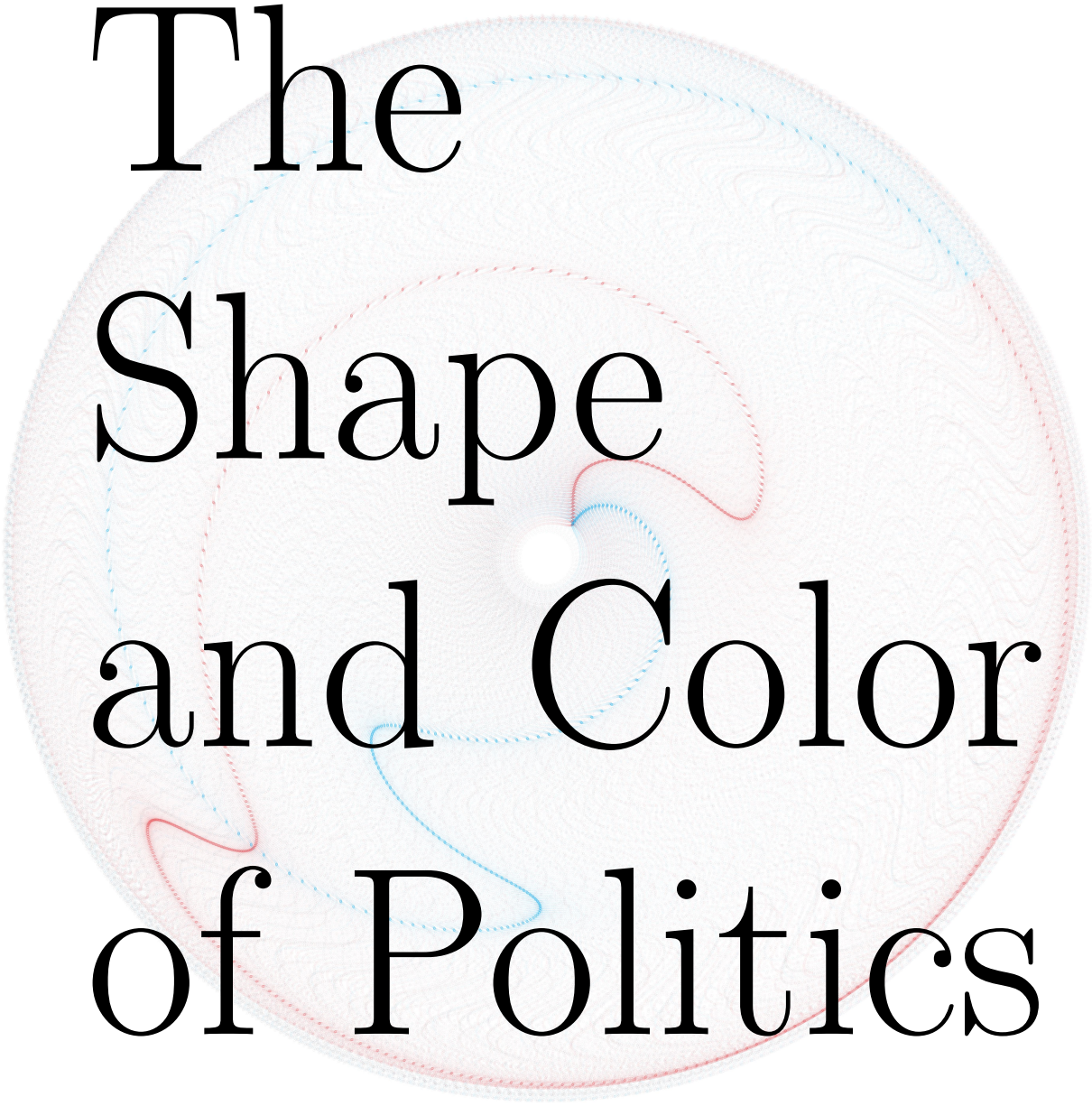
The Shape and Color of Politics



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The Shape and Color of Politics

How citizens process political information and its consequences

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2. How do colors convey political information and effect individual attitudes?

2.1. Introduction

Are colors important to politics? This chapter argues that they are; at least that they convey information that voters and campaigns care about.

2.2. The role of visual information in politics

As the rise of television consumption necessitated a change in the focus of the medium in the research for political communication scholars (Hall Jamieson 2014), so too does the rise of image-based social media. For a number of methodological and disciplinary reasons, the visual aspects of television were not of much focus in the literature (Bucy and Joo 2021). However, with the trend towards ubiquitous use of the public to use image-dominant social media platforms like TikTok and Instagram, news organizations and politicians have responded and are relatively active on these platforms as well. In response, we, as scholars, need to make this transition to integrate the role of simple visual information into our theories of political information processing (abbreviated as *pip*) and attitude formation.

A number of scholars make this same argument. An edited issue of *The International Journal of Press/Politics* is centered around making the point that visual politics is understudied; yet important (Lilleker 2019). Those who are engaged in these sorts of question attribute these challenges to methodological and the requirement for the difficult task of interdisciplinary theorizing to engage in such questions (Gerodimos 2019; Bucy and Joo 2021).

How does politically-relevant visual information matter to politics? From a evolutionary-biological perspective, visual information is a common source of information for millions of years that a variety of single-and-multi-cell organisms rely upon to evaluate their environment (see Grabe and Bucy 2009, chap. 1 for a useful discussion). Visual information processing, as an ancient biological invention, the human brain is organized around the processing of it. Reflecting this, many scholars of neuroscience argue visual information to

be the fastest form of information processing for humans. For example, even complex visual information such as the warmth expressed in someone's facial features are automatically and subconsciously processed in only about 33ms (Ames, Fiske, and Todorov 2012).

Approached from a different perspective, as humans are cognitive misers , visual information in the realm of politics provides efficient information to voters about politically-relevant actors and events (Lilleker 2019). Evidence suggests that voters rely on simple visual information in the background of an image to infer the ideological position (Dan and Arendt 2021) and that their coverage reflects electability perceptions (Stewart et al. 2021) – which influences reported desire to vote for the candidate. Images posted on social media by politicians provide more personalized information about them and that they take on their own styles (Lindholm, Carlson, and Högväg 2021; Peng 2021); reflecting that it is an alternative source of information curated to attract support.

While visual politics is enjoying more attention by social scientists, there is still little focus on the simplest visual information: color. In the context of the United States, the "Republican red" and "Democratic blue" are a relatively recent invention that likely has significant import in a era of significant effort by the parties to distinguish themselves from each other (Clifford 2020) and where voters toe the party line (Utych 2020). Since the 2000 presidential election, the media have consistently used the color red on their electoral maps in "horserace" journalism to represent Republicans and blue to represent Democrats (Elving 2014). The supposed consequence of this is that Democrats now report preference for the color blue over the color red; and Republicans report a preference for the color red over the color blue (Schloss and Palmer 2014). Beyond this however, we have yet to robustly develop and test theories about the broader impacts that color has on political information processing and attitude formation.

As the broader field of study of visual politics is under-theorized, theorizing about the use of color as a form of information is also quite limited – perhaps even more so. The literature that does exist argues that colors are a source of visual information to classify more abstract concepts for voters. For example, in western Europe, voters are better at connecting the ideological positioning of a party with the color they use in their branding, the longer-surviving and more prominent the party is (Casiraghi, Curini, and Csumano 2022). The use of politically-relevant colors activate biases toward pre-existing ideological and partisan preferences among voters in a Spanish sample (Maestre and Medero 2022). It remains unclear, however, what the particular psychological mechanism drives this, and how even colors as a form of political information, is organized into a schema that allow voters to quickly access to form political attitudes or how they moderate the effects of other types of political information on attitude formation. As a jumping-off point, we can turn to the literature on political information processing (heretofore abbreviated as *pip*).

The first prominent model of *pip* is derived from rational choice perspectives. The memory-based model of *pip* views attitudes as a weighted collection of prior information (see J. R.

Zaller 1992). As individuals receive new information, they organize it into a schema that is relative to prior objects they already have encoded. With the encoding of this new information, the model predicts that individuals incorporate this new object with similar objects to form an attitude. This schema then may be more accessible in similar contexts and may then sample from its elements when prompted to express a political attitude. While the Receive-Accept-Sample (RAS) model accepts the view that expressed attitudes are based on a weighting that is most accessible at the time of attitude expression (Zaller John and Feldman 1992), it still presupposes that the weighting is an average of prior information.

The second prominent model challenges this latter point. The online model of *pip* contends that individuals do not evenly weigh information, but that whether they even store it into their long-term memory to access later is biased in the direction of supporting pre-existing attitudes (Lodge and Taber 2013); this phenomenon is referred to as motivated reasoning by the psychology literature (Kunda 1990). This model suggests that people ignore new information that goes against their prior beliefs and that information confirmatory of their preferences are quicker to access – referred to as hot cognition (Lodge and Taber 2013).

The online model conceptualizes this underlying mechanism of information encoding and attitude retrieval as automatic (Lodge and Taber 2013). This occurs as a result of the information's strong associations with valanced appraisals of the information guiding the attitude (Lodge and Taber 2013). This brings political scientists closer to the dominant conceptualizations among neuroscientists and psychologists concerned with memory retrieval, encoding, and attitude formation (see Fazio 2007). Namely, that memories are encoded and retrieved based on associations and are quickly done so as a result of their association with valanced appraisals (Kensinger and Fields 2022). What remains unexplored is how visual information such as color may prime individuals to engage in motivated reasoning subconsciously, and if they do keep their attention on the object, what paths are activated by such information.

2.3. Integrating color into a model of political information processing

Existing models of *pip* are largely focused on complex forms of political information such as text. As individuals process visual information before other sorts of information, we might expect that they may form the snap-judgement or the initial appraisal of an object. This has a number of important implications; from suggesting that our theories of *pip* should be broadened to reconsider what constitutes politically-relevant information to what it means for our substantive understanding of how people process political information and the calculus involved in political attitude formation.

2. How do colors convey political information and effect individual attitudes?

Though the online model of information processing goes a long way to inform us about the ways that our physiology engages attitude formation and retrieval, the types of information it considers necessarily limits the applicability of the theory to other forms of political information. Color and other forms of simple visual information are processed much more quickly and occurs more frequently than text-based information (Mehta and Zhu 2009). As color and other types of visual information are processed differently, we should consider its use as political information differently as well. As visual information is affectively encoded (Cimbalo, Beck, and Sendziak 1978), this means that it has the potential to effect the affective state and processing of more complex information, such as text. That is, the visual information provides a snap-judgement or an impression of the object through faster processing and activates particular neurological processes that influence subsequent information appraisals (Ames, Fiske, and Todorov 2012). This implies that the conclusions drawn from such *pip* models may be systematically biased without considering the upstream effects of non-text information; such as simple visual information like color.

Before expanding upon the role that colors have on shaping political attitudes, let me first define an attitude as a concept. An attitude represents an accessible, valanced, evaluation of associated prior information and experiences. This conceptualization fits with that of the Object-Evaluation Associations Model (Fazio 2007). As opposed to viewing attitudes as a latent collection of memories, as is done in the memory-based model of *pip* (Zaller John and Feldman 1992), it views attitudes as measurable evaluations of memories. As memories, are at the core of an attitude, the association of memories with its evaluative component (see Kensinger and Fields 2022) contribute to the perspective that attitudes are affective. What this implies, is that we should be able to measure attitudes but that such an operationalization requires a careful consideration of the role that the context plays on any given measure of an attitude as they are resulting from memories (Fazio 2007).

In line with the existing models of *pip*, I conceptualize attitudes as associative. This means that attitudes may be unstable - not stochastically, though. As attitudes are associative, they manifest slightly different depending on the associative paths that are activated (Fazio 2007). The retrieval of relevant memories to the attitude depend on a number of factors such as the recency of the event, the similarity of the context, and the importance or salience of the memory (Kahana, Diamond, and Aka 2022). This means that the memories that are retrieved to contribute to an attitude are quite variable. However, to understand where that variability comes from, we must understand the deeper processes that influence the way information is encoded and later retrieved. This illustrates my point of the need to further develop the reigning models of *pip*. Colors may act as one such contextual feature that may lead to this variability in how a given set of political information may shape attitudes.

Colors are associative and are affectively encoded (Cimbalo, Beck, and Sendziak 1978). When individuals access a memory, they do not just recall an object but they may re-

call visual information such as the color of an object. As visual information like colors are quickly processed and encoded, they are also quickly retrieved with their associative memories and can do so unconsciously (Mehta and Zhu 2009). As they are affectively encoded, their associations with particular memory contribute to the evaluative component of the memory. For example, colors like red are associated with anger, arousal (Valdez and Mehrabian 1994); whereas blue is associated with things like happiness and pleasure (D'Andrade and Egan 1974). What this means is that colors are particularly powerful as contextual information shaping the subsequent processing and integration of "traditional" forms of political information to construct an attitude. As the preference for a particular color correlates with political attitudes (Schloss and Palmer 2014), they may have some causal influence upon political attitudes; rather than just a correlation with them.

According to the literature in affective neuroscience, visual information is processed in parts of the brain such as the visual cortex (**goldstein_brockmole_2017_cl?**). This will activate other areas of the brain and will make associated paths "hot". One such area is the amygdala. Neuroscientists believe that as visual information is quickly and subconsciously processed, the amygdala takes such information and appraises the information based on the paths it activated; this generates a simple affective response to such information (Winkielman, Berridge, and Shlomi 2011). More complex, categorical, emotion occurs later in conscious processing (Winkielman, Berridge, and Shlomi 2011). This means that once politically-relevant visual information is detected, this information is passed from the retina to the brain. Once there, the brain attempts to classify the visual information by activating networks of neurons that are associated with the current information. With these activated pathways, the brain also attempts to appraise such information based on the quick classification. As memories are affectively encoded (Kensinger and Fields 2022), these memories help areas such as the amygdala to appraise the current information.

The automatic and subconscious appraisals of the visual information one encounters encourages particular behavioral and attitudinal motivations Ralph and Anderson (2018). This has evolutionary roots for the purposes of survival Parker (2003). While emotional appraisals can lead to complex motivations such as anxiety leading to motivations for information seeking (Marcus 2000), affective appraisals are valanced and are more automatic (Winkielman, Berridge, and Shlomi 2011). These affective appraisals lead to a desire to either retract or engage more with the object (Valentino et al. 2011). We should expect then, that the snap-judgement resulting from automatic processing of politically relevant visual information will lead to an affective response that motivates either a desire to engage more with the object or to disengage.

While the visual information may encourage a particular immediate reaction to engage or disengage from the information, subsequent information processing and more conscious processing adjusts this initial appraisal generated by the snap-judgement (Kensinger and Fields 2022). While subsequent information may amend one's snap-judgement, the snap-

judgement nevertheless influences the processing of subsequent information by activating particular paths which is later encoded as associated with the object as it is converted to a memory Kensinger and Fields (2022).

Figure 2.1 presents an illustration of the snap-judgement model.

What all of this means for *pip*, is that when we view political events or consume political information that has a visual component, we are going to encode visual information along with it. Taking expectations formed from theories of motivated reasoning (see Kunda 1990), I'd expect that the visual information that we encode with it is likely congruent with the evaluation of the object; we are likely to be unwilling to encode the visual information that is not congruent with the visual information as we do with text-based political information (see Lodge and Taber 2013). That is because unconsciously, we are going to experience a motivation to disengage from such information as soon as we appraise the visual aspects of an object as incongruent with existing attitudes and therefore to be uncomfortable. It should also influence how we retrieve memories when we are encountered with new information as well. This will have an effect on the attitudes that we express as a result. Additionally, this predicts that we will spend less time processing, accessing, and encoding congruent information (Lodge and Taber 2013).

Let me illustrate the snap-judgement model with a common experience for residents of the United States. Say you are driving down a highway. At 65 miles an hour, you are traveling at about 95 feet per second at this speed. Your attention is split. Your eyes are focused on the conditions of the road in front of you, on the cars in front of you, and on the rear-view mirror where your kids are either dropping food in the crevice between the seat or are trying to grab your attention. Out of the corner of your eye, you see a sign. It is not a road sign, because it is not on the familiar white or yellow background with black lettering. It's election season. You correctly infer that it is a political yard sign. In this split second, you notice the color of the sign and may see a name: Mitch McConnell. You now are racking your brain to think about who that is. If you are politically engaged, you might come to that recognition of the name quickly or it may take you quite a bit longer if you are less politically engaged (see Kahana, Diamond, and Aka 2022). You figure out that they are a Republican politician. You may have come to this with help by the fact that every year you've seen yard signs on this stretch of highway; and you know that when you see those electoral maps pop up on your news app on your phone that the electoral forecasts always represent Republican support with red and blue for Democrats. Once you've figured out who this person is, with the help of this other information, you have a reaction: "ugh, that guy is too loyal to Trump" or "yeah! He's loyal to Trump". You've expressed a political attitude.

What the snap-judgement model predicts is happening in your head is that as soon as the light that bounces of the sign to produce a particular wavelength hits your eyes, your brain is already trying to make sense of this information. This is a useful tool for survival that

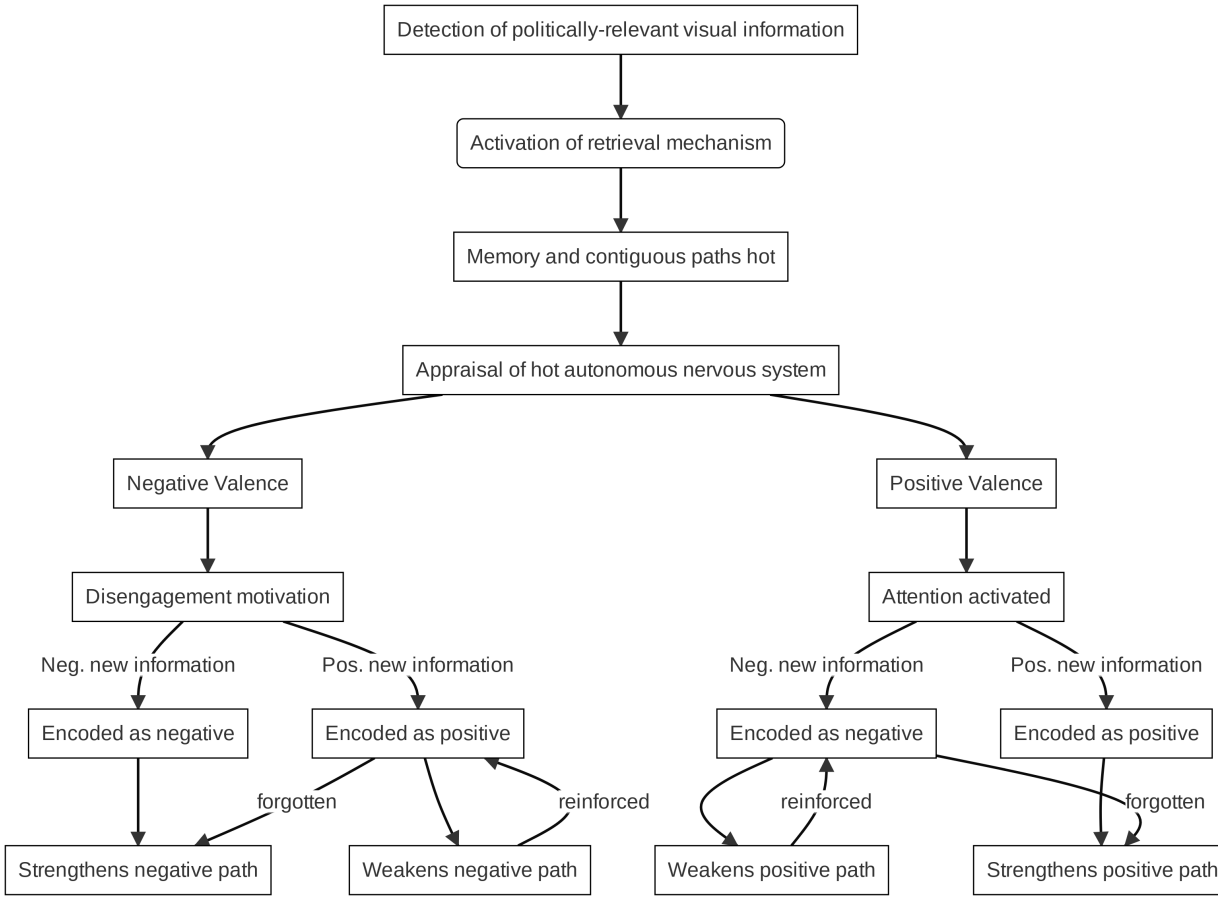


Figure 2.1.: Snap-judgement model

biology has optimized for millions of years (Parker 2003). Rather than processing the visual information slowly and you find yourself already in the jaws of a predator or to process it quickly but form the wrong impression and run away from a friend, the brain processes the information quickly and subconsciously (Newell 1990). To make sense of such information, it accesses information that is familiar and similar to what it is currently attempting to process for efficiency (Kahana, Diamond, and Aka 2022). This is accessing memories and contains valanced information (Kensinger and Fields 2022): should I avoid this or is it pleasant? Once the brain has finished such processing, it can pass along its prediction to your conscious memory. Once a reflex of avoid or approach is made, this opens up space for your brain to process the more difficult information: to take the patterns of the light as shapes that construct symbols and letters. This comes later because this information not only requires access to information about what it *is*, but also what it *means*; and once you understand what it means, then you have the information necessary to evaluate it.

The snap-judgement model predicts that you first process the colors of the yard sign. You access associative memory to figure out what those particular wavelengths represent: red, white, blue? As these colors are associated with different emotional states (see Cimbalo, Beck, and Sendziak 1978) and the resulting behavioral consequences, your brain starts sending signals to the rest of your body to prepare it to react (see Sander 2013; Dror 2017). You now need to figure out what the rest of that information was. What were the patterns of that light? It appears that there were some white letters on the sign. There was an "E", a "L", an "E", a "C", a "T". That creates the word "ELECT". Meaning to vote for. There were some more letters on the sign: a "M", an "I", a "T", a "C", a "H". A name. The full name is "Mitch McConnell". Since it is about politics, it must be a politician named Mitch McConnell. Now imagine, the information was the same, except the color was blue. You may take more time to figure out how that Mitch McConnell person is and come to your reaction to seeing their yard sign. This is because without the color red, you first are thinking about Democrats who are named Mitch McConnell, only when you come up empty on your mental rolodex, you figure out that it is the Republican Mitch McConnell.

How do you react to the color and then to the name? Social groupings are not simply abstract concepts invented by social psychologists. They are also reflected in our neurobiology. For example, researchers find activation of parts of the brain such as the anterior insula when we see someone in our social group outperformed by someone from the outgroup (see Zink and Barter 2012). The anterior insula activity is associated with physical and emotional pain; not just for ourselves but also for others (Adolphs and Vanessa 2011). Others have also observed that when seeing someone part of a high-status social group, that there is an increase in activity in the sensorimotor cortex and supplementary motor area indicating more activity in the areas of the brain that encourage movement (Zink et al. 2008). Visual information of someone in your social group speeds up processing, is more salient, and demands more attention than visual information of an object outside of your social group (Zink and Barter 2012).

There is significant evidence in support of the theory that our partisan identification reflects more than just our attitudes about politics, but that it is a social identity (see Campbell et al. 1960; Mason 2018) that guides our attitudes (see Achen and Bartels 2016; White, Laird, and Allen 2014; also Bullock 2011). As our political attitudes reflect shared views among co-partisans (Pickup, Kimbrough, and Rooij 2020), our reactions to such political information contains influence by the congruency to which that political information aligns with our partisan identification. This means that the visual information we glean from politics is likely to motivate those neurological features of social groups and will explain resulting behavioral manifestations reacting to such information. That information is also likely to be processed at different rates as well. That is, while visual information carries affective associations that are quite general, we should also expect that politically-relevant colors and visual information are associated to the structures represented by our partisan identification.

From this discussion, I expect the following: that individuals do pay attention to the colors used in campaign branding ($H_{2.1}$); that these colors that they notice shape perceptions about the person and ideological symbol represented in the branding – meaning that they express different levels of preference for recieving more information that is similar to what they saw and their levels of preference for supporting such a campaign ($H_{2.2}$); that more positive perceptions are explained by the consistency of information – simple visual information with more complex "traditional" information ($H_{2.3}$); this positive and consistent information is processed quicker than negative and inconsistent, negative and consistent, and positive and inconsistent information ($H_{2.4}$); and finally that campaigns make strategic choices about their branding to attract voters ($H_{2.5}$) in line with their primary objective of reelection (Fenno 1973; Mayhew 1974).

2.4. The systematic use of colors in campaign branding

- Descriptive analysis of the use of color in yard signs
- Consider using district level fixed effects in a regression to show District PID → Color selection

To examine whether the use of colors on yard signs vary in systematic ways, I collect images from the 2018, 2020, and 2022 Congressional elections for the House of Representatives across the United States. These yard signs are pulled together on one website by the Center for American Politics and Design[1]. From this website, I am able to extract over 1,100 images for these three elections. I then combine this information with district-level

[1]See: https://www.politicsanddesign.com/

data provided by the MIT election lab on election returns for candidates in these House elections [2].

With these data, I detect the percentage of the "Republican Red" and "Democratic Blue" on the yard signs and examine whether the 5-year smooth moving average of Democratic candidate vote share in that given district correlate. The purpose of this analysis is to examine the hypothesis that campaigns respond to the preferences of partisan voters and adjust their branding as a result. In this case, the branding being the color on the yard sign.

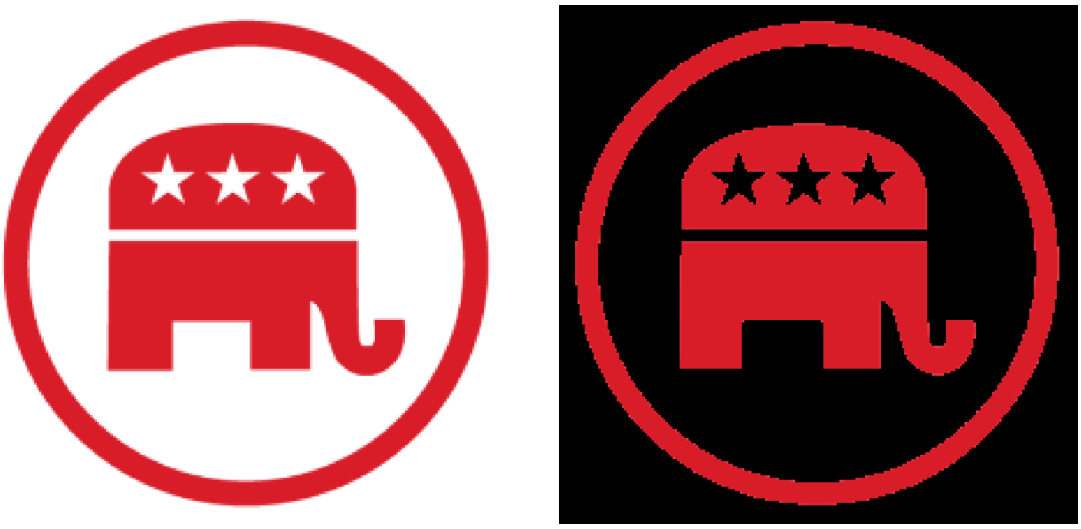
To provide an example of how the color detection works, I collected the GOP logo used on their official Twitter account during the 2022 midterm election cycle. I load this image and convert it to a three-dimensional array that contains information about the GBR (reversed RBG) values for the pixels in that image. I then resize the images to be a standardized 224 x 224 pixels. The computer is trained to detect a range of GBR values that encompass the official "Republican Red"[3]. For the broader exercise, I do it for the color white[4] and "Democratic blue"[5]. Once this range of values is specified, the computer detects the pixels that do not contain values within this pre-specified range and converts those values to represent the color black. Figure 2.2 presents this process.

I then extract the values in the array that are non-black and calculate the percentage of non-black pixels (as depicted in Equation 2.1).

$$\text{Color\%} = \frac{\text{Non-black}}{\text{Transformed}} \times \frac{\text{Original}_{\text{Height}} + \text{Original}_{\text{Width}}}{2\text{Transformed}_{\text{Height}} + 2\text{Transformed}_{\text{Width}}} \tag{2.1}$$

For the example in Figure 2.2, about 32.26 of the image is red.

[2] See: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/IG0UN2
[3] lower values: (93, 9, 12), higher values: (236, 69, 75)
[4] upper and lower values: (255, 255, 255)
[5] lower values: (0, 18, 26), higher values: (102, 212, 255)



(a) Resized original image (b) Masked

Figure 2.2.: Detecting colors in the GOP logo

3. How does visual information influence social interactions?

4. Does visual political information influence perceptions of your environment?

5. Conclusion

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