MAKING ANALOGIES WORK:

ANALOGICAL MISFIT AND ALIGNMENT IN THE EMERGENCE

OF THE ONLINE ADVERTISING INDUSTRY

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Abstract

Prior research shows that innovators often explain their deviations from established market categories by using analogies to highlight similarities between their innovation and elements of a more familiar category. However, little is known about how organizational actors overcome the misfit between their innovation and an analogized category. To explore how actors make analogies work, we use a qualitative study of the emergence and growth of the online display advertising business to develop a theoretical model that describes how actors make strategic use of analogies to explain new innovations and defend their departure from traditional categories. We observe actors using three types of strategies – stretching, bending, and positioning – to make their analogies work despite misfit. Our study's findings contribute to theory on the role of analogy and public discourse in market emergence by explaining how actors overcome analogical misfit in the emergence of new industries.

INTRODUCTION

For scholars studying the emergence of new types of markets, an increasingly central topic of research combines questions of how market actors define new types of goods as a market and how they settle into new exchange routines (Fligstein 1996, Rosa et al. 1999). Prior research suggests that innovative firms with products and services that do not readily fit existing market categories face difficulty merely explaining their offerings (Bingham and Kahl 2012, Rindova and Petkova 2007), and that this communication challenge can threaten the viability of innovators (Zuckerman 1999, Kennedy 2008). To overcome this challenge, firms introducing innovations as diverse as the light bulb (Hargadon and Douglas 2001) or the computer (Bingham and Kahl 2012) have drawn on analogies to different markets and industries to shape how others understand and utilize their products.

As a result, prior research has increasingly featured studies of organizations using analogy as a strategic tool for giving meaning to new phenomena (Cornelissen and Clarke 2010, Etzion and Ferraro 2010, Hargadon and Douglas 2001, Leblebici et al. 1991, Ocasio and Joseph 2005). This work suggests that organizations invoke analogies to explain their novel offerings using terms featured in different market categories (Lounsbury and Glynn 2001, Sternberg 2004, Ward 2004). This use of analogies aids innovators' efforts to educate their audience by suggesting their innovation can be understood in terms of another, already familiar domain or category (Cornelissen and Clarke 2010). This suggests analogies are an important way to provide normative legitimacy for innovations (Etzion and Ferraro 2010).

While this prior work explains why analogies may boost acceptance of new types of innovations, important questions still remain. In particular, an analogy by definition highlights resemblance, or fit, between select features of things that are in other ways unlike. Although it appears that analogies work best when there is good fit between an innovation and the analogical referent because such fit lowers the burdens of learning a new schema (Bingham and Kahl 2012; Cornelissen et al. 2011), we know less about the work organizational actors engage in to establish and improve such fit. The inherent dissimilarity in an analogy provokes our research question: how do organizational actors overcome the misfit between their chosen analogy and their actual innovation or goods and services? That is, how do these actors get analogies to "work"?

We explore this research question through a qualitative analysis of the emergence of a new business model – the advertising exchange – in the nascent online display advertising industry. Advertising exchanges extensively used analogies to financial markets to introduce and develop a business model for buying and selling advertising impressions that challenged the advertising industry's historical reliance upon profession-inspired principles for governing the buying and selling of advertising. We combine interviews and participant-observation with an analysis of industry discourse found in blogs, websites, and media to explain how various organizational actors work to create greater analogical alignment between financial markets and online display advertising.

Our findings reveal three distinct types of strategies organizational actors use to make analogies work. First, we find that actors *stretch* the meaning of the analogy so that the analogy fits their activities better. Second, actors furthermore *bend* their activities to better fit their analogy of choice. Finally, innovators engage in analogy work to *position* their business model relative to pre-existing business models and other innovators so as to construct a persuasive account for their innovation. In combination, we argue that actors facilitate acceptance of new market conceptions and related products and services by "stretching" the meaning of categories they use in analogies while also "bending" their innovations to better fit the existing meanings of those categories, and that this is furthermore supported by a positioning of their new market analogy within the existing system of conceptual relationships.

Our findings extend prior research on how analogies aid the emergence of new institutions (Etzion and Ferraro 2010). While this research suggests actors invoke analogies more effectively when the analogy builds upon historical practices (Hargadon and Douglas 2001) or shares causal relationships with the innovation (Cornelissen et al. 2011), our findings offer a novel theory of why and how analogies aid acceptance of new types of innovation. In particular, we develop a model of how actors make analogies work by managing the misfit between their innovation and their analogical category, and vice versa. In our study of online advertising, for example, we find actors both using analogies to explain their new activities and adapting their activities to fit the analogies. As a result, analogies not only provide cognitive inspiration to organizational actors, but also provide a feedstock of material ideas and constraints that influence the structure of emerging markets.

THE STRATEGIC USE OF ANALOGIES

Modern product markets are dynamic knowledge structures that are developed and negotiated by market actors seeking to make sense of producer and consumer behavior (Rosa et al. 1999, Kennedy 2005). As such, markets enable participants to construct shared definitions of goods being exchanged and to coordinate relationships with other participants. However, the nature of markets as dynamic knowledge structures also raises questions about how such structures emerge. For new markets and market categories to emerge, the relevant actors have to agree on new shared definitions and relationships to achieve a stabilized exchange format with common assumptions and common frames of reference (Fligstein 1996, Rosa et al. 1999).

This emergence of new markets depends on the construction of socially shared category schemas that model how the actors and audiences in various markets think about both rivalry and the overall model of the emerging industry (Porac et al. 1995, Bingham and Kahl 2012). These emerging schemas shape nascent markets by offering identities and guiding further comparisons (Porac and Thomas 1990, Porac and Rosa 1996). For instance, in the early days of the market for minivans (Rosa et al. 1999), active meaning making constructed category schemas that helped reduce uncertainty about what was being exchanged. Although categorizing new goods and services facilitates the recognition and legitimation of new markets (Zuckerman 1999), the legitimation of nascent markets requires new goods and services to relate to important ideas or logics that convey legitimacy. As Mohr (1998) argues, institutionalization depends on the construction of meaning that defines domains and knits them into the broader network of meanings that make up social structures and culture. New markets do not emerge in a cultural vacuum, but have to connect to the larger cultural webs in which they are embedded (Thornton 2004).

Drawing on these insights, prior work describes the challenges firms face to help other market actors understand innovations that do not easily fit into existing categories (Rindova and Petkova 2007, Bingham and Kahl 2012). In particular, sensegiving by means of analogies has emerged as a key means for conveying and giving meaning to new phenomena (Cornelissen and Clarke 2010, Leblebici et al. 1991, Hargadon and Douglas 2001, Ocasio and Joseph 2005, Etzion and Ferraro 2010). For our current purposes, we define analogies as "statements of similarity in properties or underlying relations between two specific domains" (Cornelissen et al. 2011). As such, analogies are a form of associative thinking that provides a natural reasoning mechanism for organizational decision makers when ambiguity and complexity are high (Gavetti 2012). Additionally, organizational actors use analogies to give sense about their actions to help other market actors understand unfamiliar issues and situations. The role of analogies, though, extends beyond mere comprehension of an unfamiliar issue such as dealing with a novel product or service. Analogies also provide understanding and legitimacy by transposing convention to the domain of the natural order: analogies naturalize social classification and help actors see "one thing in terms of another" (Douglas 1986).

Building on this argument, extent research suggests that entrepreneurs in particular invoke analogical or metaphorical comparisons with other cases and experiences to familiarize themselves and others with a new venture to reduce the uncertainty their stakeholders have about their products or strategies (Lounsbury and Glynn 2001, Sternberg 2004, Ward 2004). In line with this reasoning, organizational researchers have explored the role of analogical reasoning in the creation of new ventures (Cornelissen and Clarke 2010), the adoption of novel technologies such as electric lighting (Hargadon and Douglas 2001), the business computer (Bingham and Kahl 2012), and the justification of strategic change (Cornelissen et al. 2011).

By definition, however, analogies also entail dissimilarities between the source and target domains—that is, between the analogy and the innovation. To be accepted by an audience, an analogy should ideally reflect deep structural similarities between the focal problem and source case (Gavetti et al. 2005, Lovallo et al. 2012). Since an analogy can theoretically invoke almost any type of comparison between a target domain and a source domain (Goodman 1972), research in cognitive psychology has aimed to understand the psychological constraints on analogical alignment between these two domains (Gentner et al. 2001, Gentner and Markman 1997). This research suggests that individuals accept analogies when they see that the elements in the source domain structurally relate to elements in the target domain (Gavetti et al. 2005, Lovallo et al. 2012). Individuals, however, can creatively construct and manipulate the structural links (Cornelissen 2005, Gentner et al. 2001). As social psychologists have suggested, constraints on the interpretation of analogies do not operate like rigid rules but instead "function more like the various pressures that guide an architect engaged in creative design, with some forces in convergence, others in opposition, and their constant interplay pressing toward some satisfying compromise that is internally coherent" (Holyoak and Thagard 1997, p. 36).

Building on this understanding of analogies, recent works in organization studies have suggested that the novel extension of an analogy may spur innovation. For instance, Etzion and Ferraro (2010) found in their study of the institutionalization of sustainability reporting that certain aspects of financial reporting inspired new ways of doing sustainability reporting. Similarly, Cornelissen and Clarke (2010) suggest that organizational actors may use analogical reasoning to discursively align their practices with the analogy. Although such alignment presents a crucial part of introducing radical innovations, we currently know little about the strategies and practices organizations use to achieve such alignment between their innovation and an analogous category. Further, while prior work in social psychology has been helpful in pointing to alignment processes at the individual level (Gentner et al. 2001), it is unclear how similar processes may play out at the organization and industry level where collective processing and adjustment may occur. In the current study, we thus turn our attention to the ways in which organizational actors work to make analogies "work" by increasing alignment between their innovation and another market category, thus aiming to provide an account of how organizations may overcome analogical misfit in the justification of new markets and industry conceptions.

DATA AND METHODOLOGY

To study how organizational actors handle analogical misfit, we explore the use of analogies in the rich ecosystem that supports the buying and selling of online display advertising. We employed an open-ended, inductive approach to analyze the use of analogies in industry-specific discourse (Strauss and Corbin 1998). Our first data source was a comprehensive corpus consisting of press releases, websites, blogs, white papers, presentations, and articles from trade journals, newspapers, and the Internet during the time period 1996 to 2011. We compiled preliminary content by searching general business media and 164 specific marketing and advertising sources on Lexis/Nexis for discourse related to the online advertising industry. The text corpus we analyzed included 3,051 pages of data, including press releases, trade journal and newspaper articles mentioning company activities, and company websites. To obtain historical records of company websites, we used the Internet archive (http://www.archive.gov/). We sought to supplement these materials by examining content produced by actors in the online advertising ecosystem, paying particular attention to blogs such as AdExchanger (http://www.adexchanger.com/) or the Interactive Advertising Bureau (http://www.iab.net/blog/) that specialize in publicly addressing topics of interest related to the display advertising ecosystem.

After this preliminary analysis, we sought to develop a more comprehensive understanding of the industry by personally interacting with selected executives and technicians. The first author engaged in two weeks of participant observation at a local advertising agency and attended two digital media trade shows sponsored by the Interactive Advertising Bureau. To further deepen our understanding, we conducted 31 semi-structured, formal interviews with industry experts working in diverse segments of the online advertising ecosystem including advertising networks, advertising exchanges, media publishers, and advertising agencies. In selecting interviewees, we used Lincoln and Guba's (1985) guidelines for purposeful sampling, choosing informants who would be most knowledgeable about the industry. In a snowball technique, our informants then recommended further interview partners who would be able to provide insight about emergent topics of interest. Interviews lasted one hour on average and loosely followed an interview guide that included questions designed to gather information on the interviewees' personal biographies, their experience with the industry, and specific issues of theoretical interest. We kept detailed notes during these interviews, which allowed us to triangulate our findings to build more reliable interpretations (Yin 2002).

We analyzed our data using the constant comparative method recommended by Strauss and Corbin (1998). We compiled an overall case history for the industry that detailed major events and the relationships between the major parties involved. We subsequently coded for the analogies used by organizational actors both in the text corpus and interview transcripts, looking for emerging themes of theoretical interest. We organized these emergent themes into higher-level categories. Going back and forth between our coding, the text corpus, and the theoretical literature (Ragin 1994) from institutional theory, cognitive analogies, and emerging markets, we aimed to identify significant sections of our data in which financial market analogies were invoked. During this phase, we obtained additional interview data for verification and assurance of the "sturdiness" of our findings (Miles and Huberman 1994). After conducting these analyses, we checked with respondents to assure that our emerging narrative reflected their experience while also comparing our findings, wherever possible, with the account of other industry observers and analysts.

Focal Cases

Our iterative comparison between our empirical context and existing theoretical literature led us to focus on particular industry participants who invoked an analogy between their business model and financial markets: advertising exchanges. After analyzing content from self-proclaimed advertising exchanges including industry leaders DoubleClick (now owned by Google) and Right Media (now owned by Yahoo!), we used theoretical sampling (Strauss and Corbin 1998) to focus additional attention on how three *de novo* organizations promoting this innovative business model that explicitly invoked analogies to financial markets handled misfit: AdECN (now owned, and closed by Microsoft), ADSDAQ (owned by ContextWeb, and now owned by PulsePoint), and AdBrite.

William Urschel founded AdECN in October 2003. Urschel had prior experience with financial markets. Earlier in his career, Urschel produced stock market and portfolio management for book publishers. Prior to founding AdECN, he was the CEO of a publicly traded company, ExperTelligience, owner of subsidiary 3DStockCharts that consolidated information from the major financial stock exchanges for investors. AdECN was founded with an explicit intention to make an analogy to the financial markets.

> AdECN is an exchange for online display advertising. We took the ECN model from the stock market – a real-time, automated auction-based exchange like Island or Archipelago – and applied it to our industry. It is an electronic market for buyers and sellers of display ads on the internet.

AdECN’s fundamental idea was that an advertising exchange should be a “neutral, disinterested party” that facilitated auction-based transactions between buyers and sellers. AdECN suggested that their exchange platform was like the NYSE, and that advertising networks were like stockbrokers with seats on the exchange such as Merrill Lynch or Fidelity. AdECN was bought by Microsoft in 2007. In 2011, Microsoft shifted resources to shutter AdECN in favor of utilizing another platform the AppNexus platform.

Anand Subramanian founded ContextWeb in 2000. Before this, he worked in software and technology companies. ContextWeb developed patented technology to cull information from a web page and then apply that information to their internal “hierarchical taxonomy of ad topic categories.” ContextWeb’s original value proposition was that context could be exploited to place advertisements more efficiently: the firm contrasts contextual advertising with other targeting methods such as search or behavior. The company had raised $12 million in 2005 and then launched the ADSDAQ exchange in 2005. The ADSDAQ exchange invokes an obvious association with the NASDAQ stock exchange. Due to the similarity of their names, the ADSDAQ to NASDAQ comparison was reinforced with every use of the ADSDAQ moniker.

AdBrite was founded in 2002 (originally as Marketbanker.com) by Philip Kaplan and Gidon Wise. The firm sought to sell advertising on their internal websites and blogs by placing a small “Your

Ad Here" link on their sites to connect advertisers to publishers via an easy-to-use an order form. After expanding to incorporate external sites in 2003, the firm relaunched in 2004 under the new name of AdBrite. Having obtained $35 million of funding by 2007, AdBrite developed into a large and influential ad network that often is also referred to as an ad exchange. In contrast to the prior two focal cases, AdBrite offers no comparison to a named entity, but described their advertising exchange in the following way:

> AdBrite brings together thousands of advertisers and publishers in a real-time auction for ad space. It's like the stock market, only we're a place to buy and sell online advertising, rather than stocks.

The advertising exchange is modeled on the generic idea of a financial market: their tagline is "The Internet's Ad Marketplace."

These three focal cases arguably present the purest and most "extreme examples" (Pettigrew 1990) of our phenomena of interest, the process by which organizational actors handle analogical misfit. While they are central to our analysis, we do examine materials from a variety of industry participants, thus allowing us to evaluate the full industry ecosystem. With this in mind, we now turn to examining analogical misfit created by the use of the stock and stock market analogies.

ANALOGICAL MISFIT IN ONLINE DISPLAY ADVERTISING

We observed actors in the display advertising industry invoking two analytically distinct analogies: the first one focused on the *product*, suggesting that an advertising impression is like a stock, while the second focused on the *organization* itself, noting that an advertising exchange is like a stock exchange. Industry participants recognized and openly discussed the misfit inherent each analogy. Regarding the product, industry participants noted that advertising impressions and stocks differed in terms of their fundamental properties: advertising impressions are unique, perishable, and created through the dynamic interaction between advertisers, publishers, and intermediaries, whereas stocks are commensurable, have a long life, and exist independent from the actions of the buyer and seller. In contrast, regarding the organization, industry actors viewed the misfit between an advertising exchange and a stock exchange by comparing the innovation to the prior business model, highlighting the peripheral relevance of the ad exchange as compared with the central importance of the stock exchange, and by differentiating between the pricing practices used in the two distinct analogical domains.

In examining the way that product and organizational analogies were constructed, we observed three overarching strategies participants used to handle analogical misfit: *stretching*, where the analogy is adjusted to match the market activity; *bending*, where the market activity is adjusted to fit with the analogy; and *positioning*, where actors relate the analogy to other market activities and actors to justify adoption of their innovation. We illustrate these strategies in Figure 1 below. As the figure further shows, each strategy aimed to overcome a fundamental misfit emerging from the use of these analogies. Specifically, stretching aimed to overcome misfit related to the fundamental differences between an advertising impression and a stock and took two different forms: naturalizing the analogy and appealing to the true "spirit" behind the analogy. Bending aimed to overcome misfit between the advertising exchange business model and prior business models. Here, the actors used the analogy to construct new business models and create new products. Regarding positioning, industry actors subverted perceptions of misfit related to the centrality of the analogy by using aphorisms to justify why the stock exchange analogy should be more central in the display advertising industry. Finally, these actors handled misfit related to discrepancies between pricing practices by selectively interpreting the analogy to justify their innovation: they make arguments to describe why their business model presents the "true" interpretation of the analogy.

----- Insert Figure 1 about here -----

To support and further detail our theoretical model, we first chronicle the emergence of the display advertising ecosystem. We then describe specific analogies to financial markets used within the industry and highlight elements of misfit that actors observed. We close our empirical findings by illustrating the analogy work done for the specific practices associated with stretching, bending, and positioning.

The Emergence of the Online Display Advertising Ecosystem

Since the Interactive Advertising Bureau (IAB) began reporting in 1996, online advertising revenues have grown from $130 million to almost $24 billion in 2010 (Price Waterhouse Coopers 2010). The interactive advertising industry now serves billions of increasingly targeted advertising impressions each day, and total annual impressions number in the trillions. Forms of digital advertising include paid search (including contextual links), display advertising (such as banner ads), rich media (including video), classified ads, sponsorships, referrals (lead generation), and e-mail (embedded ads) (eMarketer 2010). This rapid growth would not have been possible without the development of new technologies supported by innovative business models and organizational forms that integrated these technologies with historical practices of the traditional advertising industry.

The fundamental logic of the advertising industry is that advertising aims to stimulate short-term consumer demand and build long-term loyalty by capturing consumer attention, arousing interest, stimulating desire, and prompting action (Barry 1987). Consumers view advertisements by interacting with different types of media such as television, radio newspapers, magazines, outdoor billboards, or direct mail. The advertising industry thus brings together advertisers (buyers) and media publishers (sellers) who exchange control over content delivered to a consumer. Traditionally, advertisers have outsourced the two primary operational functions required to advertise – creative development and purchase of media spots – to advertising agencies (Calkins and Holden 1905). Media publishers sell advertising spots to agencies by either posting published prices (i.e., a newspaper “rate card”) or using a direct sales force. These prices depend on how advertisers value both how a consumer interacts with a particular media type (i.e., the difference between watching a television commercial and reading a classified advertisement in the newspaper) and who the consumer of a particular media publisher is (i.e., the difference between people who watch Mad Men and General Hospital). Advertising agencies who buy media for clients typically mark up these media buys by 15% to their client advertisers (Heller and Ballance 2001).

In the 1990s, the emergence of Internet-based media (i.e., websites, blogs, or social networks) created new markets both for search advertising (i.e., an advertisement served based on an individual's specific request for information) and for display advertising (i.e., an advertisement served to an individual viewing a particular site on the Internet). Sellers in this new market included traditional media publishers (i.e., the online version of the Wall Street Journal or the New York Times), internet portals and search engines (i.e., Google, Yahoo!, Microsoft, America Online), social networks (i.e., Facebook, MySpace), and a plethora of niche content producers (i.e., blogs and specialty interest websites – the Internet's so-called "long tail"). As agencies continued to use traditional media buying methods to purchase advertisements, publishers began to face a problem of excess inventory for display (i.e., when an individual views a site on the Internet without seeing an advertisement) that they were unable to monetize with an advertiser. Remnant inventory quickly grew to trillions of impressions and thus overwhelmed the capacity of traditional agency-based sales channels. These market dynamics consequently created a demand for novel intermediaries that could technologically handle this demand and bypass the traditional advertising sales channels.

One of the first solutions for publishers to monetize this excess inventory emerged when an entrepreneurial firm, LinkExchange, offered web publishers the opportunity to trade or barter advertising space on their website for their ability to advertise on other Internet sites. While this innovation offered publishers a way to avoid letting excess inventory go unused, a new organizational form soon replaced this barter-based model: the advertising network. Operating outside of traditional advertising agencies and publishers, ad networks agglomerated relationships with smaller publishers and/or advertisers to achieve economies of scale that could be monetized by offering discounts to volume buyers. For example, the ad network "Glam" builds relationships with websites whose viewers are women between the ages of 18 and 49 and sells those impressions to advertisers interested in that particular demographic. As the online advertising industry grew, ad networks began to develop increasingly sophisticated and differentiated business models.

Initially many ad networks, for example, had emphasized arbitrage by selling impressions to publishers at one cost and having advertisers buy these same impressions at a larger cost. Some ad networks extended this strategy by engaging in price model arbitrage, where they would develop an understanding of the behavioral activity of internet users that enabled them to buy ads based on impressions (CPM) and sell them to advertisers on a “risk-free” basis based on action (CPA). Other ad networks began to frame their market-making activity as an exchange that enabled transactions for advertising impressions to take place at an individual level through a “real-time bidding” system where individual impressions were auctioned to the highest bidder. These companies invented a new label to describe their activities: advertising exchanges. Today, the display advertising industry features many different business models including advertising networks, advertising exchanges, demand-side platforms, yield optimizers, data suppliers, and data aggregators, to name a few. Figure 2 shows a widely referenced industry landscape chart that categorizes the large number of distinct types of organizations industry insiders recognized as of 2010.

----- Insert Figure 2 about here -----

The Use of Analogies in the Online Display Advertising Ecosystem

The ambiguity, fluidity of meaning, and high survival stakes for many of the entrepreneurial firms in the online display advertising ecosystem make this industry a suitable context within which organizational actors use analogies as a strategic tools to promote innovative business models. Specifically, during the mid-2000s observers and industry actors began to use analogies between online display advertising and financial markets to describe the view of the online advertising industry held by advertising exchanges. An example of this can be seen in this excerpt from an article in the New York Times (Clifford 2008):

> Joe Zawadzki’s traders spend their days in front of two computer screens, feeding their systems with data and trying to perfect their trading algorithms. But they are not analyzing stocks. They are analyzing advertising. What they are measuring is activity on advertising exchanges, where companies bid to place their online ads on space provided by publishers. As advertising exchanges gain popularity – Yahoo, Google, and Microsoft have all moved into this arena

> recently – Madison Avenue is borrowing tactics from Wall Street. It is reminding some observers of what happened when technology came to the stock exchange, including the arrival of trading advisers like Mr. Zawadzki's firm, MediaMath, that are running numbers and promising to offer sophisticated financial instruments.

This article makes extensive use of analogy by comparing components of the online display advertising industry with components of financial markets: advertisements are stocks, ad exchanges are stock exchanges, advertising analysts are financial analysts, and the current advertising era is just like a past era in the financial markets.

Different organizational actors invoked analogies to financial markets in unique ways. AdWeek.com, for example, in describing Google's strategy in online advertising, made an explicit analogical comparison: "The DoubleClick Ad Exchange is designed to operate like the New York Stock Exchange, matching buyers and sellers of online ad space in a real-time marketplace" (Morrissey 2009). Alternatively, the chairperson of the Interactive Advertising Bureau, Wenda Harris Millard, used a negative analogy to contrast advertising products with financial commodities: "We must educate one and all about the value our digital offerings provide marketers and not trade our advertising space like pork bellies" (Millard 2008). In our analysis of discourse and in our interviews, we observed analogies comparing advertising products (i.e., advertising impressions) with financial products (i.e., stocks, commodities, private placement memorandums, index funds, insurance policies). We also observed actors comparing organizations in the display advertising ecosystem (i.e., ad networks, ad exchanges, demand side platforms, data providers) to analogical organizations in financial markets (i.e., the New York Stock Exchange, NASDAQ, Electronic Communications Networks, foreign exchange markets, brokerages). We illustrate specific examples of these analogies in Table 1 below.

----- Insert Table 1 about here -----

Analogical Misfit

While analogies were used extensively for describing and explaining this novel industry, the analogies to financial markets were far from perfect: observers and actors in the industry recognized and publicly discussed misfit with these analogies. We observed two forms of analogical misfit, one relating to the product itself, the other relating to the organization and ecosystem of online advertising.

Misfit at the product level.

When comparing an advertising impression with a stock, for example, industry participants noted that the two products are "fundamentally different:" an Internet impression occurs when an individual views a website at a particular point in time, while shares of stock confer ownership rights supported by an extensive legal framework that assures their commensurability (Carruthers and Stinchcombe 1999). This fundamental difference can be illustrated by comparing each object according to different properties that are diametrically opposed. For example, an advertising impression is perishable, but a share of stock is not.

> Online ad impressions are more like snowflakes than stocks: no two are exactly alike, and they melt…a share of Time Warner will exist in perpetuity, but a single display ad-serving opportunity comes into existence in real-time when a browser visits a page, and it spoils fractions of a second later when the ad is required to load. (John 2010)

Additionally, each perishable advertising impression is unique, while each share of stock for a particular company is homogenous.

> …a share of Time Warner is a share of Time Warner, but a single ad impression on Time.com is not exactly the same as any other: not only will future impressions occur at different times obviously, but they will be to different users with different interests and different previous ad interactions, in different geographies, with different demographics, different browser versions, different ISPs, etc. (John 2010)

Because of this uniqueness, every advertising impression also has a unique value, unlike a stock where every share of a particular stock has the same value. As one executive noted,

> There is a difference between a stock having an underlying financial value and an impression, which can mean wildly different values to different people because buyers have such different evaluations of an impression.

Whereas individual shares of stock are accompanied by voting rights that are not contingent upon a stock ownership transaction (a stock owner has voting rights), the publisher and the advertiser both construct the advertising impression in a way that influences the actual nature of the advertising impression. As an interview respondent noted,

> For publishers with longstanding relationships with select advertisers, the prospect of inviting unvetted advertisers to their editorial sites via contextual ad networks is viewed as a risky venture. Publishers require some assurance that contextual ads will be relevant and appropriate for their audience and not compromise the value that they offer to their top-level advertisers…in advertising as well as publishing, it's all about reaching the right community of readers at the right time with topical content.

Another executive commented that in dealing with ad networks and exchanges "the key issue that the publishers and advertisers deal with is, how do you keep your brands safe?" If ads are placed on undesirable websites that should not be associated with an advertiser, the advertiser brand could be devalued. Opponents of ad exchanges, who suggested that a heavy reliance on algorithms and arbitrage would be harmful to brands, frequently marshaled this argument and suggested that ad exchanges did not suit the business needs of premium buyers and sellers. Traditional ad agencies suggested that lack of control over placement of an advertising impression mitigated the value of the advertising impression and ultimately the brand: as one article title suggested, "You really don't know where your inventory is going," and this results in a "blind buy" (Matthews 2008). Particular concern lies with premium ads appearing on sites "at the periphery of good taste," since a lack of control over where ads are going to appear thus makes it very difficult to achieve the right associations for a branding campaign. Advertisers and publishers thus require control over an advertising impression in a way that is fundamentally different from the way that buyers and sellers of stock interact with the shares of stock that they exchange.

Misfit at the level of the organization and ecosystem.

The industry also discussed the misfit that existed at the level of the organization and the ecosystem. Unlike the analogy between an advertising impression and a stock, the analogy between the advertising exchange and the stock exchange is not an analogy between two fixed concepts, but between two different ways of organizing activities. A financial exchange, for example, facilitates the trading of securities (i.e., stocks, bonds, commodities) by providing a location (i.e., a trading floor, an electronic marketplace), and rules of interaction (i.e., rules for auction-based trading) to achieve certain goals (i.e., provide liquidity for owners of financial securities). Although financial exchanges share these general characteristics, different individual financial exchanges may configure these elements differently. For example, the Chicago Board of Trade provides a marketplace for futures and options where the New York Stock Exchange provides a marketplace for stocks of a certain type; an Electronic Communications Network (ECN) provides a virtual location for exchange, whereas other exchanges might rely on physical space to facilitate trade.

Ad exchanges, born out of the ad network business model described above, provide a marketplace that provides liquidity for publisher website inventory. An advertising exchange, according to the Interactive Advertising Bureau, is

> …a sales channel between publishers and ad networks that can also provide aggregated inventory to advertisers. They provide a technology platform that facilitates automated auction-based pricing and buying in real-time. Ad exchanges' business models and practices may include features that are similar to those offered by ad networks. (Interactive Advertising Bureau 2012)

This definition acknowledges that there are different types of advertising exchanges. AdBrite, for instance, creates a marketplace within which publishers and advertisers can directly exchange control over the advertising impression, while AdECN creates an exchange that facilitates the intermediary function of ad networks. Since each individual ad exchange can feature different elements of misfit depending on which financial exchanges is used as an analogical referent, we highlight the general patterns of misfit that apply to the general stock exchange analogy.

The first type of misfit between an advertising exchange and a stock exchange arises from the clear distinction between the prevalent business models in the industry and the innovative business model of the advertising exchange. The previous business model featured publishers using direct sales forces or posted pricing to sell aggregated audiences to advertisers. In the ad exchange model, however, in the interest of advertising efficiency and effectiveness, impressions are sold to the individual and not the aggregated audience. As Iggy Fanlo, CEO of AdBrite noted, "audiences buying at the impression/cookie/user level…have made display advertising more efficient and effective than ever before" (Fanlo 2010b). This switch from a media buy seeking to acquire an aggregated audience categorized by demographic characteristics to seeking to acquire an individual, contextual impression sparked challenges to the ad exchange business model. In particular, publishers feared potential price degradation that might arise due to the ad exchange model of pricing individual impressions. As one publishing executive commented,

> But the problem is, how do you preserve different price levels? How do you preserve what makes advertiser A to pay $100 versus advertiser B who is willing to pay $50? If you have unused inventory, and you can sell it, it is better to do this than to lose the revenue. But ultimately the issue with advertising exchanges is that if you dump inventory on an exchange, and the inventory is cheap, how do you have fairness with your existing clients and the buying agencies?

This discrepancy between the pre-existing business model and the innovative business model created controversial industry conversations on blogs and during conventions.

The second type of misfit relates to the relative centrality of a stock exchange for a financial market relative to the peripheral role of an ad exchange in the display advertising market. A majority of financial securities, for example, trade on the major financial exchanges. In the advertising world, however, since the ad exchanges primarily facilitate the buying and selling of low-value remnant inventory, the ad exchanges served as a platform for a much smaller proportion of the total advertising spend of internet websites. One executive described this difference:

> What percentage of transactions are traded on the open market? In the online advertising world, it is 3-6% at most. It's a lot of private one-off transactions from buyer to seller, not direct exchanges.

This type of misfit thus relates to the scope of the analogy: whereas stock exchanges are a central component of financial markets, the ad exchange is not (yet) a central component of the online display advertising market.

The third type of misfit between an ad exchange and a stock exchange stemmed from a lack of transparency for pricing in the transactional chain. In stock markets, exchanges continuously post prices and arbitrageurs resolve price anomalies quickly in a way that provides market liquidity and avoids pricing inaccuracies. In contrast, online ad exchanges did not publicly disseminate pricing information. As one executive explained,

> There are people in the Wall Street Journal who know what the value of the Wall Street Journal prices are. Each buyer knows what they are paying. Only the DSP [Demand Side Platform], the people in the middle, and the exchange know the prices of their inventory, but they don't share it.

Additionally, other entities outside the direct advertiser and publisher add information to the advertising impression being exchanged, and these changes fundamentally transform the interaction in the display advertising market. As an interview respondent noted,

> Data exchange is a sidebar part of the ecosystem that enriches information on a particular impression. An ad exchange may only know so much about the person [the advertising impression]. The data exchanges will append the information that the ad exchange has on the impression in real time.

Thus we see that there are significant amounts of misfit between how financial exchanges work and how the advertising exchange works. We highlight additional examples of analogical misfit in Table 2 below.

----- Insert Table 2 about here -----

Handling Misfit

The existence of analogical misfit created problems for these novel organizations operating in the online advertising space, undermining the legitimacy of this emerging new industry. To reduce the friction emerging from analogical misfit between the source analogy and the target domain, the organizational actors in this field engaged in a variety of activities. Based on our analysis, we identified three different kinds of strategies: stretching, bending, and positioning.

Stretching

To deal with the misfit described above, our focal cases expanded and modified their analogy: they tweaked analogy concepts to accommodate their innovation. Conceptually, the introduction of new, dissonant components of an existing analogy can be conceived as an example of stretching a concept – what Burke (1984) refers to as casuistic stretching where actors "introduce[e] new principles while theoretically remaining faithful to old principles" (Burke 1984, p. 229). The need to engage in concept stretching emerged from the analogical misfit between the advertising impression and the share of stock. This misfit stemmed from two differences in the fundamental properties of impressions and stocks: differences in the commensurability and differences in how each one is valued and controlled. .

The first difference between impressions and stocks related to the uniqueness of the advertising impressions, which are quite unlike the commensurable nature of a typical financial security that is required for market liquidity to occur. In a financial market, liquidity is made possible since shares themselves are not unique—one does not buy *a particular share* since all shares (within a share class) present identical legal claims. In the advertising industry, however, commensurability of impressions presents a considerable challenge. Advertising impressions present unique opportunities. Not only is each impression different from the next one, but there is even variation in the value of each individual impression which presents vastly different values to different buyers—depending on the context in which an ad is presented, it might be worthless to one kind of buyer and especially valuable to another buyer. Market participants recognized this misfit. As one executive explained: "So there are a lot of things from the finance analogy that don't really apply. You can't apply the [mathematical] techniques to the things themselves. How do you define the class? There are an infinite amount of classes to think about. Which features do you use to describe the impressions?" Likewise, another executive described the challenges of matching buyers and sellers as unique to advertising:

> The customer wants to reach a certain user. But [the customer] also [wants to reach the user] in a certain time and in a certain way – with a product like video, a full page ad, or rich media. [In the online advertising world,] this is where advertising becomes more advertising like. Not just from designing but also from how you place the advertisements.

To overcome this misfit between the stock analogy and the nature of impressions, our focal cases *appealed to the spirit* of the analogy by incorporating the notion of customization into their business model. Specifically, each firm paid significant attention to elaborating how both buy and sell side actors could in fact identify specific kinds of impressions and ads, but that this ability did not undermine the notion of impressions as stocks. The most relevant tool in this regard was the emphasis on targeting algorithms. For instance, AdECN emphasized that it offered "a dozen methods of targeting, three types of metering, frequency capping, extensive reporting, ad serving (third party ad servers are also accommodated)." Similarly, ADSDAQ emphasized the capability to distinguish and target impression characteristics at a minute level, since "the exchange's patent-pending, page-level contextual technology … [makes] inventory on the exchange 'brand-safe' and comparable to a site-specific or portal buy." This statement suggests that traded inventory can be so specifically selected according to its idiosyncrasies as to make the transaction comparable to a private negotiation – i.e., a "site-specific" buy in which the advertiser directly contracts with the publisher for a specific audience buy particular impressions.

By focusing on the ability to customize and take into account idiosyncratic characteristics of the traded goods through technology, the ad exchanges introduced a new principle – customization – into the stock market analogy and presented this principle as aligned with the spirit the stock market analogy. AdECN, for example, in describing their business model in a white paper, explicitly suggests that this type of customization is part of the stock exchange.

> An exchange also must trade in the most discrete units possible. *In our world this means individual ad impressions, matched specifically to the viewer or the situation*. AdECN provides extraordinary contextual, behavioral, and profile based targeting, and auctions off each targeted impression individually. This means that advertisers know what they are buying and pay only what it is worth to them. (emphasis added)

While appealing to the spirit of the analogy aims justify the "stretching" of the analogy, tension does remain since the principle of customization is fundamentally at odds with the functioning of a financial market and the associated notion of liquidity in such exchanges. To impose a stock market analogy on online advertising, the actors involved have to account for how heterogeneous viewing opportunities on various websites can be transformed into homogenous entities that can be traded according to a stock market logic. For liquidity to emerge, participants have to specify what commodities they will accept as standard and homogeneous. By emphasizing discrete units, the ad exchanges emphasized "idiosyncratic, private, or highly asymmetric knowledge [that] undercuts liquidity" (Carruthers and Stinchcombe 1999, p. 356). In essence, the exchanges incorporate the notions of classification and targeting by suggesting that they are aligned with the spirit of the stock market when in fact they are based on a very different principle of idiosyncrasy. While this form of analogy stretching aimed to alleviate this tension, its explicit nature of addressing it nevertheless remained a consistent strain on the stock market analogy.

The second form of stretching aimed to overcome such strain not by aligning new principles in spirit but by aiming to *naturalize* them, that is, by suggesting that the new principles introduced to stretch the analogy in fact are a natural part of the analogy. Naturalizing was especially used to deal with a second difference between impressions and stocks requiring analogical stretching, namely issues related to differences in control over shares and impressions. Regarding the first, a financial security such as a share of stock is premised on the transferability of control rights. The holder of a share owns a fractional part of the issues, and a sale fully transfers these control rights and their associated revenue streams or control over the company. As such, individual shares of stock confer ownership rights that exist independent of the actions of their buyers and sellers.

In contrast, advertising impressions exist only as a result of advertiser actions (i.e., serving a particular advertisement to a particular website) and publisher response (i.e., being willing accept that particular ad to serve to a particular user). As an interview respondent noted,

> For publishers with longstanding relationships with select advertisers, the prospect of inviting unvetted advertisers to their editorial sites via contextual ad networks is viewed as a risky venture. Publishers require some assurance that contextual ads will be relevant and appropriate for their audience and not compromise the value that they offer to their top-level advertisers…in advertising as well as publishing, it's all about reaching the right community of readers at the right time with topical content.

Advertisers and publishers thus both require some control over the advertising impression, yet the notion of an advertising exchange is premised on the notion that the buyer does *not know exactly where the ad will appear*, raising the risk of ads appearing on undesirable websites that may damage the advertiser's brand. As one executive commented, in dealing with advertising exchanges "the key issue that the publishers and advertisers deal with is, how do you keep your brands safe?" If ads are placed on undesirable websites that should not be associated with an advertiser, the advertiser brand could be devalued. Opponents of ad exchanges, who suggested that a heavy reliance on algorithms and arbitrage would be harmful to brands, frequently pointed to such misfit of the analogy for selling impressions and suggested that ad exchanges did not suit the business needs of advertising buyers and sellers. For instance, traditional ad agencies suggested that lack of control over placement of an advertising impression mitigated the value of the advertising impression and ultimately the brand, summed up in the statement that "You really don't know where your inventory is going," resulting in a "blind buy" (Matthews 2008). Particular concern lies with premium ads appearing on sites "at the periphery of good taste," since a lack of control over where ads are going to appear thus makes it very difficult to achieve the right associations for a branding campaign.

The ad exchanges addressed this misfit by introducing a novel form of control over the impression into the trading process and into the analogy. For instance, the ADSDAQ exchange emphasized its ability to classify the impression space by means of "'next generation' algorithms that have resulted in deeper, niche classification of the millions of Web pages that are part of the ADSDAQ Exchange," with these algorithms allowing the firm to make "…inventory on the exchange 'brand-safe.'" A ContextWeb blog (1/7/2010) described this as below:

> In addition to page-level contextualization, the ADSDAQ Exchange run by ContextWeb extends the reach of our marketer's brand messaging safely by applying up to four levels of protection: Quality Exchange, Page-Level Ad Serving, Negative Keyword Filter, & Brand Keyword Filter. Together, the levels offer unmatched brand safety among competitive exchanges, networks, portals – even single sites."

Similarly, AdBrite claimed to resolve the problem of controlled placement by noting that "the latest targeting technologies are deployed" to determine "the most appropriate ad" (AdBrite.com, accessed 5/29/2010), thus presenting a natural extension of existing concerns into the exchange model. CEO Iggy Fanlo noted, "At the end of the day, we believe transparency is the ultimate [safety tool]" (Fanlo 2010a). On their website, AdBrite notes that

> Ad exchanges allow publishers to sell their advertising inventory using a real-time auction that identifies which advertiser is willing to pay the most for that particular impression. In just tens of milliseconds, an ad exchange identifies the type of person visiting the publisher's site, finds which advertiser placed the highest bid to reach that type of person, and delivers a relevant ad in that slot. Publishers are then provided with a treasure trove of data to identify what's working, and can partner closely with an exchange to analyze how to continue improving their approach to drive more revenue. The AdBrite exchange *gives publishers full control into how ads are delivered, including the ability to approve/reject specific advertisers to avoid channel conflict and preserve brand integrity*. Publishers receive access to real-time data such as click-through rates across their properties, ensuring an optimal user experience through highly relevant ads, while monetizing their inventory to the fullest extent. (emphasis added)

By presenting the concept of control as being a natural element of the stock market analogy, the ad exchanges incorporated a novel and conceptually foreign element into the stock analogy. With a stock, the buyer acquires the stock and based on its property rights has full control over it. However, by incorporating notions of brand-safety and naturally suggesting that this notion is part of the very concept of an exchange, our focal cases take a new element – that of control over the impression being exchanged – and incorporate that new element as though it were naturally a part of the stock market analogy. The analogy is stretched to be able to apply to the innovative business model of the ad exchange.

Bending

In the stretching of an analogy concepts that are part of the innovation and are problematic for the analogy are inserted into the analogy and either made acceptable by suggesting that the misfit is not in violation of the spirit of the analogy or portrayed as a natural part of the novel business model. While this mechanism extends the analogy to fit the analogized category, we also observed another mechanism of achieving fit between the analogy and the structure of the activity that we call bending: reducing misfit by altering the activity and innovation to be truer to the analogy, where organizational actors consciously alter and re-organize activity to match the analogy. While stretching thus alters the analogy to fit the context, bending alters the context to fit the analogy. We observed two different types of bending: the constructing of new business models and the creating of new products.

Regarding the first form of bending—*constructing new business models*—our focal cases engaged in handling misfit relative to prior business models prevalent in the industry by constructing activities novel to the advertising space and inspired by the analogy in a variety of ways. For instance, AdECN extensively used activity bending to construct their detailed business model. In presentation materials, the organization explicitly noted, “The AdECN exchange is structured like a stock exchange.” In setting up the mechanics of their business model, though, they extended beyond a simple reference to another categorical concept and constructed a business model based upon the patterns of activities that make up the stock exchange:

> AdECN is an exchange for online display advertising. We took the ECN model from the stock market – a real-time, automated, auction-based exchange like Island or Archipelago – and applied it to our industry. It is an electronic market for buyers and sellers of display ads on the internet. And like a stock exchange, not just anyone can trade directly on the exchange. On the stock exchange, individual buyers and sellers have to trade through a stockbroker. In our exchange, advertisers and publishers have to trade through an ad network.

AdECN further developed this model based on the pattern of activities specifically utilized by the New York Stock Exchange, as noted on their website (9/21/2007), “By way of analogy, AdECN is the New York Stock Exchange, and the members of the exchange are stockbrokers like Merrill Lynch, Fidelity, Charles Schwab, and so on.” AdECN thus used this analogical analysis to justify the ability of its member firms (ad networks) to be able to do what profits the ad network rather than profit the end advertiser:

> Member B could have specified that the exchange favor his own advertisers, unless he has no ads, or unless the profit from an exchange ad exceeds a certain level. Or Member B could have specified that the exchange always match his publisher's impression with an ad from one of his own advertisers. Or Member B could have specified that the exchange never match his own advertisers to his own publishers.

Concurrently, AdECN also created a business model that emphasizes their role as the financial clearinghouse for the member networks: “AdECN…acts as a financial clearinghouse. We collect from all members and pay all members, guaranteeing that every member gets paid for what he sells.” Organizational actors thus make their activities conform to the analogy by incorporating the actual patterns of activities used in the analogical referent of the stock exchange.

We also observed our focal cases bending their activities to the analogy in another way: *creating new products* or services for the display advertising industry based on the products or services featured in the analogical case of the stock market. ADSDAQ, for example, used the notion of a financial trader and a trading desk to create a new product that promoted their advertising exchange.

> Here's the idea. Just as traders turn to a terminal to monitor real-time financial data and place trades, media buyers need a similar trading desk to make it easy to buy and sell online ads. ContextWeb, a New York-based startup, plans today to announce a system that it says fills that need. The system – called the ADSDAQ Exchange Agency Trading Desk – lets media buyers see how their online display ads are performing on any site across the Web.

It is important to note, however, that the trading desk is not a perfect "bending" from the trading desk of the financial markets to the display advertising industry. The ADSDAQ trading desk – and all of the trading desks – only features buyers or sellers using one side of the trading desk. In the stock market, a trader buys and sells. Product bending thus does not need to be comprehensive: bits and pieces of the pattern of activities from the analogical context may be selected or excluded in a sort of bricolage, and bending is further combined with stretching in order to reinforce its effectiveness.

Another example of using the analogy to create new products can be seen with the introduction of financial trading algorithms to the advertising space. One industry consultant noted that there was a direct incorporation of the concept of a financial trading algorithm into the sister ecosystem of search advertising – "buying and selling impressions algorithmically are very similar to stock market. In the advance days of search engine marketing, those who perfected search did so using Wall Street algorithms." AdBrite did this in display advertising through the introduction of its "Open Targeting Exchange (OTX), a competitive marketplace for algorithms and ad targeting technologies" (AdBrite.com, accessed 5/26/2010). In a press release, AdBrite argued that OTX "delivers superior yield and advertising effectiveness by leveraging multiple targeting methods and algorithms, and allowing them to compete for the right to match advertisements to publisher web pages."

AdECN engaged in bending the financial market analogy to create a new product by suggesting that their member networks offer a service of risk management for their clients. AdECN also used a variant of the stock market analogy – the insurance industry – to advise their member customers about how to profit from the AdECN exchange. In their benefits for advertisers, AdECN suggested that

“Members can sell their advertisers an ‘insurance policy’ by arbitraging CPC and CPA campaigns into CPM.” AdECN talks openly about how the member can take advantage of this insurance “arbitrage” strategy to profit from their clients.

> A shrewd member is happy to sell an advertiser this “insurance policy.” He may accept payment on a $25.00 CPA basis, for example, show some number of ads and pay the publishers on a CPM basis. If the number of ads he shows totals less than $25.00 for every action that happens, the member keeps the difference between the $25.00 he gets from the advertisers and whatever he had to pay the publishers. The trick, for the member, is to know where to run those ads and what to pay for them. Fortunately, SpotBot and other features in the [AdECN] system do much of the work. As a member, you will have to run your advertiser’s CPC, CPL, and CPA campaigns yourself, acting as the advertiser. You, after all, need to manage your risk to make the profit.

In bending, the analogy is thus used as a specific impetus to develop particular new ways of establishing business models or to create new products based upon the analogical context, enhancing the new business model while also further aligning actual activity with the stock market analogy.

Positioning

By means of concept stretching and activity bending, organizational actors aim to handle the misfit inherent in an analogy by improving the fit between the analogy and the innovation. Yet, this kind of activity happens against a backdrop of pre-existing conceptualizations and business activity. As such, while stretching and bending aim to alleviate internal misfit between analogy and chosen target domain, the analogy also needs to be made meaningful externally by positioning it within the overall universe of advertising activity and market participants. Here, misfit related in particular to two aspects: the low centrality of the exchange analogy within the advertising domain when compared to the centrality of the stock market, and the introduction of novel pricing practices that deviated significantly from prior industry practice. To overcome misfit here, our focal cases engaged in *positioning,* in which the analogy is made meaningful relative to the pre-existing sets of relationships. In particular, we observed two forms of positioning: the use of aphorisms and selective construal, each of which we turn to now.

As noted, our focal cases responded to misfit of centrality by using *aphorisms* related to their financial market analogy to justify why their innovation should be a central feature of the industry, and not a peripheral afterthought. Within the world of stocks, exchanges are arguably the central mechanisms for trading securities and setting prices. Yet, in the online advertising industry, the newly established advertising exchanges lacked this centrality and faced the threat of being relegated to the periphery of the market. In response, the ad exchanges used aphorisms to rhetorically connect the advertising exchange to larger, more culturally accepted ideas associated with the stock market analogy. As rhetorical devices, aphorisms reflect notions of folk wisdom based on claims that nearly everyone can agree with (such as "Life is short, art long") and present them in a memorable form to their audiences.

In our setting, ad exchanges used aphorisms to solidify their claims on the online advertising world. For instance, a common critique of ad exchanges held that the exchanges are only suitable for the "dregs" of an advertiser's inventory, not for the premium ads that are more traditionally sold by a direct sales force. Against this powerful negative labeling aimed at relegating exchanges to the periphery of the market, proponents of real-time bidding (RTB) based sales of online ads offered the aphorism, "One person's trash is another person's treasure," suggesting that value is perceived uniquely by different actors. Accepting the applicability of this aphorism to the online advertising impression makes the stock exchange an appropriate analogy: when individuals value objects uniquely, a stock market auction-based price mechanism yields optimal value realized by both buyers and sellers. This aphorism thus suggests the idea that the value of ad inventory should be allowed to float at market rates rather than being set by a direct sales force that cannot always anticipate how inventory might be valuable, and to whom.

The marketing materials of the three exchanges we studied also centrally used aphorisms to promote their specific approaches to buying and selling online advertising. For instance, AdECN conveyed its commitment to equality and fairness by using the familiar aphorisms associated with a stock exchange – the inherent need for an exchange to be a "level playing field" and a "neutral auction house" free from conflict of interest. AdECN then applies these aphorisms by claiming that their advertising exchange functions as "the only neutral exchange for online advertising" that creates "a marketplace where all participants access a larger pool of supply and demand" (AdECN, 3/13/2007). Overall, these claims attempt to establish neutrality as a defining element of what it means to be a true exchange, and consequently justify why the stock exchange model should be more central in the display advertising world than it currently is.

In contrast, ADSDAQ used aphorisms primarily to emphasize the importance of measurement and control. This emphasis is captured in the "It's the (Pricing) Control Stupid!" aphorism (ContextWeb, 3/31/2010). To explain the importance of control, ContextWeb's CEO invoked the aphorism-like importance of measurement by saying that "measurement is imperative in order to reflect the true value of ContextWeb's page level targeting" (comScore, 5/31/2009). Through this aphorism, ADSDAQ associates their model with a culturally shared understanding that measurement is an important prerequisite to efficiency. When actors value measurement and control, the benefits of an auction-based stock exchange become more important relative to the traditional sales methods using posted pricing. By connecting to the larger culturally shared understanding of the importance of measurement and control, ADSDAQ justifies the unique offerings of their business model

AdBrite took yet another position by using aphorisms to emphasize transparency. This emphasis is reinforced using the aphorism "pay for performance" (AdBrite, 11/24/2008) and "may the best algorithm win!" (AdBrite, 4/10/2008). AdBrite described itself as "the first fully transparent ad exchange to offer real-time bidding" and promised participants "full visibility as to the properties they are buying" (AdBrite, 11/3/2009). The company's signature description claims that it is "a completely transparent and effective advertising exchange" (e.g., AdBrite, 1/19/2010) and "the only fully transparent advertising exchange" (AdBrite, 10/27/2009). These phrases and statements combine to push the idea that transparency is critical to what it means to be an exchange.

Positioning is thus a form of defensive analogy work. Its use of aphorisms links the issues at hand to familiar ideas and positive sentiments. In a sense, the cause of an aphorism is also its effect; as "pithy sayings or aphorisms of a proverbial nature that appeal to common knowledge in a formulaic manner" (Calkins 2001, p. 239), these linguistic practices are identifiable as such only with the hindsight of history. Because their claims are based on an appeal to common knowledge, aphorisms are rarely further proved and their relevance is seldom explicitly demonstrated (Jonsen and Toulmin 1988). As a rhetorical device, therefore, an aphorism asserts the importance of one principle while simply disregarding others. That is to say, an aphorism neither refutes nor embraces what it fails to mention. This is exactly what we observe in the positioning statements of ad exchanges. Looking across the three aphorisms identified above, neutrality, control, or transparency are all important not only to the notion of an exchange, but also to defining the characteristics of the RTB-oriented approach to building an online advertising industry that eschews the lack of transparency often characteristic of a previous generation of advertising, in which "half of every budget is wasted, but one never knows which half that is." By highlighting some features as central, aphorisms are particularly useful as a tool to defend analogies in ways that resonate with situations and principles people already understand and value.

A final type of misfit related to the discrepancy between the pricing practices used by ad exchanges relative to the pricing practices used in the analogical referent of the stock market. Pricing practices varied for each of the ad exchanges. We found that our focal cases used a principle of *selective construal* to argue that the particular way in which they employed the analogy was the correct way of doing so. For instance, AdECN used the stock market analogy to selectively construe the benefits of their own business model and correspondingly construe the harms of their competitors' business models:

> What exactly is an exchange? An exchange is an automated trading platform in which buyers and sellers enter their bids and asks, and the exchange makes the match, delivers the goods to the highest bidder, handles the accounting, and collects from and pays all of the members. An exchange has to be a neutral, disinterested party in the transactions. It cannot care who wins an auction. This is how the new computer-based stock markets, such as Island, Archipelago, Brut, and so on now work. They are all Electronic Communication Networks (ECN's) and are extraordinarily efficient. *Over the years I've seen "exchanges" that were auction-houses for remnant inventory. One of them held an auction three days a week, using a whiteboard. There are "exchanges" where the members were merely introduced to each other in a sort of dating service, leaving it up to the members to contact each other and work the deals. There are also "exchanges" that were really CPC and CPA ad networks trading for their own accounts, and not necessarily for the benefit of their clients.* (emphasis added)

In this analysis, AdECN attacks ad exchanges that double as ad networks (i.e., DoubleClick/Google, Right Media/Yahoo!, even AdBrite) by emphasizing the exchange's need for absolute neutrality. AdECN thus implies that other "exchanges" are exchanges in name only, not in reality because of the different ways that they constructed auction-based pricing practices.

AdECN also used the analogy to justify its adoption of a brokerage model. The company argued:

> Why work with a brokerage model, like the stock market, rather than directly with advertisers and publishers? AdECN works only with ad networks for three reasons: First, the need for advertisers and publisher sales, consulting, and support function will never go away. The good ad networks are already doing it well. Second, the purpose of an exchange is to provide liquidity to its members, which requires decent or better traffic, and the ad networks already have that — just in isolated universes. Third, as an exchange, AdECN has to guarantee payment. I can't do that if I have to collect from 100,000 individual advertisers. Again, this is the way it has worked on the stock exchange for a couple of hundred years. It is a model that works. Moreover, in the last three years, with the rise of the ECNs and increased automation, the profits of stockbrokers have soared.

AdECN thus actively uses the misfit in the analogy as used by competitors to make their own "fit" look better by highlighting their brokerage model.

ADSDAQ did not highlight these brokerage-related analogical similarities. Instead, the ADSDAQ exchange also used selective construal to suggest that their exchange should include a trading desk as a service. The company describes how a trading desk should be integrally tied to an exchange so that customers select the right prices during the exchange transaction.

> Most people are just giving a dashboard and saying 'Here, look at this data.' But we are saying, 'Look at this data, and here's how you act on this data. You can buy, or you can sell.' *The exchange itself is an integral part of this product, which nobody else has, whether it is Google or anybody else*. (emphasis added)

In the trading desk rollout, the company also specifically suggested that their model of the trading desk aligned with a key attribute of an exchange – neutrality – so that they were free from conflicts of interest. They thus use the selective construal to justify how they construct their business model and to persuade potential customers to adopt of their model rather than other competing models:

> It needs to be a player that has an agnostic viewpoint in the industry. Here is an example. We are actually showing you data for free from sites that you are already buying from. We would rather that agencies act on the data. When they act on the data, we get paid for it, rather than charging for the data itself. *We don't have any incentive to charge. We are not charging anything for this. We are giving it away for free*. (emphasis added)

ADSDAQ thus invokes a similar value to AdECN – neutrality – but did so by construing the analogy in a very different, though again selective way.

Finally, AdBrite selectively construed the advertising exchange analogy to financial markets by emphasizing their size and their targeting ability. In promoting their OTEx-like product, this exchange claimed that "[we] reach 100 million users across 70,000 sites" and "AdBrite serves ads on nearly 1 billion page views daily." AdBrite reinforced this emphasis on the importance of size for the ad exchange immediately by highlighting their ability to target particular users: "Tell us who you'd like to target – defined by user or site characteristic – and we'll help you reach them. OTEx (Open Targeting Exchange) ensures your ad will benefit from leading edge targeting." (AdBrite.com, 5/26/2010). AdBrite thus rhetorically manipulated the characteristics of the ad exchange to increase the persuasiveness of their business model. Our focal cases position their business models by appealing to aphorisms that link their benefits implied by their business model with benefits that are culturally associated with the stock exchange, and by selectively construing the analogy to effectively position their business model relative to their competition and the overall needs of the online advertising community.

CONCLUSION

Analogies are powerful tools of sensegiving and justification, yet their power frequently depends on their persuasiveness. Our study aims to address this issue by developing new theory to explain how organizational actors in a novel market overcome analogical misfit to advance their interests. By invoking an analogy, such actors connect their innovation with a more familiar category, thus providing legitimacy and meaning to what might otherwise be strange and difficult to comprehend. In any analogy, however, there is misfit: similar and dissimilar elements of an analogical comparison co-exist, leading to tension and potentially weakening the power and persuasiveness of the analogy; we tend to comprehend analogies better when the analogical source and referent are more similar. While prior work focuses on how analogies legitimate new ventures, research has yet to examine how organizational actors seek to handle such analogical misfit.

To address this gap, we conducted a qualitative study of the display advertising industry, an empirical context that appears to be particularly suitable given the extensive use of a novel and complex analogy to legitimize an innovative way to buy and sell advertising impressions. Specifically, we observed the emergence of a new organizational form that transformed media buying in the advertising industry. In the traditional advertising industry, advertisers or their agencies bought audiences through aggregated buys of diverse media types. With the rise of the internet, however, and the inspiration of individual-focused search advertising, technological entrepreneurs conceptualized new mechanisms for buying and selling advertising impressions. These new business models, called advertising exchanges, created a market for individual advertising impressions that looked like an auction-based financial market. In this display advertising industry, we observed the use two specific elements of analogical work: an advertising impression is like a stock, and an advertising exchange is like a stock exchange. Yet, industry actors recognized significant differences between the advertising industry and the analogized financial markets. For example, industry actors observed that advertising impressions and stocks were fundamentally different. Whereas a stock is a commodity that confers rights to its owner and exists independent of the actions of a buyer or seller, the advertising impression is unique, perishable, and constructed by actions of both the buyer and the seller.

As our study shows, the actors involved aimed to overcome analogical misfit by stretching the analogy to better apply to their innovation through two forms of stretching. First, actors dealt with the misfit of the uniqueness of an advertising impression by suggesting that the spirit of the stock market analogy was to price a good at the most granular level possible. Consequently, even the though detailed classification of the ad impression performed by ad exchanges differed from the classification of stocks, organizational actors implied that the classification practices they used fit within the spirit of the stock market analogy. Second, the actors naturalized the analogy by incorporating elements that were foreign to the original analogy into the analogical context, and presented these foreign elements as natural. For example, the control ad exchanges offered to buyers and sellers was presented as a natural part of the stock market analogy – even though buyers and sellers in the stock market do not have control over the stock.

The second general strategy actors used to handle misfit was bending, where organizational actors made the innovation fit the analogy. As a strategy, bending aimed to overcome misfit between the prior business model used by the industry and the innovative business model proposed by the advertising exchanges. Whereas the prior business models focused on buying aggregated audiences through negotiated sales or posted pricing, the ad exchange enabled advertisers to buy individuals as an audience. To handle this misfit, organizational actors engaged in two types of bending. First, actors constructed their business model in such a way as to model activities in their innovation on the activities of their analogy's source domain. For example, AdECN constructed their business model as an exchange similar to the New York Stock Exchange, suggesting that their member ad networks could be considered to be similar to stockbrokers such as Charles Schwab or Merrill Lynch. Our organizational actors further bent their innovation to fit the analogy when they constructed new products derived from the analogical referent of the financial markets. For example, ADSDAQ introduced trading desks to the display advertising industry, and AdBrite introduced financial market-like algorithmic targeting with their OTX product offering. By using the analogy to create new business models and inspire new products, actors let the analogy shape their physical and material business practices.

Finally, the actors we observed performed positioning work to justify their use of the financial market analogy and locate it in the overall advertising domain. One key element of misfit that actors identified in the analogy between ad exchanges and stock exchanges, for example, was the relative centrality of the analogy relative to the innovation. Whereas the stock exchange is a central feature of financial markets, many actors argued that the ad exchanges only influenced remnant inventory – a minor portion of the total market. Actors handled this misfit by using aphorisms – general culturally accepted sayings of folk wisdom – to justify why the stock market analogy should be more central for the display advertising industry. Additionally, actors handled the misfit of distinct pricing models by selectively construing the financial market analogy to justify their particular business model. For example, financial markets contain more transparency than the display advertising market. Organizational actors handled this misfit by selectively interpreting the analogy to persuade market actors of the particular interpretation of the business model.

Taken together, our findings suggest that actors handle analogical misfit through three distinct strategies. Analogies can be stretched, bent, or positioned to advance the interests of organizational actors. Our model extends beyond prior research that illustrates the use of analogies in emerging markets as a means of legitimizing products and services (Hargadon and Douglas 2001, Etzion and Ferraro 2010). Specifically, our study builds on these works to develop a detailed account of the mechanisms organizational actors employ to create analogical fit. As such, we believe that our research opens up opportunities for additional studies. For example, under what conditions will such analogical work fail? While our case demonstrates the success of analogy work, it seems evident that analogies also frequently fail to convince, and a better understanding of the conditions under which analogies break down would have considerable implications for our understanding of how entrepreneurs may use analogies to justify their new ventures (Cornelissen and Clarke, 2010). Furthermore, how do organizational actors balance the need to legitimate their analogy and the need to position themselves as unique in a market? As prior work (e.g. Kennedy, 2008) has demonstrated, market actors may benefit from other entries in legitimizing new market and product categories, but too many entries are detrimental to firm performance, setting up a tension between the benefits from other actors similarly justifying an analogy and the need to compete with these actors over the business entering the category. Providing answer to such questions will help us better understand how actors make analogies work, and will be of use for theory and practice.

In conclusion, our research advances our understanding of analogy use by suggesting that actors use analogies in a dynamic, dual way. That is, the dynamism of analogy lays in the fact that analogies generate new vocabularies that link two different domains, introducing variation into two distinct contexts. This is essentially the "how" behind what Bourdieu (1992) called generative discourse – that is, discourse that generates social structure by transforming new social arrangements from ones that need explanation and justification into ones that seem not just real, but so natural that they need no further explanation or justification.

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FIGURE 1 – THEORETICAL MODEL OF HOW ACTORS HANDLE ANALOGICAL MISFIT

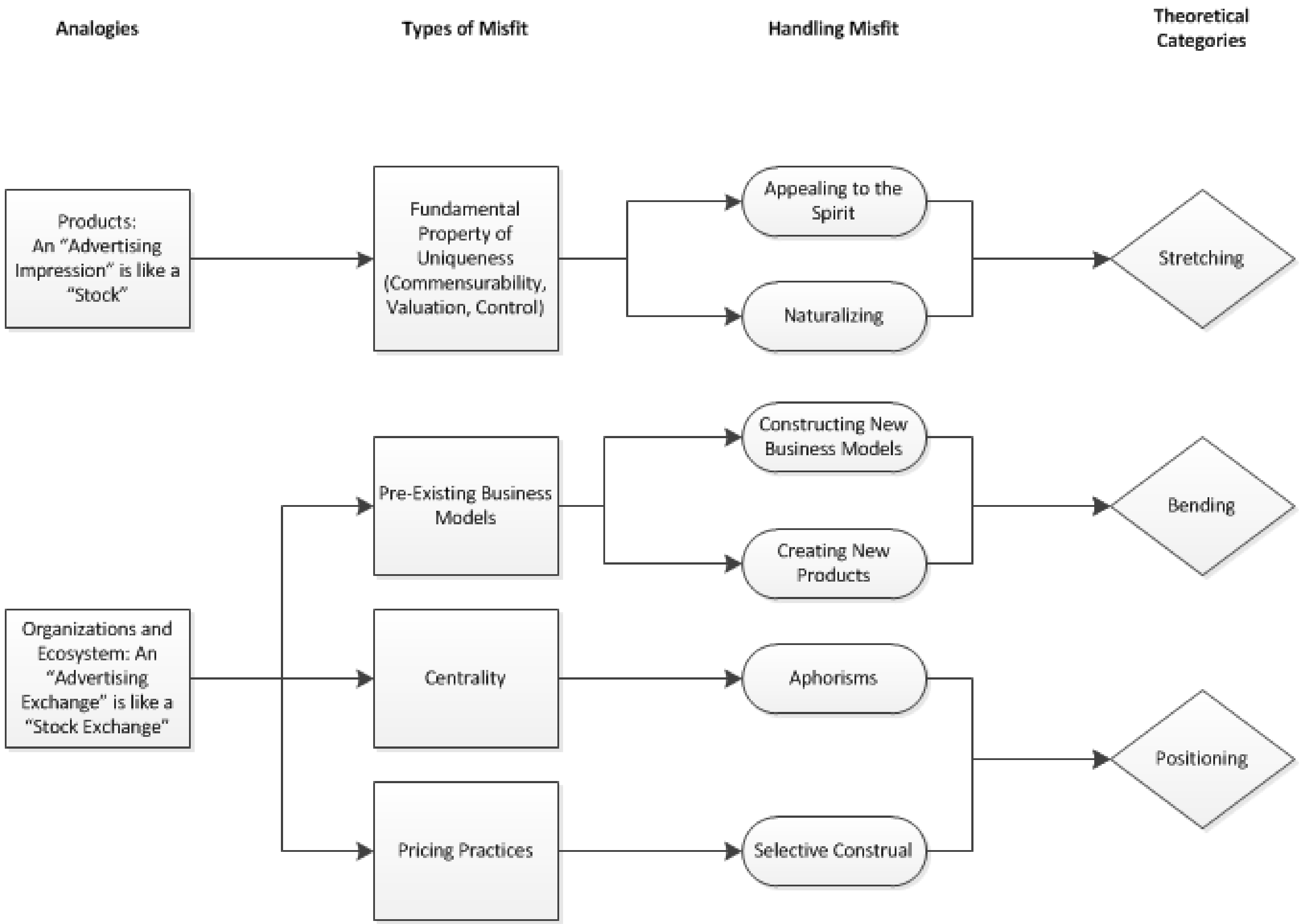

FIGURE 2 – LUMA PARTNERS LANDSCAPE FOR DISPLAY ADVERTISING

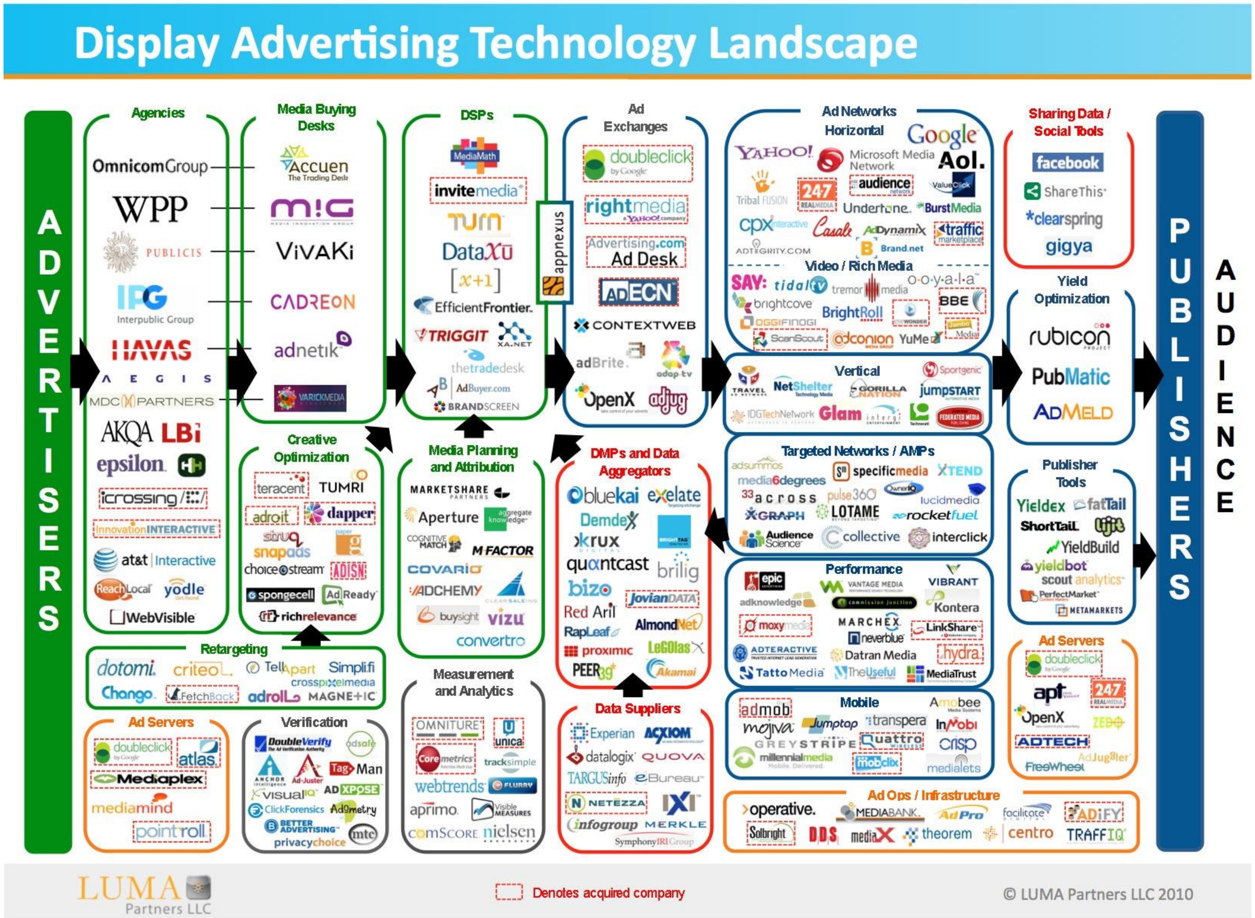

TABLE 1 – FINANCIAL MARKET ANALOGIES USED IN ONLINE DISPLAY ADVERTISING

Display Advertising Concept	*Analogical Referent*	*Example*	*Source*
Advertising Impression	Stock	DoubleClick has tripled its' trading volume. They do more trades than all of the stocks and bonds traded in all the world markets every day.	Google Presentation at an Industry Conference
	Commodities	The next big Internet race might turn the buying and selling of advertising space on Web sites into the online equivalent of the pork-bellies pit.	Wall Street Journal
	Derivatives and Other Instruments	I think that as the ad exchange gets going, that there can actually be instruments like options and puts and covered calls that can reduce any financial risk for the publisher, too.	Interview
Advertising Sales	Private Placement Memorandums	Selling premium advertising is like selling private placement memorandums in the equity market.	Interview
Advertising Campaign	Index Funds	Impressions do have a similar correlation to how stocks are categorized. We did try to do a little bit of categorizing publishers instead of stocks – like a Fortune 500. Early on, we thought about offering to advertisers, buy our top 200 publishers. This would be kind of like buying an index fund.	Interview
	Insurance	Members can sell their advertisers an "insurance policy" by arbitraging CPC and CPA campaigns into CPM.	AdECN website

Display Advertising Concept	*Analogical Referent*	*Example*	*Source*
Ad Exchanges	Electronic Communications Network (ECN)	An exchange is an automated trading platform in which buyers and sellers enter their bids and asks, and the exchange makes the match, delivers the goods to the highest bidder, handles the accounting, and collects from and pays all of the members. An exchange has to be a neutral, disinterested party in the transactions. It cannot care who wins an auction. This is how the new computer-based stock markets, such as Island, Archipelago, Brut, and so on now work. They are all Electronic Communication Networks (ECN's) and are extraordinarily efficient.	AdECN Website
	Stock Exchanges (NYSE, NASDAQ)	Ad exchanges efficiently connect buyers and sellers, in very much the same way that the NYSE or NASDAQ enables buyers and sellers of stock to meet – an ad exchange does the same thing for the ad impression market.	IAB You-Tube Video
	Foreign Exchange Market	AdBrite launched what it labeled the Open Targeting Exchange, or OTX, giving advertisers a more particular set of options by which to send their messages – and hopefully do so more effectively than would otherwise be the case.	Internet Article
Ad Networks and DSPs	Stock Brokerages	In essence, digital media is rapidly becoming akin to the stock market, with the need to constantly find smarter and better ways to inform the buying process, in terms of when and where to place your ads and the appropriate price point. Within this environment, the DSP is the online display equivalent of a stockbroker's trading platform, providing a one-stop shop for managing auction bids and analyzing performance.	Internet Article
	Futures Players	In the case of ad exchanges, additional parties can be ad networks, which commonly use them to buy and sell excess inventory; data providers, increasingly common as data about ads become important for targeting and retargeting; and, eventually, futures players and other arbitragers	Wall Street Journal
	Hedge Funds	The DSPs are more like the hedge fund.	Interview

TABLE 2 – EXAMPLES OF ANALOGICAL MISFIT

Analogy	*Misfit*	*Example*	*Source*
Advertising Impression is like a Stock	Difference in Uniqueness	So there are a lot of things from the finance analogy that really don't apply…how do you define the class? There are an infinite amount of classes to think about. Which features do you use to describe the impressions?	Interview
		With our top contracts, there were potentially 1x1060 categories to target. There were in actuality 3 trillion categories among our top 200 contracts. An example: what if I only want to run ads on days when the stock market is up? This type of example doubles the number of categories…	Interview
	Difference in Perishability	In the financial world, what is traded [i.e., stocks, commodities, etc.] has a long life span. In advertising, an impression is totally consumed a fraction of a second later.	Interview
	Difference in Valuation	There is a difference between a stock having an underlying financial value and an impression, which can mean wildly different values to different people because buyers have such different evaluations of an impression.	Internet Article
		Essentially this is a reflection that we are bidding on consumers which change in value to marketers depending on their own place in the purchase cycle – i.e. I'm a lot more valuable to an airline when I am vacation planning than the other 99% of my life. This is not the same as a share of AAPL, which is always a share of AAPL – it may change in value over time, but it does not suddenly become a pharma company for 2 weeks during flu season.	Blog
		With an advertising impression, you can create value where there would have been none by selecting the right ad – if you serve the right ad, the impression actually becomes more valuable.	Interview
		In a financial market, there is a "true" price. In a financial market, uncertainty causes many people to assign different values to a financial instrument. But the underlying idea of the value of a company being the discounted value of the future cash flows is relatively unchallenged. An	Interview

		advertising impression, however, has a different value to every purchaser.	
	Difference in Control Required by Buyers and Sellers	Publishers with bad information have an incentive not to release that information. If publishers attach too much information to an impression, the advertisers can take the cookie-based information from the publisher and go target that impression when they are visiting a lower-priced site – they can obtain a comparable impression in a different manner.	Interview

Analogy	*Misfit*	*Example*	*Source*
Advertising Exchange is like a Stock Exchange	Pre-Existing Business Models	Ultimately the incentives that exist with current business practices to keep things muddy for ad networks have to be overcome…for the brands to come on and trust the publisher.	Interview
		“The existing ad network model is completely up for grabs. We’re in classic creative destruction mode right now in the industry,” said Bill Demas, president and CEO of Turn, Inc.…The trend is not without obstacles. Brand advertisers and publishers are still getting comfortable with the advances…	San Francisco Business Times Article
	Centrality of the Analogy	There’s going to be a lot of not-so-good inventory that’s publicly available, but the best inventory is still going to be bought privately between companies…We believe that the private advertising market will always be much larger than the public advertising market.	Internet Interview
	Pricing	The prices on the stock exchange do not fluctuate on a given day; in the online advertising world it can fluctuate 90+%...Only the specialists know the real prices in the market…Each buyer knows what they are paying. Only the DSP and the ad exchange – the people in the middle – know the prices of their inventory, and they don’t share it.	Interview
		Finally, and probably the most immediate difference, is the issue of transparency. Admittedly, this issue could be solved easily by the market participants, but the reality is that most inventory is ‘masked’ by the publishers. Essentially, bidders cannot know exactly what they are bidding on. The exchange proponents will say that this does not matter if you are using ‘smart enough’ technology, since one can track performance by a unique, anonymous publisher and section ID. This naively ignores the fact that publishers can easily change which inventory these IDs represent in 10 seconds and there is no way for the market participants to tell that this has occurred until the value has significantly eroded. To see how this undermines the financial market metaphor, imagine that you are purchasing shares of ‘mobile company 123′ for 6 months and it is performing great. You bid at higher and higher rates for these shares based on	Blog

	this information. Then without your knowledge, the broker switches out the underlying stock from AAPL to RIMM. For a while, you continue to bid high for 'mobile company 123', your performance will (most likely) rapidly deteriorate while the broker makes huge profits. Financial markets have disclosure rules to prevent this sort of behavior. Only wishful thinking prevents this in ad exchanges (and maybe a verification service, but that's another discussion).