and text providing the "models" through which to examine the selected articles. Textual (or narrative) analysis theory also informed the research. Narrative

research notes the analytical strategies that authors use as well as the variety of texts and visual data presented in the storied form (Creswell et al., 2007). Allowing for a space for the qualitative information to speak on its own accord allows for this form of research to be appropriately applied to the current study.

In this textual analysis, keywords and concepts were derived, such as whether terms like "climate change" and "solutions" are used interchangeably and in what context. The language and terms employed was also noted (e.g. carbon sequestration). It is crucial here to note whether or not this text text was effective in presenting the information at hand. Was the solution(s) presented in the piece central to the story and did it provide the framework mentioned above? Further, with this research compiled, will solutions journalism be an appropriate practice to be followed in the future?

To focus this research, the textual analysis based on grounded theory (Cresswell, 2007) was used to conduct qualitative research of the most commonly used words and news frames in articles verified as Solutions Journalism by SJN. The articles' primary focus was the issue of carbon in the Earth's atmosphere and were published in English-language media outlets between January 1, 2017 to March 27, 2021. The articles either qualified as text or multimedia to ensure that they adequately reflect information that can be compared in the same modality. Due to the lack of studied and observed Solutions Journalism practices, there was no regional filter to these articles. The search terms "carbon" and "carbon removal" resulted in a total of 148 articles via the SJN Story Tracker. However, of these 148 articles, the stories that were truly focused on the aspect of carbon removal came down to 70 articles. These 70 articles ensured that carbon removal and solutions geared toward carbon were the central topic of the piece. The stories were found at http://storytracker.solutionsjournalism.org/.

Results

The results found from the textual analysis were revealing in the sense of similarities in the terms used by the solutions articles. Again, this textual analysis focused on finding the keywords, concepts and frames used. As seen in Figure 1, after analysing the data, keywords are illustrated with larger words reflecting the frequency in which they were used in the articles. It can be assumed that words such as "carbon" and "climate" were to be common given the parameters of the pieces in which they were found. However, it is words such as "goals," "solution" and "hope" that were striking. Striking in the reasons that these are positive, often action-driven words. Another interesting note is that in all 70 articles combined, the word "fight" comes up 42 times, "health (healthy, healthier)" comes up 73 times and "hope" comes up 38 times. It is this very notion of hope that offers insight into the world fighting against climate change. Indeed, according to conservation psychologist John Fraser, hope is critical to addressing climate change. In his research, he has found that feelings of fear can cause people to withdraw from the issue of climate change — in order to minimize the pain and concern — but that can be self-destructive to mental health. Fraser says when people concentrate on solutions to the climate crisis, there is an escalation in hope ("Hope is Critical…" 2019):

> Hope is the belief that I can accomplish a goal that may seem insurmountable. So it's targeted, it's specific, and it isn't necessarily 'Pollyanna' happiness. What hope is, is a targeted way of seeing my future and taking the steps to get to that future.

Journalistic norms are driven by news values like prominence, proximity, currency, timeliness, conflict, impact, human interest, and the odd or unusual. As such, it is understandable that news audiences are often exposed to negative stories, as it is the goal of journalists to

provide coverage with these news values in mind. This is not to say that journalism should stop from providing the watchdog coverage they are known for, since this is crucial to the principles of the fourth estate (McNair, 2009). However, the concept of solutions, specifically in offering hope, is quite a unique factor when it comes to news values. Terms like "hope" invoke a positively-valenced news frame on might not be considered in traditional news coverage, which is often predefined and contextualized in narrower, negatively-valenced terms.

Figure 2 features the cumulative frames used within the analyzed articles. It is a given that solutions would be a focus for these stories, along with an environmental focus. However, it is interesting that the use of emotion came into play heavily in these articles, drawing attention to the human element that made the reader feel an attachment to what was being portrayed. However, it is important to note that more frequently than that, data was used as an important element in many of these stories. In fact, 30 out of the 70 articles used data analysis in their pieces. This disestablishes that solutions journalists are creating "puff" pieces, highlighting what is only good; instead they are reporting on what is working and what is not working in the solutions that are presented, as backed by measurable results. This data, however, did not minimize the human element of the pieces. Presenting the data in an understandable way is still a crucial part of journalism, and when used effectively, can have an emotional impact. In the 2018 piece in *The New York Times Magazine*, "Can Dirt Save the Earth," Moises Velasquez-Manoff wrote that:

> The essential insight is one often overlooked when we talk about climate change:
> The element that threatens to smother civilization is also, in different forms, the
> fundamental building block of life. To prevent carbon from causing misery and
> destruction, perhaps we just need to change its location. Perhaps we can find a way
> to pull it from the air and restore it to the earth.

As shown by the writing expert above, the explanation of science in such a humane and understandable way is what makes journalism necessary. The need of mobilization in terms of action can be implicated at times, but journalism is also about presenting information in the appropriate way, in such a way that Velasquez-Manoff even turned presenting information into art.

In considering the way the solutions are presented in journalism, it's important to note that most people only engage news on a surface level. Indeed, media researchers found that 79 percent of web users scan information rather than read it (Nielsen, 1997). So can the "solutions" message be translated to the reader in the headline alone? The findings of compounding the headlines together, followed by placing them into a word cloud generator, uncovered some major keywords of interest. First, it is important to draw attention, again, to the most frequently used words, which correspond to the largest words in the word cloud in Figure 1. Those are "carbon" and "climate," and serve as the primary focus of the headlines analyzed. However, it is crucial to look into the other words in the presentation text as well. The words, such as "saving" and "help," offer a keen insight into the presentation of the climate crisis. The word "saving" not only acknowledges that there is something to fix, but that if not addressed, could result in peril.

The vast majority of solutions journalism stories on the climate change issue were presented in a positively-valenced frame as seen in Figure 3. Overall, the stories featured positive solutions in their given communities, or a strong comparison of effective change between two entities. However, there were a few stories framed in a negative light — making up around 4.3 percent of 70 stories. This, however, does not represent a flaw in the workings of solutions journalism. As stated on April 1, 2021 in a Solutions Journalism Webinar, Allen Arthur, manager of online engagement, said:

There are solution stories about responses that were tried and did not turn out well... It's different in structure than an expose 'Look at how those failed' and more geared towards 'Well, what can we learn from the ways that this did not work out?' (Hotz, 2021).

It is crucial to recognize that in the framing of solutions, it can be useful to highlight the solutions that did not work. It is a similar mindset to adapting the frame of teaching history to children. It is necessary to understand the mistakes of the past in order to move onto the solutions of the future.

Now when assessing the framing used in any given story, it is important to recognize the words used, as well as the people responsible for reporting the information. Figure 4 focuses on the gender and minority status of the journalists who wrote the stories. The genders were coded based on their ascribed gendered presentation on their public news outlet web pages or on their social media sites and do not take into account any self-identifying gender status. A majority of the authors were white, making up 84.1 percent of the stories reviewed, while 15.9 percent of journalists reporting these stories were minorities, in terms of their race or ethnicity. This, while seemingly being a not ideal representation of journalists in reflecting the communities they are reporting on, is not a novelty occurrence to the journalistic community at large. According to a 2018 survey by the ASNE, racial and ethnic minorities make up on 17 percent of print and online publications (2017), while 37 percent of the U.S. population does not identify as white (Arana 2018). It is crucial to look into the possible roots of journalists' personally accumulated biases since journalists can insert or diffuse biases by being aware of their word choice, story frames,angles, and sources. The reporting community often picks out sources that are similar to ourselves and community (Lehrman, n.d). It is not to say that a non-minority journalist could not

be sensitive to the presentation of a topic disproportionately affecting a marginalized community, but there can be more done.

It should be noted that this information represents that solutions journalism, while providing an outlet for stories moving beyond the noted norms of the original news values, does not in itself solve all the issues facing journalism in providing fair, balanced and neutral reporting. The effort of providing communities with an outlet to state their solutions, or in turn failed solutions, does not dismantle problematic systemic structures in our society and media as a whole. The importance of representing all communities becomes increasingly apparent when, in turn, it is considered that marginalized communities are more impacted by climate change. This notion is called climate justice and has become more apparent in the teachings and research of the climate crisis. According to research conducted by David Schlosberg and Lisette B. Collins, they concluded that:

> Given the long‑term impacts of climate change, the ever‑present demands for justice in its wake, and the dynamic and continuing evolution of environmental and climate justice movements, we will be examining the idea, movement, and, hopefully, the realization of environmental and climate justice much more in the coming years (Schlosberg 2014).

The impact of climate change on minority communities needs more attention in mainstream media For instance, Patnaik et al. (2020) found that 13.4 percent of African American children will suffer from asthma, compared to 7.3 percent of white children.

Moving further, it is crucial to take a critical look into the types of outlets that are presenting solutions pieces. Out of the 70 articles that were analyzed in this current study; 40.6 percent were from mainstream media outlets and elite / mainstream outlets, 8.7 percent were local and 50.7 percent were from niche outlets. It is important to understand the reach that these

articles potentially have in shaping the public agenda, remembering back to the agenda-setting theory that was mentioned in the literature review. Clearly there is a need to get more of these stories into mainstream and local media agendas, beyond niche outlets. However, it is interesting how strongly mainstream and elite outlets have shown up in this research and leads to a possible notion if in a few years, more local news outlets will follow suit.

Conclusion

Overall, the findings suggest that solutions journalism are geared to positively-framed pieces, with inspiring and action-inducing language from a variety of outlets. Shown in the sense of the framework provided, these efforts could lead to more effective action by the audiences of the communities impacted by climate change (McCombs, 1972; Scheufele, 2007). With this research as a foundation, it is noted that solutions journalism is not a silver bullet to solving problems and does not act as a replacement for the watchdog function that journalism holds in a society. Rather, it works to offer a possible new narrative format in order to convey new routes to overarching issues in our society. It is essential that journalists and the institution of journalism continue to evaluate its stance within a community and society. Without doing so, the institution itself will shoulder the blame for not taking action in promoting social justice. It is the responsibility of the press to notice when something is broken, and, in turn, represent the solutions on how to fix it.

Limitations

The limitations of this research is first, I am a journalism student, so while having prior existing knowledge and experience in a newsroom, I am biased because I do find great need for journalism as a whole. Next, I choose the type of the articles based on personal interest and ample availability of the articles. To restate, I choose articles focusing on carbon removal out of the various solutions stories. To ensure that these articles qualified as solutions pieces, I used an aggregator or second party network, SJN, which has a platform called Story Tracker. I found all my articles through this portal, ensuring that I was not the only person to qualify these articles as solutions articles. However, this placed faith in the strategy and findings of SJN. In terms of picking the stories, I filtered them based on the time range, and made sure they were English, print pieces. However, to ensure the stories focused on carbon reduction, I eliminated stories that did not use the term "carbon" five times or more.. If carbon was used less than 5 times in a story and/or not in the appropriate fashion, I took them out of the study.

Another possible point of error in my research was my using digital media and online landscapes to find the authors race, gender and ethnicity. This was either done from their papers/outlets or their online portfolios. This does have some biases because the sites' information, social media and other mediums could have been misleading. This leaves a large margin of error. I also did not use a second coder to check for agreement in my determination of frames, keywords and structures used in the current study. All in all, there is always room for improvement, however, I believe that my research contributes to the literature..

Future Directions

I would hope future research presents more information into this sector of journalism, further expanding on the crucial role solutions journalism plays in climate change coverage. Moving forward into other sectors of research in solutions journalism and climate change, it would be beneficial to look into priming as a more central theory, an experimental design as a central method. While it was not used as a central theory here, it still holds important weight into what needs to be considered when moving forward. To elaborate further on this for the means of future research, the analysis shows that the media can prime the reader's schema, which is the beginning of framing, which in turn sets the agenda (Scheufele, 2009). All of this can cultivate public thought, and in turn ignite public action. This question above can be explored through experimental design, asking if and how solutions journalism impacts individuals and mobilizes action in comparison to the typical journalistic structure.

Another possible direction of future research would look into the gendered and race disparities at news outlets in comparison of news outlets that are equitably staffed. To look into this and textually analyse the stories being released from these outlets to see if there are any major disparities or differences in the work presented to their given communities. In turn, to note how the newswork of one outlet in comparison to another impacts the priming, framing and agenda-setting (Scheufele, 2009) of the climate change issue on the audience. The question is if an outlet shows more inclusivity and equitable action, if it is reflected in their writing and the outcome of the stories.
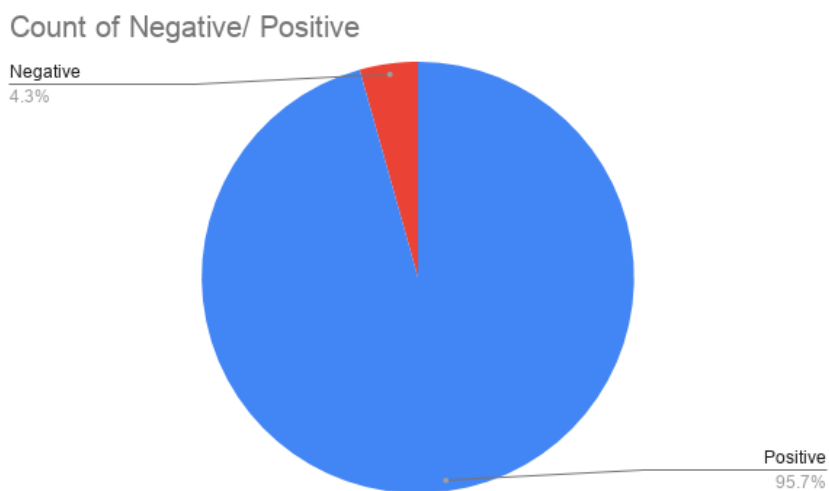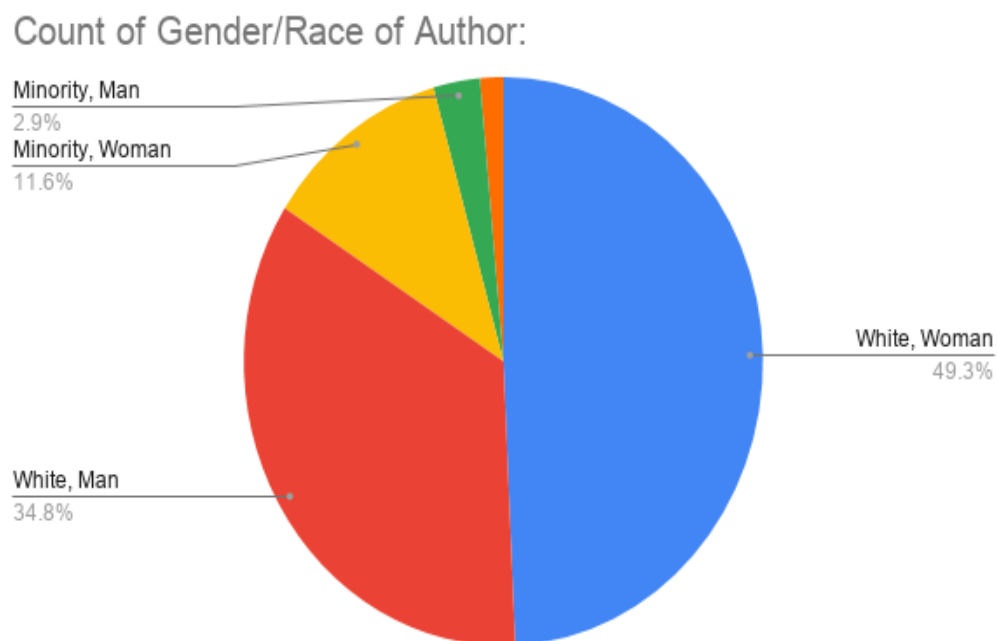
Results in Figures

Figure 1: The chart to the right represents the most used words from the articles that were analyzed.

It is important to note the similarities between these words and the frames that are given.

Figure 2: The chart above shows the frames used in the given articles. The larger the word, the more frequently the frame was used in the articles given.

Count of Negative/ Positive

Negative
4.3%

Positive
95.7%

Figure 3: The chart below shows valienced frames in the 70 stories, either being positive or negative in overall frame.

Figure 4: The chart right represents the gender and race breakdown of the journalist for the coded articles. The gender and race of the authors were found from their news outlet website as well as their social media pages.
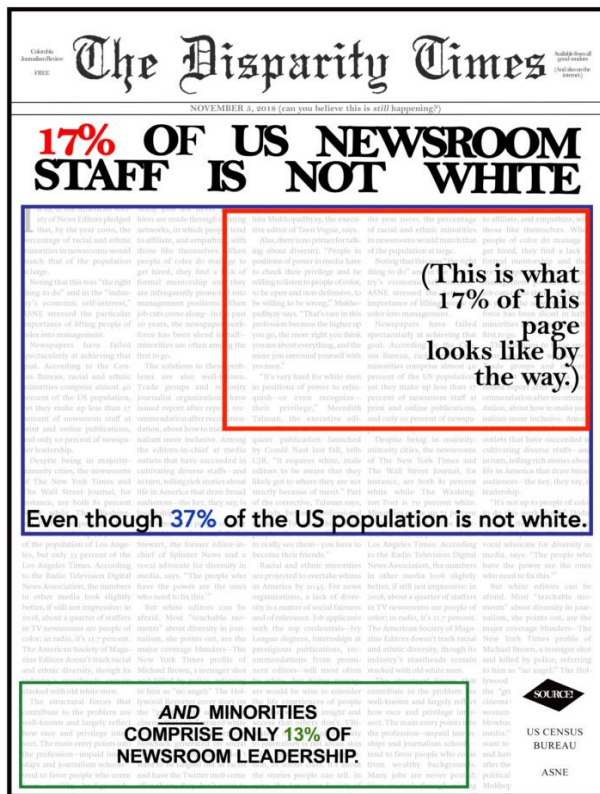
Count of Gender/Race of Author:

Minority, Man
2.9%

Minority, Woman
11.6%

White, Woman
49.3%

White, Man
34.8%

Figure 5: The chart to the left, crafted by ASNE, shows a representation of the ethnicity breakdown of journalists in mainstream media (2017).
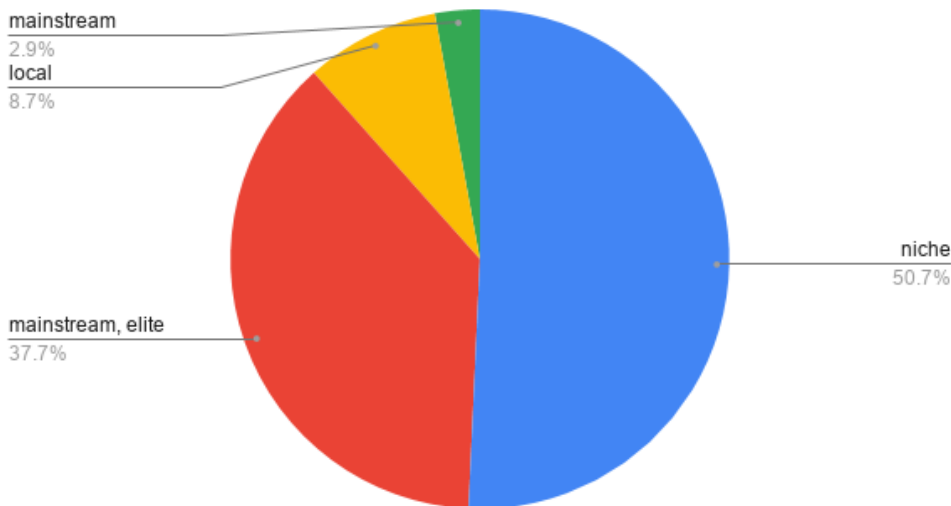

Figure 6: To the left are the types of news outlets that the 70 articles consisted of.

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