

A spatial theory of media polarization
Preliminary draft

Justin Buchler
justin.buchler@case.edu
Case Western Reserve University

abstract

This paper presents a spatial theory of the ideological placement of media organizations in a market to provide news to consumers with different ideological preferences. As the barriers to entry for media organizations decrease, more media outlets develop that differentiate themselves by moving away from the center, and the multimodality of the distribution for ideological preferences among news consumers leads to multimodality in the distribution of media organizations in a way that it cannot in a two-party election. The market strength of Fox News, talk radio and conservative online news sources merely reflects a demand for conservative news among the most avid news consumers.

Paper prepared for delivery at the 2016 annual meeting of the Midwest Political Science Association,
Chicago, IL

As the media landscape has shifted from a few large and relatively nonpartisan national outlets to a fragmented environment filled with ideological niche outlets, scholars have focused their attention on the concept of “bias,” its measurement, and the degree to which people seek out news sources that share their preferences. The primary question, then, has been the degree to which selective reception reduces the impact of biased news coverage (Arceneaux et al. 2012, DellaVigna & Kaplan 2007, Feldman 2011, Forgette & Morris 2006, Garrett et al. 2013, Gerber et al. 2009, Levendusky 2013, Prior 2009, Smith & Searles 2013, Turner 2007, Xiang & Sarvary 2007). In contrast, this paper argues that “bias” is not necessarily the most helpful framework with which to analyze media fragmentation. Rather, this paper turns to spatial theory, rethinking the concept of “biased” news coverage as merely strategic placement along an ideological dimension in a case of simple market competition. Rather than ask, then, how “biased” organizations like Fox News and MSNBC are, this paper will ask why they position themselves to the right and left, respectively, of the ideological spectrum. The decision to present the news from either a liberal or conservative perspective is not necessarily an abrogation of journalistic responsibility, but a profit-seeking firm’s decision within a market much closer to the Hotelling (1929) model than even Downs (1957). In the vein of Gentzkow et al. (2014), then, this paper shows how basic changes to the operation of the media market can affect the distribution of ideologically-positioned media outlets. This is not a defense of actual dishonesty, which does occur, but merely an explanation for the development of news presented from alternative perspectives.

Spatial theory and the liberal-conservative dimension

Modern spatial theory traces its roots to Hotelling (1929). In Hotelling’s model, two businesses compete for consumers who will patronize the businesses located closest to their homes. If the businesses must locate along a single street, and consumers are distributed symmetrically around the center, then the two businesses must locate as close as possible to the center of the street. If either business fails to do so, it cedes some portion of the market to its competitor. Downs (1957) was the first to apply the concept in a systematic way to electoral politics, arguing that two office-seeking parties should converge to the location of the median voter along a single ideological dimension, lest they cede victory to a more centrist opponent.

The degree to which such models can explain electoral politics has been a central issue in political science scholarship since Downs, but at the core of the issue is the notion that we can think of an election as being analogous to a market. In fact, though, an election is quite different from a market in many ways, meaning that we are prone to a variety of errors when we draw analogies between market competition and electoral competition (Buchler 2011). Most of these errors trace their roots to “the principle of voter interdependence.”

In a market, two consumers can make different purchasing decisions, and neither consumer’s decision affects the other. If one consumer buys a Coke, and another buys a Pepsi, neither imposes their choice on the other. In elections, that isn’t true. A voter might prefer the Democratic candidate, but voting for that candidate won’t provide the voter with the Democratic candidate’s platform unless a plurality of other voters do the same. What any one voter receives isn’t independent of the other voters’ choices. That makes elections, particularly “competitive” elections, fundamentally different from markets in ways that generate inefficiencies (Buchler 2011). Yet, spatial theories of elections are fundamentally market-based theories.

There is, however, a true market that can be represented by a liberal-conservative dimension: the market for news. Politically involved citizens need news organizations to provide them with information, in exchange for viewership, which generates advertising revenue. The transaction is more complicated than a simple exchange of goods for services since the money doesn’t flow directly from the consumer to the firm, but it is not subject to the principle of voter interdependence. One viewer choosing to watch Fox does not force anyone else to watch Fox, and even if Fox holds a plurality of the cable news viewership market, those choosing to rely on other outlets may do so, and those outlets, while less profitable than Fox, remain viable businesses. While structurally different from other consumption decisions, in the most important respect, giving one’s attention to a news service is essentially just a consumption decision.

Moreover, we must think of the process in terms of simple psychology. One of the easiest ways to avoid cognitive dissonance is to avoid being exposed to messages inconsistent with one’s pre-existing beliefs. In a limited media landscape, such as the one that existed when Zaller (1992) proposed the axioms of the RAS model, it is difficult to find news sources in which one will not be exposed to uncomfortable messages. Today, that isn’t the case. Television audiences have not only the major

networks, but Fox, MSNBC and CNN, radio listeners have a wide array of conservative programming, and online sites offer every imaginable shade of coverage. It is now much easier to minimize cognitive dissonance simply by relying on the most ideologically proximate news source.

That makes the decision about which news organization to use much closer to the consumer's decision in Hotelling (1929) than a vote. More importantly, that makes a *firm's* decision about how to present the news more analogous to the *firms* in Hotelling. The fundamental difference between a party in a plurality rule election and a market firm is that a firm can be profitable without a plurality of the market, whereas a party in a plurality rule electoral system simply loses if it doesn't reach the plurality threshold. Firms don't need a plurality.

This creates two primary ways in which spatial media theory can deviate from the Downsian model— changing entry barriers over time, and the modality of the distribution. The entry barriers for news organizations are both lower and different from electoral entry barriers. In a plurality rule electoral system, the primary entry barrier is Duverger's law. It is intrinsic to the electoral rule, and hence remains unresponsive to other changes in politics or society. In the news market, though, the entry barriers consist of both policy (FCC regulation of the airwaves) and financial (the start-up costs of a news organization). That means we must pay attention to the number of news organizations supportable, the extent to which they can differentiate their products across the ideological spectrum, and how the distribution of news perspectives that firms offer responds to the modality of news consumers' ideological perspectives.

In order to use spatial theory to study the ideological placement of media organizations, then, we must discuss the relationship between entry barriers, both policy and start-up costs, and the distribution of preferences among the news-consuming public.

The television news market with FCC-imposed entry barriers

Newspapers in the 19th Century were party-operated institutions rather than profit-seeking endeavors, making their ideological content less about appealing to consumers than about serving an electoral purpose. This also created a norm of competing papers within a city, offering alternative perspectives. The 20th Century saw the rise of news as business, with Hearst-style yellow journalism

demonstrating the potential for profit in sensationalization. Yet, the rise of broadcast and electronic media is what created the current environment, so this paper will begin with televised news.

Let us consider the strategic nature of media ideological placement in the infancy of television news. Television news came into existence as a condition for the “rent” that broadcast networks received. If too many television stations broadcast at the same frequency, the signals interfere with each other. To avoid a “tragedy of the commons,” then, the FCC has licensed access to the television airwaves, thereby preventing new networks from entering the market. While justifiable on a tragedy of the commons principle, though, this is effectively a rent-seeking situation. Firms with television broadcast licenses had government policies in effect that prevented new competing firms from entering the market. The additional revenue that such firms receive because they are protected from competition is “rent,” distinguished from “profit.”

Because of broadcast networks’ rent, the FCC has required firms with broadcast licenses to perform public service. One of the obvious ways to do so was to air television news programs. While these programs began, not because they were seen as profitable, but because they were required public service, maximizing audience share is still important. To sacrifice audience, even in a small market, is wasteful. Thus, as ABC, CBS and NBC began airing televised news, they needed to figure out a way to convey the news that would maximize profit.

So, consider a news-consuming public in which each potential audience member has a quadratic loss utility function for the ideological perspective of her news, $U_a(n) = -(n - i_a)^2$, where n is the ideological perspective from which the news is conveyed, and i is an audience member’s ideal point of perspective. In this equation, n is not a parameter for bias, but merely a parameter reflecting the manner in which the news is covered. Consider, for example, social spending. A conservative “perspective” could focus on the effects that social programs have on market incentives, whereas a liberal “perspective” could focus on the personal circumstances of those receiving benefits from such programs. Neither is necessarily “biased,” but a conservative news consumer will be more comfortable with the former, and a liberal news consumer more comfortable with the latter. We will address the distribution of audience members’ ideal points later, but for now, let us normalize the median consumer’s ideal point to 0.

Since each consumer has a single-peaked, symmetric utility function for news ideological perspectives, a two-firm market would operate precisely as Hotelling (1929), and subsequently Downs (1957) suggested. Two firms must locate at 0, or cede market share.

The problem is that the television news market is not, never has been, and never will be a two-firm market protected from new entrants by Duverger's law. Let us begin with the introduction of television news. Consider three firms, ABC, CBS and NBC, who receive a payoff equal to their market share. Each network simultaneously decides the ideological perspective with which they will convey the news, and then consumers make their news consumption decisions. In the next section, we will add sequence, which becomes more important as entry barriers decline due to technological advancements, but for now, consider simultaneous decisions.

If the game is a one-shot game, there are no pure strategy equilibria (for elaboration, see Eaton & Lipsey 1975). In an indefinitely repeated game with potential movement, though, we can apply the folk theorem.

Despite the fact that there are no pure-strategy equilibria to the one-shot game, there is a Schelling-type focal point (1960) arrangement of media placement decisions. Each network can position itself at 0. That way, the networks divide the market three equal ways since consumers are indifferent to the products. This isn't a Nash equilibrium to the one-shot game because any one network can go from 1/3 of the market to half the market by moving either incrementally to the left or right, leaving its two competitors to divide half the market between themselves. However, if at least slight movement is possible over time, we can introduce the folk theorem. Each firm can agree that if anyone deviates from the 0, 0, 0 arrangement, the two competing firms will begin the leapfrogging process. If, for example, the array is 0, 0, 0.01 at time t , then at $t + 1$, the second firm leapfrogs the third, giving 0, 0.02, 0.01. The firm that defected at time t for a 50% market share winds up with essentially 0 market share at time $t + 1$, whereas it could have stayed with 1/3 market share in each period had it not defected.

By the folk theorem, such a threat can maintain long-term compliance, and keep ABC, CBS and NBC at a centrist location, dividing the market three equal ways. However, such an arrangement only remains stable as long as entry barriers prevent new firms from entering the news market. In a broadcast

news market, that collusive agreement is maintained by FCC-imposed rent, based on airwave licensing policies that block any new firms from entering the market.

Reduction of entry barriers

Two developments have reduced entry barriers into the news market: the development of cable news, and the development of internet news. Beginning a cable news network does require financial start-up costs, which are significant. However, cable news, by virtue of not using the public airwaves, requires no FCC license. Thus, the major networks are not protected from cable news by their rent-seeking agreement with the FCC. The second reduction of entry barriers came with the proliferation of internet news sources. The cost of operating an internet-based news service is minimal. The only real challenge is finding a way to stand out among the din. The revenue from a purely web-based news service may also be minimal, but that merely permits niche product development.

As the media market has seen the sequential reduction of entry barriers, then, the three major networks have found themselves competing for ever-smaller market shares with institutions who have minimal operating costs, and hence less need for a broad market anyway. From the market-level perspective, then, scholars observe the fragmentation of the media, along with outlets catering to sometimes small and ideologically polarized audiences. More than elections, then, this cries out for Hotelling-style models.

What happens, then, when we introduce a fourth firm into the televised news market? When Ted Turner founded CNN as a cable news network, he had no need for an FCC license since cable programming doesn't use public airwaves. The three major broadcasting networks, then, were unprotected. The question was where CNN would position itself. Unbound by a collusive agreement, CNN could position itself at a location other than 0, but beyond the range of leapfrogging, and attract more than 1/3 (or 1/4) of the market.

Since Turner was a Democrat, the obvious choice was slightly to the left. The constraint is that once the cable news market is opened up, Turner needs to position himself with an eye towards future firms entering the market. Hypothetically, if CNN enters at, for example, -.1, a right-leaning firm could position itself at .1, and the next logical place for a new firm to enter would be just to the left of -.1,

leaving CNN with essentially no market. Thus, CNN must follow the principle of minimal differentiation, and position itself enough off center that if a new firm enters to its left, CNN isn't stuck with essentially zero market share.

Within a few years, then Fox enters the market to the right of 0, and internet news services begin entering at all conceivable locations. From an equilibrium perspective, then, the challenge is that this becomes a sequential move game in which different organizations have different start-up costs, and different potential audience reach because television news can reach a wider audience than any one web page.

We can, however, find a different approach to equilibrium conditions. Consider a media market with news consumers who have quadratic loss utility functions for news perspective as given above. At this point, we must consider the shape of the distribution. Suppose that the probability density function for the distribution of consumers' ideal points is $f(i_a)$.

Suppose that a firm's profit is its share of the media market, and the cost of entry is given by $c > 0$. For simplicity's sake, let us treat this as a fixed cost. If a firm enters the market, it receives utility equal to (market share - c). If a firm does not enter, it receives 0. Thus, a firm will enter the market if there exists some location, l , such that (market share $| l$) $> c$. Suppose, further, that once a firm enters the market at l , the firm's location is fixed at l by reputation. Any movement away from l will alienate existing audience members without attracting new audience members whose opinions are fixed by reputation.

Now, consider the following structure. Suppose that there are N firms who have the potential to enter the market, and each firm has the utility function given above. They do so in sequence, and since they each have identical utility functions, the specific sequence is irrelevant. In each round, a new firm decides whether or not to enter the market, and if they enter, the location of entry. At the end of N rounds, the consumers select a news outlet based on proximity. They are, more than Downsian voters, Hotelling consumers, who patronize the business closest to their ideological preferences.

We can now define the most important equilibrium condition: *saturation*. Saturation occurs at some round in sequential entry decisions when all subsequent firms must decline entry. The basic

condition is simple. Saturation implies that the maximum market share that a firm could attract given possible placements is less than c . The concept is simple.

Suppose that a condition is reached with t firms having entered the market. We can array them from left to right as t_1, t_2, \dots, t_t . If $c > \max \{F^{-1}(j+1) - F^{-1}(j)\}$ for all j , then there are no longer any gaps in the market with enough of an audience to outweigh the cost of entry. In practice, saturation will be reached with larger gaps. This statement assumes that $f(j)$ and $f(j+1)$ are both arbitrarily small with the entirety of the sub-market clustered at some point between j and $j+1$, which makes little substantive sense, but when $c > \max \{F^{-1}(j+1) - F^{-1}(j)\}$, then regardless of the shape of the distribution, no new firms can enter the market. We can define this condition as “saturation,” at which point market share can no longer outweigh the start-up cost for any more firms.

The saturation condition generates two insights about media positioning. First, as c goes down, more firms can enter the market. This should be obvious, since that is the point of entry barriers. The introduction of a cable news market in which FCC licenses no longer constrain the market means that more firms can enter in more locations. However, the startup cost of a cable news station is still significant. The startup cost of a web page is far lower. Thus, the development of an internet news market with low entry costs allows far more firms to enter the market. At that point, the distribution of media placement decisions becomes more dependent on the shape of the news consumption market, which leads us to the following critical observations.

Downs (1957) made a variety of useful observations, but also some mistakes. One of Downs’ mistakes was the assertion that if the electorate has a multimodal distribution, the electoral system could support different arrangements. In fact, that was wrong. Regardless of the shape of the distribution, Duverger’s law would operate, and two office-seeking parties must converge. In the media market, though, the shape of the distribution matters in ways that Downs thought for elections. In a multimodal distribution, each mode contains a niche market. More consumers means more potential for market share. The number of media organizations that can be profitable in a range depends on the number of consumers in that range, and the more clumps of consumers there are, the more clumps of media outlets there can be. This can be operationalized as follows. $F^{-1}(b) - F^{-1}(a)$ is the proportion of the news consuming market between the locations of a and b where $a < b$. The maximum number of news organizations supportable

within that range, then, is $(F^{-1}(b) - F^{-1}(a))/c$. In a unimodal distribution, such as a normal distribution, the number of supportable media organizations, then, decreases as the range moves away from the center.

In a multimodal distribution, though, that isn't true. Consider the ideological self-placement of people at various levels of attention to political news. The 2012 American National Election Studies survey asked respondents how often they pay attention to politics and elections. We can look at the ideological self-placement of respondents at each level of attention. Percentages are computed using post-stratification weights.

Table 1: Ideological self-placement and political attention

	Always	Most	Half	Some	Never	EVERYONE
Extreme Lib	7.2%	3.2%	1.9%	1.3%	4.8%	3.1%
Liberal	14.1%	11.6%	10.0%	10.3%	3.3%	11.2%
Slightly Lib	7.8%	12.4%	13.0%	11.9%	15.5%	11.7%
Moderate	23.9%	29.0%	37.0%	44.2%	55.8%	34.4%
Slightly Con	10.1%	17.1%	19.1%	15.1%	5.9%	15.6%
Conserv.	27.1%	21.9%	17.4%	13.7%	9.4%	19.4%
Extr. Cons.	9.9%	4.8%	1.7%	3.5%	5.3%	4.6%

While the overall sample is nearly unimodal (slightly more respondents identified as “conservative” rather than “slightly conservative”), the highest attention group was trimodal, with clusters of respondents identifying around the “liberal” mode (14.1%), the “moderate” mode (23.9%), and the “conservative” mode (27.1%), with the final mode being the plurality of respondents. As the cost of entry, c , approaches 0, the distribution of media organizations at saturation will approach the distribution of the market itself. If the political news market is essentially the subsample of high-attention consumers, then the market can support more “conservative” outlets than “moderate” outlets, and more “moderate” outlets than “liberal” outlets. Note that this closely matches the cable news ratings. Fox News, which

caters to an ideologically conservative audience, has the highest ratings, followed by the relatively centrist (although perhaps left-leaning) CNN, followed by the liberal MSNBC.

With respect to talk radio, conservative programming has dominated since its inception, and if it is a medium that attracts only the most devout listeners, it should be no surprise that its primary audience is conservative. Simple statistics are unavailable for the market shares of liberal and conservative web pages, but where the numbers are distinguishable, there is more of a market for conservative-aligned news than for liberal-aligned news. Rather than thinking of this in terms of bias, then, we should simply understand that the media market is, quite literally, a market, and among the most active consumers of news, there is a higher demand for news presented in a conservative manner than for news presented in a liberal manner. Whether any form of news coverage can be called “biased” is a separate question. It is a product.

The obvious contrast, then, is between the analysis here, and conventional wisdom among some commentators. One of the most popular refrains among conservative politicians, conservative identifiers and others is the claim that there is an overwhelming liberal slant to the media. Of course, the word, “media,” is the plural of “medium,” and there are a variety of liberal media and a variety of conservative media. The latter simply have larger market shares than the former, and whether this is strategic placement among pure profit-seeking firms, or something else is a matter of debate. The reason Fox outperforms its cable news competitors, though, should be obvious.

Concluding remarks

The simplified model here took its basic inspiration from Downs, in which the parties are essentially indifferent to policy. Media organizations were merely profit-seeking firms, who would present the news from whatever perspective maximized their profits. A more elaborate framework might resemble the citizen-candidate models (Besley & Coate 1997, Osborne & Slivinski 1996). In a citizen-candidate model of an election, each citizen simultaneously decides whether or not to become a candidate. If they become candidates, they do so with platforms equivalent to their personal ideal points, unable to credibly commit to an insincere platform. One might imagine news media operating in this way. Would Rush Limbaugh behave as he does if he thought there were more of a market for liberal-

oriented talk radio? Perhaps not. Then again, perhaps he wouldn't have entered the market. However, the citizen-candidate models use simultaneous decisions among all potential candidates, and media market entry decisions are both sequential, and affected by sequence. Combining the citizen-candidate framework with sequential entry decisions is a more complicated proposition, and the purpose of this paper is to make a more simple series of observations about the nature of news coverage and spatial theory.

The observations should be obvious, once pointed out. The media market can be characterized by an ideological space in which news consumers prefer coverage as close as possible to their ideological perspectives. More than an election, then, media markets operate on Hotelling principles. As barriers to entry have declined, we have seen a fragmentation and polarization of the media market based on the ideological preferences of news consumers. Rather than thinking about media organizations' ideological slants as "bias," we should recognize them for what they are: market placement decisions.

References

- Arceneaux, Kevin, Martin Johnson & Chad Murphy. 2012. "Polarized Political Communication, Oppositional Media Hostility, and Selective Exposure." *Journal of Politics* Vol. 74, No. 1: 174-186.
- Besley, T. and Coate, S. 1997. "An Economic Model of Representative Democracy." *Quarterly Journal of Economics* 112: 85-114.
- Buchler, Justin. 2011. *Hiring and Firing Public Officials: Rethinking the Purpose of Elections*. New York: Oxford University Press.
- DellaVigna, Stefano & Ethan Kaplan. 2007. "The Fox News Effect: Media Bias and Voting." *The Quarterly Journal of Economics* Vol. 122, No. 3: 1187-1234.
- Downs, Anthony. 1957. *An Economic Theory of Democracy*. New York: Harper Collins.
- Eaton, Curtis B. and Richard G. Lipsey, 1975. "The Principle of Minimum Differentiation Reconsidered: Some New Developments in the Spatial Theory of Competition." *The Review of Economic Studies* 42, No. 1: 27-49.
- Feldman, Lauren. 2011. "Partisan Differences in Opinionated News Perceptions: A Test of the Hostile Media Effect." Vol. 33, No. 3: 407-432.
- Forgette, Richard & Jonathan S. Morris. 2006. "High Conflict Television News and Public Opinion." *Political Research Quarterly* Vol. 59, No. 3: 447-456.
- Garrett, R. Kelly, Dustin Carnahan & Emily K. Lynch. 2013. "A Turn Towards Avoidance? Selective Exposure to Online Political Information, 2004-2008." *Political Behavior* Vol. 35, No. 1: 113-134.
- Gentzkow, Matthew, Jesse M. Shapiro & Michael Sinkson. 2014. "Competition and Ideological Diversity: Historical Evidence from US Newspapers." *American Economic Review* 104(10): 3073-3114.
- Gerber, Alan S., Dean Karlan and Daniel Bergan. 2009. "Does the Media Matter? A Field Experiment Measuring the Effect of Newspapers on Voting Behavior and Political Opinions." *American Economic Journal: Applied Economics* Vol. 1, No. 2: 35-52.
- Hotelling, Harold. 1929. "Stability in Competition." *Economic Journal* 39: 41-57.
- Levendusky, Matthew S. 2013. "Why Do Partisan Media Polarize Viewers?" *American Journal of Political Science* Vol. 57., No. 3: 611-623.

Osborne, M.J. and Slivinski, A. 1996. "A Model of Political Competition with Citizen Candidates." *Quarterly Journal of Economics*, 111: 65-96.

Prior, Markus. 2009. "The Immensely Inflated News Audience: Assessing Bias in Self-Reported News Exposure." *The Public Opinion Quarterly* Vol. 73, No. 1: 130-143.

Schelling, Thomas C. 1960. *The Strategy of Conflict*. Cambridge: Harvard University Press.

Smith, Glen & Kathleen Searles. 2013. "Fair and Balanced News or a Difference of Opinion? Why Opinion Shows Matter for Media Effects." *Political Research Quarterly* Vol. 66, No. 3: 671-684.

Turner, Joel. 2007. "The Messenger Overwhelming the Message: Ideological Cues and Perceptions of Bias in Television News." *Political Behavior* Vol. 29, No. 4: 441-464.

Xiang, Yi & Miklos Sarvary. 2007. "News Consumption and Media Bias." *Marketing Science* Vol. 26, No. 5: 611-628.

Zaller, John R. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press.