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Abstract

This paper study documents the evolution of Pay TV in the United States. We show that, when the first version of Pay TV, over the air Pay TV, came to the market, movie theatres and TV broadcasters started a social movement to "protect free TV" by blocking the emerging market. Later on, however, another technology with a similar business model, Pay cable TV, became successful. A closer look into the factors leading to this success shows that regulatory voids, the ambiguity of the public interest frame, and the influence over public opinion can create windows of opportunity for a technology to emerge despite strong opposition from incumbent firms. We argue that, in highly regulated industries, technology dominance can arise from windows of opportunity emerging amidst political battles.

Keywords: technology, market emergence, social movement, regulation, organizational frames.

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Introduction

Technological progress goes hand-in-hand with the evolution of the industry and its supporting institutions. While technological innovations are indeed vital and even critical drivers of industry evolution, emphasizing these innovations alone leads to an imperfect, under-socialized understanding of industry evolution. A more complete account would include an analysis of the political aspects of the evolution of new technologies. For instance, collective action is often required to gain from the opportunity structures created by new technologies (Rao, Morrill, and Zald, 2000; Swaminathan and Wade, 2001). In order to gain support for a technological innovation, organizations must often mobilize resources with collective action and gather the support of key constituents, including customers, regulatory agencies and suppliers.

It has been acknowledged that technological trajectories are subject to political action and that collective action may be necessary to shape trajectories (Hargave and Van de Ven, 2006). Despite the importance of the process, we do not know much about how organizations employ collective action and proceed to influence regulation to shape technological evolution. It is usually suggested that the players that take part in the technological change struggle are the ones who are the initiators of these technologies and that they try to influence the key constituents to gather support. However, there could equally be other incumbent players who are opposing these new technologies due to fear of losing their economic advantage.

In this paper, we explore the technological trajectory of over-the-air Pay TV and pay cable TV in the United States from the years 1949 to 1980. We scrutinize a social movement championed by the incumbents (free TV broadcasters) and used as a political strategy tool in order not to lose their customer base to newcomers with a different business model (Pay TV) in the television broadcasting industry. The social movement attempted to manipulate public opinion and to influence the regulatory agency with its success contingent on the regulation agency's preconceived framing and executive powers within its jurisdiction regarding the technology. In addition, the initial cooperative aspect of advertiser-supported cable TV shielded it from being identified as the threat, delaying the second social movement only until cable TV technology ended up being a good enough medium and technology for Pay TV to emerge. The entire political process had a crucial effect on which technology had the opportunity and time to

survive the testing and development period in this new business model (Pay TV) which has better odds of succeeding when it is widespread.

We suggest that the political battle fuelled by the broadcasting industry incumbents with the intention of rejecting rival business models resulted in the dominance of one technology of Pay TV over another. The findings provide a link between social movements, regulatory agency politics and jurisdiction, and technology dominance. We argue that social movements can be a competitive tool for fending off hostile business models with the corresponding technologies.

The paper is organized as follows. First, we provide a short overview of the relevant literature on technology development and collective action. Then, after describing the methodology, we delve into the rich historical details of the evolution of Pay TV in the United States. Within this historical account, we discuss the role of the FCC regulation and broadcasters in shaping the Pay TV technological trajectory. In the final section, we discuss the theoretical findings of the study and offer concluding remarks.

Literature Review

Technology Dominance and Collective Action

Technology battles and standards wars have been the focus of many management studies in the last few decades. Scholars have adopted many perspectives to explain the emergence of a dominant technology among several competing ones (Gallagher and Park, 2002; Schilling, 1998; Shapiro and Varian, 1999; Suarez, 2003). They identified different factors that shape a technology battle – e.g. technological characteristics of the product, firms' resources, the role of institutions, etc. (Suarez and Utterback, 1995; Schilling, 1998; Shapiro and Varian, 1999; Scott, 1994; Scherer, 1992).

There is an increasingly popular trend among researchers to identify and observe social and political processes in the explanation of how technology battles develop and new markets emerge (Hargave and Van de Ven, 2006). Bijker, Hughes, and Pinch (1987), Anderson and Tushman (1990), and Das and Van de Ven (2000) observed that technology selection and development arise through a process of negotiation among relevant social groups which reflects the extent to which evaluation criteria are influenced in favor of technology. Murmann and Tushman (2001) discuss this collective decision process, stating that, except in the case of simple technologies, uncertainty about the potential of certain technological designs cannot be understood by looking at the technology alone; rather, dominant designs emerge out of a sociopolitical process of compromise and accommodation played out in the community (Rosenkopf and Tushman, 1994; Van de Ven and Garud, 1994).

Scholars find that in a technology battle, competing groups use political tactics to "frame" issues to favor their own technology (Klandermans, 1997). These frames are by produced by firms and institutions that seek the same resources in order to legitimate collective action against the competing technology (Swaminathan and Wade, 2001). Such collective action can lead to agreement on a technological standard based on one of the technologies despite it being technologically and economically inferior to the competing ones (Aldrich, 1999).

In their study of Sun Microsystems' sponsorship of the Java technological standard, Garud, Jain, and Kumaraswamy (2002) show how that organizations socially construct frames to

catalyze the legitimization of a technology. They also show that mobilizing collective action is itself made difficult by the collective action against the sponsor of a technology, organized by incumbents whose dominance is threatened by the sponsor's initiatives.

Social Movement Theory

Several scholars have noted that technological developments have salient similarities with social movements. Swaminathan and Wade (2001) observe that, like social movements, entrepreneurs in emerging industries face the key duty of obtaining cognitive and sociopolitical legitimacy. Dowell et al. (2002) build the link between social movement theory and industry emergence in their description of how proponents and opponents of high definition television engaged in framing processes to influence the trajectory of HDTV in the United States. Rao (2001) notes that neo-institutionalists have begun to take the view that the creating of new organizational forms involves an institutionalization project that is similar to a social movement (Fligstein, 1996, pp. 663-664).

Social movement theory's interest in the emergence and advancement of social movements has a particular focus on the dynamics of social change. Social movements can be defined as an action system of mobilized networks of groups and organizations which try to achieve social change by using collective protest. Creators of social movements aim their message at two distinct targets: the power holders and the general public. On the one hand, they pressure the political authorities for recognition as well as to get their demands met, while on the other hand, they look for public support and try to get the population to identify with their cause.

There are three approaches in scrutinizing the emergence and development of social movements (Meyer, 2004): resource mobilization, political opportunities, and framing processes. First, the resource mobilization approach looks at the rational efforts by people poorly positioned to make claims on the government. It explores *how* movements emerge instead of *why* by scrutinizing the processes by which organizers mobilized activities such as protest or membership in civic organizations; however it does not take into account the nature of the political contexts. Second, over the past three decades, research that emphasizes the interaction of a social movement with its political context has accumulated within the political opportunity tradition. The key recognition is that activists' prospects for advancing particular claims, mobilizing supporters, and affecting influence are context-dependent, i.e., highly related to institutional arrangements. However, some researchers (Goodwin and Jasper, 2003) criticize the political opportunity approach, arguing that it neglects the importance of activist agencies, offering only a mechanistic understanding of social movements that does not apply to many cases. Finally, in order to alleviate the gap between opportunity and action, several researchers have explored framing processes. A frame is an "interpretative schema that simplifies and condenses 'the world out there'", thus organizing experience and guiding action by "rendering events or occurrences meaningful" (Snow and Benford, 1992, p. 37). Frames are perceived as the collective processes of interpretation, attribution and social construction that mediate between opportunity and action and that are intended to mobilize potential adherents and constituents, to get bystander support and to demobilize antagonists (Benford and Snow, 2000). Social movement research suggests that framing practices of activists can affect which frames prevail in societal discourse and in setting policy agendas. However, the success of the framing strategies depends on both political actors' ability to frame the issues (Kingdon, 1984) and constituents' reliance on preexisting beliefs and biases (Hilgartner and Bosk, 1988). These preexisting beliefs and biases may play an important role on the decision the regulators take

(Dowell et al., 2002). Lounsbury et al. (2003) present the framing efforts of the interest groups to influence the regulatory agency as a determinant of the technological dominance; however there is no association between the frames of the interest groups' and the preexisting frame of the regulatory agency that may influence the outcome of the regulatory processes.

In sum, even though political processes and collective action sponsoring new technologies are taken into consideration in the previous literature, we believe that examining regulatory politics further helps us understand technological dominance more. In particular, studying a social movement episode provides a good context in which to inspect regulatory politics because of the visibility of attempted influence. Especially compelling is the position of the incumbent fighting with the rival business model and technology, which has not received sufficient attention, except for works of Dowell et al. (2002), and Ingram and Rao (2004). Other factors, such as the technology's core characteristics or the regulatory coverage that pre-exists for it, need to be considered along with the regulatory politics in order obtain a balanced view of technology dominance in new markets.

Methodology

In order to understand the process of collective and political response to new technologies, we focused on the comparison of cable versus over-the-air ("OTA") Pay TV in the United States. This comparison is particularly appropriate for the research question because the television broadcasting industry was highly regulated at the time of the study and the processes of regulatory politics stretched for three decades. This long time period gives us the opportunity to trace the emergence and development of the two technologies for Pay TV (cable versus OTA) in a controlled environment where we can systematically observe how political action of the involved organizations affects the development of the two competing technologies. Observing the success and failure of competing technologies symmetrically is central to the study of an emerging business model in a technology market (Bijker et al., 1987).

We explored the emergence of cable and OTA Pay TV using archival data including annual reports of the Federal Radio Commission (FRC) and the Federal Communications Commission (FCC) covering the years from 1927 to 1980, historical books of evolution of Pay TV (Hilmes, 1990; Mosco, 1979), communications of the National Association of Broadcasting (NAB), and congressional hearings. We also included two hundred *The New York Times* articles (1949-1980) which we obtained with a keyword search on "Pay TV". Using extensive archival data is appropriate for our setting for the following reasons. First, the large quantity of documents over the time period shows the prevalence of written, publicly accessible communications in the broadcasting industry, and these documents provide lasting texts and historical insight into the change process. Second, since most of these documents are official reports, they are long (FCC reports average more than 100 pages) and carefully prepared, and therefore provide a very rich data source. In addition, the FCC annual reports are particularly key to the analysis because these reports are the FCC's main method of communication and therefore capture important and timely information about how the FCC views particular issues and responds to other actors' demands. Similarly, NAB's communications reflect the position of the broadcasters, providing valuable information which helps to identify and understand the logic of these key actors. Finally, *The New York Times* is the leading newspaper in the city where powerful TV networks were located during the period of the study. The two hundred news articles we obtained provide extensive coverage and comparison of different parties' opinions and effectively complement

the official documents we analyzed in the study. Data triangulation from multiple sources strengthens confidence in the accuracy of findings (Jick, 1979).

Data Analysis

We analyzed the content of all written materials in order to identify and categorize events, patterns of events, and reactions that occurred between 1949 and 1979. First, we created a detailed historical account of the evolution of Pay TV. This historical account is an effective way of using history to build theory (Kieser, 1989; Rao, 1998; Hargadon and Douglas, 2001) because it allows the examination of multiple instances of technology emergence and change over a long period of time, and therefore can provide greater breadth of knowledge than participant observation or interviews (Rao, 1998, p. 921). Historical reading can also provide the distance necessary to observe how a new technology emerges and is influenced by its institutional environment, because the changes that accompany innovations often occur over years and even decades (e.g., DiMaggio, 1992; McGuire, Granovetter, and Schwartz, 1993).

The resulting historical account was about 60 pages, including quotes and timelines regarding the emergence of both OTA Pay TV and cable Pay TV. Two researchers reviewed the data to form independent views of the accounts. We then synthesized these views and began our analysis where we looked for the emergence of similarities and differences between the historical accounts of OTA Pay TV and cable Pay TV. We used tables and other cell designs to compare several possible constructs at once (Miles and Huberman, 1994). As the theoretical frame clarified, we added a comparison with the extant literature to highlight similarities and differences, strengthen the internal validity of findings, and raise the generalizability of the emergent theory.

In the next section, we provide highlights of our historical account on the development of the competing technologies for Pay TV and explain the emerging theoretical model around framing contests and institutional battles around emerging technologies.

Findings

We provide a narrative covering the period from the emergence of the Pay TV concept until one of the competing technologies had a stronghold in the market place. A timeline of the evolution of the two technologies is shown in Table 1.

Table 1

Timeline of the evolution of the two technologies for Pay TV

Year	Over the air Pay TV	Cable Pay TV
1948		First Cable TV
1949	Zenith applies for testing	
1950	FCC authorizes Zenith	
1952	Zenith files to test Pay TV nationally	
1953	Paramount-Telemeter Palm Springs trial	
1954	Zenith updates its appeal, Free TV social movement starts	
1955		150,000 subscribers to cable
1956	NAB pamphlet "On Record Against Pay TV"	
1958	The FCC sets a date for applications for pay television systems with controlled conditions	FCC refuses to extend jurisdiction
1959		FCC refuses to license Carter Mountain microwave system
1960	FCC permits controlled three-year tests	
1962	Zenith begins for trial in Hartford	FCC finally assumes jurisdiction over cable
1964		Launch of STV in California, Free TV social movement and ban of STV in California
1965	Zenith applies to broadcast nationally	
1966		FCC publishes new orders requiring cable operators to always carry local channels and not duplicate local programs within 30 days.
1969	FCC authorizes all over-the-air systems	FCC rules for preventing access to top urban markets
1971		Positive public perception about cable
1972		Cable regulation diminishes
1974		FCC restricts movies and sport events on cable
1975		HBO Pay TV uses satellite for the first time
1979		Many FCC rules for cable relaxed even further

The Emergence of the Over-the-Air Pay TV Technology

The concept of Pay TV emerged in the late 1940's when the TV audience started growing. Movie distributers initially proposed bringing the economics of film exhibition to the broadcasting business by charging for television viewing on a per-program basis. TV manufacturers quickly joined them in the effort in order to sell more new-generation TVs. Specifically, three corporations led the quest for OTA pay television technology in the 1950s: TV manufacturer Zenith's Phonevision, known for developing the first Pay TV system worldwide; movie distributor Paramount Picture's Telemeter company, which used a coin-operated box attached to any television set to charge viewers; and electronics company Skiatron's Subscribervision. The basic technology that the three competitors used was the same: using a broadcast channel to transmit a scrambled signal which was then unscrambled at the subscriber's home.

The first request to test pay television in United States was filed by Zenith on August 3, 1949, asking for a 90-day period to conduct an experiment regarding Phonevision. On December 8, 1949 the FCC (see Appendix 1 for the founding of the FCC) showed resistance by calling a congressional hearing, stating that "it is not clear whether 'Phonevision' should be classified as

a broadcast service, a common carrier service, or other type of communication service, or what frequencies, if any, are appropriate for use in the proposed experimental operations or for use in a general commercial 'phonevision' service, in the event that such services were to be authorized on a regular basis" (Hilmes, 1990, p. 130).

After Zenith's appeal for reconsideration, FCC gave their permission in February 1950, without a congressional hearing, for the testing of the technology. However, the testing would be conducted at a small scale under strict geographic restrictions. The FCC commissioner publicly stated his resistance at the time as follows: "[This] may prove to be the first step toward the introduction of pay television and radio into the American system of broadcasting. I do not believe that even the first step toward such a momentous change into the American system of broadcasting should not be taken without the benefit of a public hearing" (Hilmes, 1990, p. 130). At the end of Zenith's 90-day testing period in Hartford, Connecticut, the FCC restated its position by declaring that a public hearing would be necessary to move ahead with the technology. Zenith filed an appeal for the second test, this time national, in February 1952, but had to wait a total of 8 years until 1960 for the permission to be granted.

Birth of the Social Movement against OTA Pay TV

Despite the FCC's resistance, Pay TV remained on the public radar, with the FCC allocating a special section for subscription TV in its annual reports starting in 1953. The resistance moved to the public level in 1953 when a wave of publicity against pay television started as a response to Paramount-Telemeter's 1953 Palm Springs trial. In this trial, over seventy households were wired with coaxial cables and Telemeter boxes. By utilizing CCTV (coaxial cable TV), which was not under FCC jurisdiction at the time, Telemeter was able to bypass the FCC.

The publicity against Pay TV trials was backed by a powerful coalition of two groups: movie theaters that feared box office erosion, and ad-supported TV broadcasters that feared that audience-supported (i.e., paid) TV would destroy their monopoly on TV programming and create the vicious spiral where the higher revenues for Pay TV would lead to higher quality programs and higher subscriptions, which in turn would introduce higher revenues.

As part of this social movement started by theater owners and ad-supported TV broadcasters, the "Free TV" argument was transformed into political virtue, and the distinction between "free TV" and "pay TV" was invented. At this point, ad-supported TV was to be named as "free TV" and subscriber supported TV "pay TV". From this period on, politicians and broadcasters would use the idea of "free TV" as a public good as part of a United States industrial policy favoring ad-supported local TV broadcasters over all other competitors.

In order to reach the general public, ad-supported TV broadcasters and movie theaters launched a well-funded and well-organized social movement campaign. They sent out pamphlets, flyers and "fact sheets" to interest groups across the United States. CBS, for instance, targeted women's groups with a pack entitled "Television in a Free World", including two pamphlets and six fact sheets, elaborating all the benefits of free television programming. The titles of the documents illustrate the broadcasters' arguments: "Free television and its accomplishments," "Television stimulates interest in education and culture," "Television provides wide range for pulpit," "In public affairs," "The importance of television advertising," and "Free television is free choice." Advertising, the aspect of free television most attacked by pay television forces, was defended as: "Television advertising, which has proven amazing effectiveness, helps make possible efficient distribution. This in turn results in making more goods available to more

people at lower cost and keeps production and employment at high levels... that's why Free television advertising is an important factor in our free economy" (Hilmes, 1990). The groups even quantified their argument, suggesting that Pay TV would cost the average family $1156 a year for the same kind of programs that they could receive free otherwise.

In order to influence the legislators, the broadcasters used a different set of arguments. First, they claimed that Pay TV was politically unpopular. The broadcasters sent pamphlets to Congress signifying and explaining the public's opposition to Pay TV. The results of seven newspaper polls were mentioned, and the pamphlets quoted several letters of support from organizations and individuals. The National Association of Broadcasters argued: "The final outcome of the pay television proposal presently before the FCC will be decided, ultimately, on the basis of whether or not Pay TV is in the public interest. And the nation's televiewers, as they become acquainted with the nature of this proposed system through television and other mass media have given a clear answer to this question. They have written to TV stations and networks. They have expressed themselves through their civic organizations in resolutions, and in testimony before Congress. Independent newspaper surveys revealed a public that is anywhere from 72% to 99% opposed to paying for its home TV entertainment. And congress as well as the FCC has received thousands of comments from viewers stating their enthusiasm for today's free television, and protesting any authorization of Pay TV."

To convince legislators, broadcasters backed their opposition to pay TV with two frames; the *efficiency* and the *equity* frame. In the *efficiency frame*, broadcasters asserted that advertiser-supported free TV enhanced customer welfare more than would audience supported Pay TV. In a pamphlet distributed to Congress, the NAB stated: "Pay to see television will add nothing to present programming except a bill. It cannot be regarded as an addition to free television; it is a substitute for free television. Free television robbed of its talent must itself inevitably turn to pay television or deteriorate to mediocrity or worse. In either event the public will receive less service for more money." Thousands of references argued this efficiency point in congressional and FCC reports, but there was no systematic effort to estimate to what extent the benefits of Pay TV outweighed the costs (Snider, 2002). The *equity frame* was a logical *successor of* efficiency frame. Broadcasters stressed that only the wealthy people would be able to watch the new Pay TV while the majority of citizens would be left without programming on their TV. In the words of one free TV broadcaster, Columbia Broadcasting System (CBS): "The privilege of looking and listening would exist in direct proportion to the resources of the family pocketbook."

As a result of these pressures, the House Committee on Interstate and Foreign Commerce introduced a "rule making hearing" in 1955, and asked for comments from the public. Between June and September of 1955, at least twenty-five thousand parties filed comments for and against pay television, and in April and July 1956, public hearings were held. During this period, at least five separate bills were introduced in congress to ban pay television.

The FCC's Response to the Movement against OTA Pay TV

The first response of the FCC to the movement against OTA Pay TV was to wait in order to evaluate whether it possessed the authority to regulate subscription television. On May 23rd, 1957, the FCC committee stated that, in order to authorize subscription television operations, more field testing was necessary to determine whether it was in the public interest. The committee set a March 1, 1958, filing date for applications to test Pay TV under the restriction

that no more than three regions could be served by one company; and the trials were limited to a three-year period. Paramount, Zenith and Skiatron all applied. In the meanwhile, the House Interstate and Senate Committee received thousands of letters, of which only a few were in favor of Pay TV. Taking those mails into account, the Senate Committee requested the FCC to delay the trials for two years.

In 1960, when the FCC again permitted the trials, only Zenith applied for a trial in Hartford, Connecticut. Opposition to Zenith's application arose immediately from such groups as the Connecticut Committee Against Pay Television, Connecticut Theaters, the Manchester Drive-in Theater Corporation, and the Outdoors Theater Corporation, which led to two more years of delay. During that time, Zenith executives complained that "It would be better for the FCC to reject our position altogether rather than bog us down in further endless administrative hearings and proceedings."

The Hartford trial finally began in June 1962. Zenith initiated the service with three hundred subscribers and ended up with five thousand in 1965. Backed by these numbers, Zenith appealed to the FCC to authorize unlimited pay television on a national scale and gained permission in 1970. Between 1965 and 1970, The House Committee intervened twice; the first time in November 1967 asking for a one year delay, and the second in September 1968, asking the FCC for another year's delay in its plans to authorize television on a nationwide basis.

Three OTA cable services were licensed by the FCC between 1970 and 1975. However, none of these ever actually launched as the cable TV technology had established wide coverage and a large subscriber base by that time.

The Emergence of Cable TV

The earliest cable television systems, also called community antenna television (CATV), were established in the late 1940s with the purpose of delivering television programs to rural homes that were too far to receive OTA signals.

TV broadcasters, on the other hand, immediately welcomed cable TV technology that made their signals accessible to remote areas and thereby increased the number of viewers, with a direct effect on their advertising revenues. They consequently helped cable TV spread across rural America in the early 1950s.

Because it operated through cables, this new technology fell right between the regulatory systems for telephony and television, with no clear agency assigned for jurisdiction. The FCC adopted a *laissez-faire* position toward cable in the 1950s, reasoning that it lacked jurisdiction over the industry, and that, in any case, extending the reach of broadcast signals served the public interest.

Emergence of Pay Cable TV

In 1960, Teleprompter, a cable TV company started in 1950's, began to acquire CATV systems in remote areas, spotting these as the ideal testing grounds for pay TV because they were unlikely to draw the scrutiny of anti-pay groups or the FCC. Teleprompter then bought the broadcasting rights to a major boxing match and transmitted it in addition to its public channels in 13 remote areas that received cable TV, with an estimated 25,000 subscribers paying $2 each for the show. This marked the first time pay programming was made available

on existing CATV systems. Another pay cable TV venture, Subscription Television, Inc. (STV), soon made a highly visible launch in 1964 in Los Angeles.

Local free TV broadcasters reacted to these launches with fury. Together with theatre owners, they immediately set up the Citizens' Committee for Free TV and, together with the California Federation of Women's Clubs and California Crusade for Free TV, gathered more than 1 million signatures, more than twice the necessary number, to put a referendum ("An act to preserve free television in California") on the state ballot. If passed, the referendum would ban Pay TV in California. One ad run by the Citizens' Committee had this jingle: "Pay TV/Before you're done/You'll charge for air/ And rent the sun!" Another showed a masked burglar sneaking into a room with an old woman sitting in a rocking chair, then escaping out the window with the woman's television set. A print ad showing a child with tears in his eyes looking at a blank TV screen included the text: "What kind of a monster would do this to your child, would come into your home and put a padlock on his TV fun? What kind of a monster would force you to feed your TV set bucketfuls of dollars – or suffer the humiliation of being labeled a 'cheapskat' in the eyes of your children? There is such a monster. It's a greedy thing called Pay TV." Another print ad was headlined "Don't watch Television with bread money." In addition, most OTA TV stations and local newspapers refused to carry commercials supporting Pay TV. For example, all three networks affiliated with local TV stations in San Francisco, as well as the major daily newspaper, *The San Francisco Chronicle* (whose parent company also owned broadcast stations), refused to accept pro-Pay TV issue ads. Overall, the advertising campaign against cable Pay TV reached five hundred thousand dollars, dwarfing the less than hundred thousand dollars spent by the proponents.

Free TV Broadcasters and Legislation against Cable Pay TV

As a result of such pressures, the State of California held a referendum in 1964 to ban all forms of Pay TV in the state; a referendum which received great public support. The pay cable company Subscription Television, Inc. (STV), challenged the vote in the California Supreme Court. Sixteen months later the California Supreme Court abolished the law, ruling that it violated the First Amendment and was therefore unconstitutional. This time, the State of California appealed to the United States Supreme Court. On October 1966, the United States Supreme Court refused California State's appeal and ended the judicial battle in favor of STV. However, by then, STV had gone bankrupt due to the legal battle.

Following the strong protests against pay cable TV, the FCC dropped its *laissez-faire* attitude and issued two major policy statements, the First Cable Television Report and Order, 1965, and Second Cable Television Report and Order, 1966. In these statements, the FCC supported local broadcasters by requiring cable operators to always carry local channels in their portfolio. In addition, the "Nonduplication" policy prevented cable companies from bringing duplicates of any publicly available local program from regional or national channels for a period of 30 days before or after a local broadcast. In 1966, the FCC further decided that cable operators in the 100 largest television markets (where 87 percent of the United States population then lived) had to obtain formal permission from the FCC to transport distant signals, which proved to be a very long and painstaking process for the operators.

In making these restrictions, the FCC also had also the backing of other powerful institutions such as the Supreme Court. In 1968, for instance, the Supreme Court upheld the FCC's right to make rules and regulations concerning CATV in the United States versus Southwestern Cable,

a.k.a. the "San Diego Case". In this case, Southwestern Cable Company wanted to import stations from Los Angeles over cable, but this was objected to by local free TV broadcasters in San Diego. The Supreme Court supported the FCC's decision to ban the cable company in favor of free TV in the San Diego area.

In 1969, a new set of policies brought severe limitations to the programming of cable operators. These restricted the cable companies to showing movies that were more than ten years old and sporting events that had already been broadcast on public TV in the previous five years. The FCC justified these policies as "saving public TV programs from being siphoned off to cable TV" and asserted that it would "continue to watch the situation carefully." Although cable operators continued to press for limitations on the FCC's ability to impose such program obligations, the Supreme Court refused their claims. For instance, when Midwest Video Corporation challenged the FCC's requirement to include local channels (United States versus Midwest Video Corporation), the Supreme Court found that such a rule was "reasonably ancillary" to the FCC's broadcasting jurisdiction.

The Movement to Allow Cable TV Technology

As the FCC and the Supreme Court continued ruling against cable Pay TV, the fate of the technology took a surprising turn when several influential actors decided to get behind the technology of cable TV for two main reasons. First, cable TV had a much higher carrying capacity compared to free (OTA) TV, allowing many more channels. This carried the potential for creating diverse social, educational, political and entertainment services that were beneficial to society. Second, cable TVs could become multifunctional information and entertainment devices, where viewers could receive and send data, receive mail and newspaper reproductions, and use interactive features for services such as catalogue shopping or banking.

Realizing these benefits, community groups, educators and think-tanks such as Rand Corporation started voicing objections to the FCC's policies. In 1968, the Johnson Presidential Committee stated that "cable television offered promise of a new era in broadcasting, permitting diversity in programs for society," and recommended the relaxation of some of FCC's restrictions. In 1969, the Justice department sent a letter to the FCC, also praising cable TV and urging the FCC to relax the cable TV restrictions. Subsequently, in 1971, the Sloan Commission on Cable Communications, which consisted of 16 members including presidents of universities and research centers, lawyers, scientists and public officials, asserted that the promise of cable TV was great, and that pay-as-you-watch TV should be introduced nationally on a controlled basis. Ralph Lee Smith's (1972) book, "Wired Nation," captured many people's imaginations with its scenarios of revolutionary possibilities that cable television could offer if only it were regulated in a more visionary fashion. The Rand Corporation, in a research study undertaken for the National Science Foundation, concluded that "in time, cable television may influence the way we live as radically as the automobile and the telephone have done."

President Richard Nixon strongly disliked the broadcast networks and the Nixon Administration encouraged cable's growth. The White House's Office of Telecommunication Policy issued a report calling for the removal of government regulation over cable TV, and that cable TV should not be treated as an extension of broadcasting, but as a new medium open to all people. The report also suggested that cable TV should have not only the same freedoms as television, but also as print media (newspapers, magazines and books) under the first amendment. The Office of Telecommunication Policy also led a series of meetings among cable, programming

and broadcast companies in 1970-1971, leading to the recommendation that the FCC revise its cable rules.

In 1972, FCC published a Cable Television Report and Order with new rules that softened some of the restrictions on cable television's expansion to new markets, particularly with respect to importing distant signals. Nonetheless, it maintained several of the detrimental rules and standards (including mandatory two-way cable service in certain markets and local origination rules requiring operators to generate programs). Unhappy about the support that cable TV received, free TV broadcasters created a "Special Committee on Pay Television" in 1974 to increase pressure on Congress and the FCC. As a result, the FCC adopted still more programming restrictions on movies and sporting events in 1975.

In the meanwhile, the pro-Pay TV movement took another turn when a study by Stanford Research Institute forecast rapid growth and a prosperous future for pay TV as a complement to free TV. This was followed by another study conducted by the "Committee for Economic Development," an organization of business executives, which recommended the phasing out of certain restrictions on cable television to facilitate its growth. In addition, the Justice Department challenged the FCC rules in a brief filed in the United States Court of Appeals for the District of Columbia charging that the FCC could not justify its actions "in terms of an immediate need to protect the public interests." The court ruled that FCC's restrictions be abolished because they were "arbitrary and capricious" and violated the First Amendment rights of cable TV operators.

Pay Cable TV and the use of satellite

A final positive turn for cable Pay TV came with a technological development that put FCC's jurisdiction limits back on the table. In 1975, HBO, formerly a pay cable company using a microwave relay, became Satcom I, satellite's first television customer. This would allow video signals to be transmitted economically via satellites to cable hubs and then through wires to houses. Within two years, the service spread to 262 hubs around United States, but current movies and sporting events were still off-limits due to FCC's programming restrictions, which only allowed movies that were more than ten years old and sporting events that had already been broadcast on public TV in the previous five years. When HBO sued the FCC, claiming that the FCC had exceeded its jurisdiction in restricting programming, the District of Columbia Court of Appeals decided that the FCC's broadcast protectionism was unjustifiable. Although HBO had already switched to satellite technology, the court generalized the verdict to all cable TV operators, stating that cable television service deserved the same First Amendment protection as newspapers, which were much greater than public TV. This reasoning led the cable industry to argue against other government rules, which fell aside one by one. Parallel to the HBO case, the 1979 United States versus Midwest Video Corporation decision found that the FCC's rules imposed unacceptable obligations on cable operators, undermining the earlier Midwest Video decision.

After the HBO versus FCC lawsuit, cable Pay TV witnessed explosive growth while the percentage of Americans fully relying on free TV decreased from 83% to 13% over two decades. The massive growth of Pay TV using the cable system in the years from 1975 to 1989 is illustrated in Table 2.

Table 2

Cable versus pay cable

	Public Cable TV		Pay Cable TV	
Year	Avg. basic subscribers (1,000)	Avg. monthly rate (dol.)	Avg. monthly rate (dol.)	Percent of homes with cable TV with Pay TV
1975	9,800	6.50	7.85	24
1976	11,000	6.45	7.87	22
1977	12,200	6.86	7.92	13
1978	13,400	7.13	8.01	23
1979	15,000	7.40	8.24	36
1980	17,500	7.69	8.62	47
1981	21,100	7.99	8.92	67
1982	25,250	8.30	9.30	76
1983	29,430	8.61	9.70	84
1984	32,800	8.98	9.96	84
1985	35,440	9.73	10.25	82
1986	38,170	10.67	10.31	78
1987	41,160	12.18	10.23	79
1988	44,160	13.86	10.17	81
1989	47,500	15.21	10.20	79

Discussion

This case study documents the evolution of Pay TV in the United States. We show that when the first version of Pay TV, over-the-air Pay TV, came to the market, a social movement started by movie theatres and TV broadcasters to "protect free TV" blocked this emerging market. Later on, however, another technology with a similar business model, cable Pay TV, became successful.

Before explaining the reasons why OTA Pay TV failed while cable Pay TV succeeded, we must compare the economic and technological advantages of both technologies. From an economic point of view, OTA Pay TV was clearly superior to cable Pay TV. OTA Pay TV broadcast through existing TV channels, and so needed virtually no installation except to attach the decoder to the normal set, and provided better picture quality. Cable TV, in contrast, had huge initial costs since each home required individual installation. As a whole, the cost of wiring a major city was estimated to be between $50 million and $100 million.

From a technology point of view, cable TV was potentially superior. It had a higher carrying capacity compared to OTA TV, allowed it to carry more channels. Second, cable TV devices could become multifunctional information and entertainment devices, where viewers could receive and send data, receive mail and newspaper reproductions, and use interactive features for services such as catalogue shopping or banking.

In the end, OTA Pay TV failed, despite its ease of implementation, because of the perceived public interest frame of the FCC. The FCC's actions were influenced by the free TV social movement, through Congress and the House Interstate and State Committee as the power holders, and through interest groups such as women's groups and labor unions. This frame was created by the allied forces of free TV broadcasters and movie theatres that wanted to protect their economic interests in the existing broadcast system. Following this frame, the FCC protected free TV broadcasters from any kind of competition from Pay TV for over ten years.

We argue that that Pay cable TV could grow despite a similar resistance from broadcasters for several reasons. The first reason was the initial lack of resistance to the technology of cable TV in general. When cable TV first emerged, its purpose was to bring free TV programs to remote rural areas, clearly a development in the public interest. By the time cable TV was first used for pay channels, the broadcasters were caught off-guard as they had been supporting the development of cable TV until then. The second reason is the regulatory void that the FCC faced regarding cable TV, which allowed the technology sufficient time to become established. Cable TV emerged in the 1950's and cable Pay TV in 1960. Until 1965, the FCC did not attempt to extend its jurisdiction to include cable TV. Arguably, the FCC's *laissez-faire* attitude was influenced by the positive initial reactions to cable TV. The FCC's official frame of "protecting public TV and interest" led them to not challenge cable TV's existence in the first place.

The combination of these factors created a window of opportunity in which cable TV rapidly grew and was quickly taken for granted. After cable Pay TV emerged, there were varying interpretations of the public interest frame used by different actors. The FCC maintained its "Paying for TV is against public interest" frame and stood against cable Pay TV, as it did in the case of OTA Pay TV. The public and the United States justice system, however, changed sides the second time around. The technological benefits of cable TV became the basis for the social movement started by community groups, educators, and think-tanks, which influenced the United States Courts to stand against the FCC in this matter and eventually soften its policies to allow Pay TV to flourish.

One question that our readers will ask is whether this outcome is due to the power differentials between parties that supported OTA versus cable Pay TV. In other words, were cable Pay TV companies larger or somehow more powerful compared to OTA Pay TV companies? OTA Pay TV companies were powerful players such as movie studios (Paramount) and a major TV manufacturer (Zenith). Even though the movie studios had lost the anti-trust lawsuit in 1948 which cast doubt on their power, in terms of their level of organization and the resources available for political action, these can barely be considered powerless actors. On the other hand, cable Pay TV companies were considerably smaller companies, mostly local start-ups that grew in a region by buying other companies that offered free cable TV. The power difference between cable Pay TV companies and their resistors, free TV broadcasters and movie studios, was large. For instance, in the seventies, when free TV broadcasters raised six hundred thousand dollars for their campaign against cable Pay TV, cable TV broadcasters could only raise two hundred fifty thousand dollars for the same campaign. We must therefore rule out the idea that cable Pay TV dominance stems from the powerful actors that offered the technology, and focus on the window of opportunity that these actors found amidst the regulatory void and the initial frame of cable as being publicly beneficial.

Contribution to Theory

Scholars find that, in a technology battle, competing groups use political tactics to "frame" issues to favor their own technology (Klandermans, 1997). These frames are produced by firms and institutions that seek the same resources in order to legitimate collective action against the competing technology (Swaminathan and Wade, 2001). OTA Pay TV technology led to an opposition from incumbent industry players. The social movement they created by using the public interest frame influenced the regulatory processes by means of strengthening the initial frame of the regulatory agency. This effort led to the failure of OTA Pay TV. When cable TV technology emerged, however, the FCC was thrown into a state of confusion through a combination of two factors. On the one hand, the cable technology was not defined within FCC's jurisdiction, which required the FCC to take a bold stand in order to extend its authority. On the other hand, the initial purpose of the cable technology seemed to be in the public interest, which gave the FCC the incentive to let it grow at the beginning.

One of the first conclusions we draw from our story regarding frames is that what really constitutes the public interest is subjective and evolving. For that reason, different institutional actors can potentially interpret it in different ways in different time periods. If the framing of what constitutes the public interest is the same, we see a more collaborative approach among different institutional actors supporting each other, whereas, at times, due to various factors such as general public opinion and the impact of other powerful actors, we observe a more "fragmented" view of what actions should be taken regarding public interest. Therefore, these varying interpretations can lead to conflicting approaches to regulation by the institutional actors.

In our case, we observe sequential periods of regulatory battles and truces which are fueled by different framing. In the first period, the single dominant frame was "protect Free TV" which allowed for a more collaborative approach by various institutional actors in terms of protecting the Free TV and opposing OTA Pay TV. Along similar lines, the second frame of "remote access" benefited the competing technology Cable TV since all regulatory actors believed that this frame led to pursuing the public interest. In the third period of the case, we observe a phenomenon different from the previous two periods where two different frames prevail as conflicting frames, one based on "allowing a revolutionary technology to grow" and the other on "protecting free TV". Here the actions of the regulatory actors, the FCC and the United States Justice System, become competitive rather than collaborative, leading to regulatory battles which were eventually won by the United States Courts.

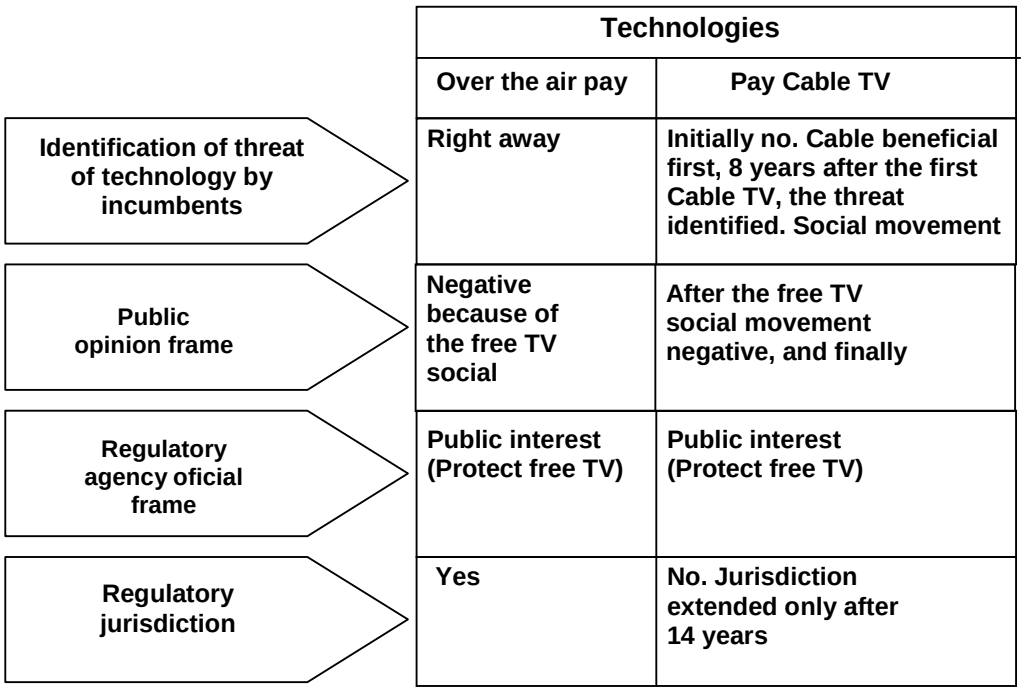
Another important conclusion regarding the antecedents of technology dominance is the public opinion for or against the technology. Regulatory agencies are created to pursue public interest and certainly are influenced by the perceptions of the general public and other power holders. Public opinion is well studied in the social movement theory and certainly has an effect on social movement success. In our case, the first social movement gained ground due to people's uncertainty about the new technology's prospects, which was easily turned into negative perception with the publicity of the social movement. However, the second social movement's success was undermined by an increasingly positive perception and awareness of the public regarding the cable TV technology with the help of think-tanks, influential books and educators influencing further the actions of the FCC. Even though regulatory agencies are founded to follow public cause, the influence of other power holders and the general public is substantial in determining their policies. Once cable was perceived in a positive way and widespread with

an extensive subscriber base, Pay TV broadcasters succeeded in using cable to reach the subscriber base they needed to be economically viable.

Finally, we find that the time dimension is crucial. The time given to a technology to become established can determine the winning technology. The two technologies were initially developed at more or less the same time. The OTA Pay TV technology was attacked right away by free TV broadcasters and movie theaters, whereas cable Pay TV was only attacked after an initial period of 16 years, during which the FCC did not regulate over cable, and the public formed a positive opinion about the technology. By that time, cable Pay TV had gained many subscribers and extensive coverage in United States. It had become unstoppable. Figure 1 lists the contributors that influence the two different technological trajectories in the case, and illustrates the time lag that the technologies faced in receiving opposition.

Figure 1

Technology dominance contributors



Conclusion

This case study documents the evolution of Pay TV in the United States. We show that, when the first version of Pay TV, over the air Pay TV, came to the market, a social movement started by movie theatres and TV broadcasters to "protect free TV" blocked the emerging market. Later on, however, another technology with a similar business model, cable Pay TV, became successful. A closer look into the factors leading to this success shows that regulatory voids, the ambiguity of the public interest frame, and influence over public opinion can create windows of opportunity for a technology to emerge despite strong opposition from incumbent firms. We argue that, in highly regulated industries, technology dominance can arise from windows of opportunity emerging amidst political battles.

The case illustrates how social movements, regulatory politics, and regulatory voids can decisively shape the emergence of new markets. In organizational theory, even though the importance of legal support from the state is recognized, there is little research on the causes of endorsement acts by state authorities (Carroll and Hannan, 2000). Particularly rare are efforts to show how legal endorsement is not exogenous approval given to a technology, but instead, the outcome of actions of organizations in an industry and their opponents. In this paper, we stress that regulatory policies affect the viability of business models through their influence on technological choices.

For future research, we endorse social movement theory as an interesting lens through which to look at regulatory politics due to highly visible influence attempts. We suggest utilizing official frames more in a dynamic way to understand the regulatory agency perception after ongoing events in the industry. Inertial or negative responses from regulatory agencies can come from either the lock-in of an existing frame or the failure of a new one to prevail in the contest over meanings. Regulatory organizations might not be able to respond adequately to a change in the environment because an institutionalized frame continues to predominate. In future research, researchers may consider framing changes in regulatory agencies which may have different implications for market order and technologies.

Although our reliance on one episode of regulation and technology change within a highly regulated environment seems limited in scope, we believe that the arguments are generalizable to different contexts of technology battles in new markets and applicable to different contexts. We suggest, however, that researchers must build a full awareness of the idiosyncrasies of a specific institutional setting while attempting to distil the findings. We argue that social movement arguments can be applied not only to incumbents but also to newcomers. One plausible example is Linux and the free software social movement versus Windows. In this battle for computer software dominance, Windows as the dominant incumbent is losing some market share due to the free software social movement fuelled by Linux. Future research should be aimed at replicating these findings and extending them to other contexts to develop a deeper understanding of how regulatory politics take place in different contexts with different actors. Another limitation of this study is that only public documents are analyzed. Deals may have taken place “behind the scenes” during the case period. Interviews with the key people may be a good approach to minimizing this effect in more contemporary cases.

Overall, this paper constitutes an important step in understanding the political underpinnings of technology dominance. Our findings regarding regulatory voids, framing battles around the “public interest,” and the importance of timing provide complementary elements of such a trajectory. They show that a technology can emerge despite strong opposition from powerful incumbents and certain regulatory agencies when certain stars are aligned.

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Appendix 1

Background of the FRC and the FCC

On February 23, 1927, the Federal Radio Commission was founded to regulate the broadcasting industry. It maintained that the electromagnetic spectrum is a limited resource belonging to the public, and only those most capable of serving the public interest would be permitted a broadcast license. We can easily notice this frame in its first annual report; "Congress has said that we shall administer the radio law in public interest... we are to determine who shall and shall not broadcast and how such broadcasting shall be carried on simply in accordance with our conception of public interest, convenience or necessity" (FRC, 1927, p. 6).

The third annual report of the FRC in 1928 stated several points and restrictions that would later affect the broadcasting industry. In seeking to define the concept of "public interest," the commission stated that it would give priority in spectrum allocation to those groups meeting certain qualifications. First, no attempt could be made to restrain service to one selected group of listeners, as in the efforts toward instituting a "subscription radio" service. Second, the commission stated that "In such a scheme there is not room for the operation of broadcasting stations exclusively by or in the private interests of individuals or groups so far as the nature of the programs is concerned" (FRC, 1928, p. 34). Similar rules applied for early entry into television.

In 1934, Congress passed the Communications Act, which abolished the Federal Radio Commission and transferred jurisdiction over radio licensing to a new Federal Communications Commission. Title III of the Communications Act included provisions very similar to the Radio Act of 1927. The new FCC largely took over the operations and precedents of the FRC, and thus started to issue licenses for TV broadcasting.

Appendix 2

Description of the Rules of the Regulatory Actors

TBC