Markets as Definitional Practices

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Abstract: This paper contends that price-setting markets operate as definitional, not merely allocation, practices. It argues that such markets operate as definitional practices because market participants in the natural course of market transactions engage in interactive, interpretive, "role-taking" behaviors. These markets are a family of socially evolved practices that are not only affected by non market practices, but also affect such non market practices, not manifestations of a single analytic model. After providing a theoretical framework for these claims, the paper examines two emerging auction markets that elucidate these claims and played a significant role in generating them: sponsored word/phrase Internet search engine markets and equity option markets. The paper concludes with three programmatic recommendations grounded in this market paradigm.

Résumé: Cet article prétend que les marchés d'établissements de prix fonctionnent comme des pratiques définitionnelles et pas simplement des pratiques d'attributions. L'auteur fait valoir que ces marchés fonctionnent comme des pratiques définitionnelles parce que les participants aux transactions normales de marchés ont des comportements interactifs, interprétatifs et de « jeu de rôle ». Ces marchés représentent une famille de pratiques évoluées sur le plan social qui ne sont pas seulement touchées par les pratiques hors-marché, mais qui influent aussi sur ces pratiques et ne sont pas des manifestations d'un seul modèle analytique. Après avoir donné un cadre théorique relatif à ces affirmations, l'auteur examine deux marchés aux enchères émergents qui éclaircissent ces affirmations et qui ont joué un rôle considérable dans leur production : marchés de moteur de recherche et marchés d'options sur actions par mot ou syntagme parrainé. L'auteur conclut sur trois recommandations pragmatiques fondé sur ce paradigme de marché.

Introduction

In recent years, numerous sociologists and economists have contended that economic actors are not simply rational maximizers and markets are not level

playing fields. In making their case, they have documented the extent to which market participants' behaviors are commonly subject to a wide range of non-rational constraints and tend to be embedded in complex social and cultural structures.[1] In attempts to remedy these limitations they have embraced a combination of theoretical ideas including network theory, the concept of embeddedness, transaction costs, and bounded rationality.

While welcoming these efforts, this paper seeks to promote a stronger social constructivist view of markets. More specifically, the paper contends that price-setting markets not only allocate and price goods, but *concurrently* — both as a condition of these processes and as a consequence of these processes — serve as important sites for generating the shared meanings, understandings, mindsets and governing narratives intrinsic to market transactions.[2] The paper further argues that this process is not grounded solely in individual calculations or established socio-cultural assumptions, but also in complex sets of highly interactive, social practices. Market participants not only strategically respond to each other's actions, but also seek to grasp and influence how others understand the ongoing practices in which they are jointly engaged, a process that echoes Max Weber's (1947, pp. 87–114) notion of "interpretive sociology," George Herbert Mead's (1934, pp. 253–260, 366–376) notion of "taking the role of the other", Erving Goffman's (1959, pp. 17–76) dramaturgical paradigm of self presentation and more recently Charles Taylor's (2004, pp. 23–30, 69–76) idea of "social imaginaries."[3] These definitional activities serve to confer

1. For sociologists, see, for example, Abolafia (1996a, 1996b); Baker (1984); Beamish and Biggart (2003); Callon (1998); Callon and Muniesa (2005); Carruthers and Stinchcombe (1999); Carruthers and Babb (2000); DiMaggio (1994, 1997); Espeland and Stevens (1998); Fligstein (2001; Granovetter (1985); Granovetter and Swedberg (1992); Knorr and Bruegger (2000, 2002); MacKenzie and Millo (2003); Smelser and Swedberg (1994, 2005); Smith (1981, 1983, 1989); Swedberg (1993, 2005b); White (1992, 2002) and Zelizer ([1979]1983, 1987, 1997); for economists, see, for example, Hirschman (1985), Kahneman, Slovic & Tversky (1982), Kahneman & Tversky, (1982, 1984), Sen (1977), Simon (1957, 1972), Smith (2000), Thaler (1991a, 1991b), Thurow (1983), Tversky & Kahneman (1986, 1991) and Williamson (1975, 1985).
2. "Understanding" is used here and throughout the text to refer not only to specific meanings, but what might be called general mindsets similar to what Weber referred to as "Sinnzusammenhang" (Swedberg 2005a, 2005b) and what Taylor (2004) describes as "imaginaries." Analogously, "narrative" refers to an account that is embedded within a more encompassing story line or mindset that governs what items are privileged, how these items are described, how they are assumed to be related and their legitimacy. As such, it also relates to what Taylor labels as social imaginaries.
3. John Maynard Keynes (1936, pp. 154–157) also implicitly acknowledged this process in his "beauty contest analogy" where he claimed that success in the stock market did not depend on selecting the best stocks, but in determining, what the other investors would believe were the best stocks.

not only cognitive meanings upon things and practices, but, being socially grounded and reflecting an implicit social consensus, also the situational legitimacy necessary for free market exchange.

The broad claims presented above can be formulated into four propositions, the first of which has three subparts:

1. Market practices are not merely embedded in social meanings; they also generate such meanings, which from a theoretical perspective are often as important as the allocation results in their impact on future transactions and behaviors. These market generated meanings pertain to three distinct market components:
   a. Meanings/rules that determine the parameters, including their priorities and values, used to define the goods;
   b. Meanings/rules that govern who may participate in these markets and how these participants are to be defined; and
   c. Meanings/rules that govern market practices themselves such as the management of bids, transparency of information, and participation charges.[4]
2. The production/reproduction of these market meanings is grounded in the interactive social practices of" "taking the role of others" and mutual understanding, which are inherent in such markets and enable participants to grasp each other's strategic options, rather than merely responding "rationally" to the reiterative practices of the others.
3. Markets are evolving practice subject not only to changing external factors but also internal changes due to their own inherent definitional capacities. Put slightly differently, definitional changes within markets commonly contribute to further/future definitional modifications.
4. Market ideations affect non-market practices as well as market practices insofar as market generated meanings and framings spill over into non-market practices. To use Weber's (1949: 64–66) terminology, market ideations foster a range of "economically *conditioned* phenomena," which in and of themselves are not economic phenomena.

An additional corollary to propositions 3 and 4 is that the more abstract and encompassing the meanings and framings subject to modification, the greater the normal behavioral transformations.

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4. Carruthers and Stinchcombe (1999) in their discussion of *liquidity*, Espeland and Stevens (1998) in their discussion of *commensuration*, Smith (1989) in his discussion of the *social construction of value*, and Zelizer (1997) in her discussion of the *social meaning* of money, each prefigure one or more of these moves in different ways.

Taken together these propositions seek to frame markets as evolving social practices embedded in a wide range of more encompassing social practices.

Theoretical Foundations

Though these propositions have deep theoretical roots in a broad range of sociological theory, the discussion that follows is grounded primarily in Giddens' Structuration Theory and George Herbert Mead's Social Behaviorism. All four propositions are grounded on the judgment that markets, as inherently social practices, are both subject to ideational expectations and generate ideational expectations. In Giddens' terms (1984, pp. 16–34) market practices, like all social behaviors, are both constrained by signification and legitimation structures and produce/reproduce, with varying degrees of transformation, such structures. In Mead's terms market behaviors, again like all social behaviors, are both subject to social expectations and serve to form such expectations, as reflected, for example, in the widespread belief that the growth of markets not only reflect an increase in individual greed and self interest, but also feeds such greed and self interest. While social practices so defined are inherently knowledgeable, such knowledge tends to be tacit unless explicitly called forth.[5]

A second fundamental judgment underlying the central claim of this paper, particularly Proposition 2, is that these expectations are socially generated. More specifically they are generated through an interactive process described above as "taking the role of the other" and attributed to Mead. This process, as recently revisited by Gillespie (2005), is built on a feedback process whereby participants acquire a shared meaning of an experience/item through the feedback they receive from others, while at the same time acquiring an understanding of the other/s through the shared experience. Just as one's meanings are acquired through interactions with others, so the shared mutuality of meaningful experiences is the means whereby one is able to grasp the consciousness, i.e., "take the role," of the other.

This "role-taking" activity is moreover not limited to the others with whom one is directly interacting with at the moment, but often involves equally, if not more, others who may be an "audience" to the interaction or non-interactive behavior. In the case of a child, for example, while the primary interactive, interpretive process is built into the direct face to face interaction with the parent, it is equally built into the mutual responses of the parent and child to particular behavior such as the child throwing food on the floor. Similarly

5. That the inherent knowledgeabilty and social constructivist nature of social practices are commonly tacit is a necessary and essential component of the "market as social practices" thesis being proposed in this paper.

buyers and sellers are normally not only engaged in mutual interpretive exchanges with each other; they are also likely simultaneously to be engaged in such processes with a range of other co-present buyers, sellers and ambiguously defined observers.

A follow-up to this is that just as we only get to know and understand another person by interacting with that person over time and in different situations, so the basic way we are able to rethink and reformulate our ideas about the world in general is through actual and abstract/virtual interaction with others (Mead 1934, pp. 332–346). What is crucial about these "interactions," be they actual or hypothetical, is that participants seek to grasp the various possible orientations, mindsets, and strategies of others, rather than simply speculate as to possible behaviors of the others. Admittedly, once socialized we are commonly capable of maintaining a personal perspective with relatively little interaction with others as evidenced in monastic orders of varying types, but it is through dialogue and interaction with others that we are normally enabled to modify and expand our expectations.

Understanding markets as practices of this sort, the setting of fresh prices entails more than revealing a pre-existing distribution of individual preferences as assumed by the neo-classical economic model. Such prices reflect a socially generated value that is itself a byproduct of the way the item has been socially defined as part of the market practice. This requires an investigation of the special symbiotic relationship between the interactive market process and their definitional capacities (Proposition 2). There is similarly a tendency to overlook the extent to which these inherent constructivist/ definitional capacities commonly operate to transform these markets' own parameters and rules (Proposition 1. c).

Propositions 3 and 4 follow quite directly from the above insofar as once price setting markets are seen to be governed by the same processes that govern other social practices, they become subject to the same ramifications. Like other social practice, market practices are continually evolving. Similarly, their degree of change is subject to the same types of variations peculiar to other social practices, where the ramifications of ideational transformations of greater abstraction and generality tend to be more significant. As with other social practices, market practices are not only constrained and enabled by more encompassing meanings and mindsets, they also contribute to such meanings and mindsets (Proposition 4).

The stance outlined above that price-setting markets exist as definitional practices is supported by a number of emerging markets that evidence definitional changes in a more pronounced manner than has been commonly the case. They do so insofar as they are engaged in redefining and reconfiguring not only concrete and specific market values, but also a number of highly abstract parameters inherent in these markets. Where the constructivist/definitional

capacities of earlier markets tended, in addition to determining price, to deal with 1) categorization and quality issues, such as grades and criteria for classifying everything from coins to tobacco; 2) certification of ownership — determining provenance and establishing ownership rights through public sale; 3) reordering of priority of criteria, such as giving less weight to the size of paintings or more weight to the *rarity* versus *quality* of certain antiques; and 4) occasional introduction of new variables such as the notion of artistic genius in pricing works of art (Smith 1989, p. 24), these markets evidence definitional changes that redefine the objects in a more fundamental way. In these markets, market practices do not simply generate different values of established parameters, but often recreate the relevant parameters.

Consistent with Proposition 2, the more pronounced definitional character of some of these emerging markets is commonly accompanied by more explicit evidence of market participants' role-taking behavior and active mirroring of each other's understandings of ongoing market practices. They similarly provide examples of the ways markets can transform themselves and how these transformations impact on non-market practices in support of Propositions 3 and 4.

Methodology

While a number of different markets could be used to exemplify the central claims of this paper, the supportive data presented is drawn from recent ethnographically grounded studies of two emerging markets: the sponsored word/phrase Internet search engine market and the equity option market. Given the paper's emphasis upon the interpretive component of the practices being examined, I would suggest that the high reliance upon qualitative ethnographic data is not only appropriate but necessary. The primary reason for selecting these markets is that they served to crystallize the central claims of the paper. They do this insofar as they strongly and transparently evidence these markets' constructivist/ definitional capacities and their interactive/ interpretive/"taking the role of the other" natures, as well as the linkages between them (Proposition 2). They also highlight a number of important ways the constructivist/ definitional capacities of markets both assume new forms, including the transformation of the market practices themselves (Proposition 3) and transcend the particular market practices within which they emerge (Proposition 4), particularly insofar as they entail highly abstract meanings and framings.

Both markets are also worthy of attention in their own right as growing markets of significant economic and social importance. Notwithstanding all of these factors, they are not presented to prove the broad propositions being presented, but to offer a range of concrete examples to elucidate these propositions.

The data drawn upon below are based on extensive ethnographic field work comprised of participant observation, structured and semi-structured interviews

and ongoing discussions with primary informants who are professionally involved in these markets. While the discussion will focus on the two markets specified above, I should note that the discussion is also grounded and informed by over forty years of more encompassing ethnographic studies of a range of complementary price-setting markets (self-reference).

In the case of the sponsored word/phrase Internet search engine market, the data and material is based on five years (2000 – 2005) of ethnographic research, supplemented by approximately fifty hours of paid consultation work and a close relationship with a prime informant, who served as a critical sounding board for many of the more theoretical observations. This informant has been deeply involved with Internet search engines in a range of different industry roles throughout this period including actively participating and managing such auctions. The consultation work has focused on the various auction formats used in the industry, including the rules and methods — much proprietary — used to structure the auctions associated with these search engines, observing these auctions in practice and discussing the process with auction participants, including eight semi-structured interviews with industry leaders, primarily from Overture. All of the issues discussed below were dealt with explicitly throughout these discussions and interviews.

In the case of the equity option market, the data and material is based on over twenty years (1981– 2005) of participant observation, of which the last five years (2000– 2005) have been intensive, averaging two to four hours of daily activity consisting of regular personal trading, ongoing dialogues with brokers and traders and monitoring of the market. These activities have included face to face interactions, telephone interactions, on-line activities and perusal of a wide range of trading materials and professional literatures pertinent to both the equity option market and more encompassing stock market. Throughout this period, I have also relied heavily on one professional trader with whom I normally speak daily and who has similarly served not only as an especially valuable prime informant, but as a critical sounding board for many of the paper's more theoretical interpretations.

How Can You Price a Phrase?

Sponsored word/phrase Internet search engine auctions, like many emerging Internet markets, deal with what might be called virtual commodities that defy normal spatial-temporal parameters. These markets are also highly dependent upon modern computer and digital technologies. Perhaps most importantly, many of these markets are engaged in definitional transformations that involve not only changes in the ranking and values of parameters, but the introduction of new parameters. While a number of word/phrase auctions, each with its own peculiarities, are presently operative, the discussion that follows will deal

exclusively with the two largest auctions: one sponsored by Overture[6] and the other by Google.

Reifying and Liberating Words and Phrases

There is something odd about the very notion of a word/phrase auction given that words and phrases are usually seen to be part of the world of symbolic forms and communication where the pricing and allocation of commodities is not ordinary. Admittedly, ideas and intellectual properties have been priced, bought and sold for some time, but such activities have historically had problematic status.[7] While few people living in modern industrialized nations question the legitimacy and necessity of pricing, buying and selling material goods, many continue to question the legitimacy and necessity of ownership of ideas or symbolic entities. Among those willing to defend the legitimacy and necessity of such property, nearly all agree that such property should be unique and attributable in some way to the individual to whom ownership is ceded. In the emerging world of Internet word/phrase search engine auctions, however, specific contextual "rights" to everyday words and phrases are presently being auctioned. In this process these words and phrases are themselves undergoing transformations.

While numerous factors have contributed to this development, it is clear that modern digital Internet technology has played a significant role in dramatically transforming the way words and phrases can be reproduced and shared. By providing words/phrases/ideas with a medium significantly more substantive than memory traces and significantly more accessible than printed matter, this new technology has simultaneously made them both more concrete and more intangible. By detaching them from previous spatial and temporal moorings — a particular printed page or utterance, it has allowed them to be reproduced and transformed more rapidly, and hence acquire an independence and character they previously did not possess. I would suggest that this mixture of increased tangibility and disconnectedness and consequential "uncertain" status has played a significant role in enabling, normalizing and legitimating the word/phrase search auctions sponsored by Overture and Google. I would also argue that as these markets have evolved and matured, the ways in which these words/phrases/ideas are priced, defined and understood have also changed. In

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6. Overture, which began life as GoTo.com, was bought by Yahoo in July, 2003, and officially renamed Yahoo! Search Research in July, 2005. The name Overture is used in the text since this was the name of the company during nearly all of the period discussed.
7. This paper does not consider the vast economic, legal and philosophic literature dealing with this subject, commonly categorized in terms of copyright issues, which is largely tangential to the central argument of this paper that focuses on definitional transformations.

order to understand the dynamics involved, we need to retrace some of the history of these auctions.

Google and Overture

Google and Overture both began as Internet search engines, but as quite different types of search engines. The purpose of all search engines is to enable a user to type in a word or phrase and then quickly receive a number of website links that somehow "match" the user's initial inquiry. Google is known primarily for its "crawler" search engine. As such it seeks out and reviews literally the entire Internet in search of possible matches and uses this information in responding to different inquiries. In order to do this successfully, a crawler search engine utilizes a whole series of algorithms to judge the "significance" of various websites, based on site locations, multiple links and other factors; the response generated will be determined by the ranking of these various websites. Overture, in contrast, relies on paid sponsors for generating its responses. As such, it allows different websites to financially compete through an auction format for the right to be matched to different inquiries. In its role as an intermediary in allocating and placing website advertisements, Overture also takes responsibility for insuring that only legitimate website be allowed to bid on specific words and phrase.

Though Google continues to rely primarily upon its proprietary algorithmic crawler technology, which has enabled it to become the dominant search engine, it has also entered the "sponsored" search engine arena, by sponsoring its own paid listing responses, which it runs concurrently with its main response listings. (In its primary search engine mode Google does not sell the right to be listed. It derives its income from companies willing to pay for website ads that will be seen by people who come to the Google website to carry out a search.) While Google, like Overture, allows different websites to compete through auction for positions on their sponsored list, Google uses a more complex and less transparent formula for determining how competing websites are ranked. This more complex formula combines auction results — ranking participants in terms of how much they are willing to pay — with its more traditional algorithmic significance ratings. In combination, Google with its dominant position among search engines and Overture with its established history among sponsored search engines now account for over ninety percent of such placements. (It should be noted that Google and Overture/Yahoo not only provided their search engine technology on their own websites, but also on a wide range of other websites with whom they split revenues generated on these sites.) Though there are a number of other search engines in use and other, including Microsoft, likely to join the fray, the discussion to follow will be focused only on these two companies. Moreover, it is primarily the auction markets that have emerged in

conjunction with these sponsored lists that are to be examined, given the focus of this paper which is the definitional capacities of markets.

Some Preliminary Questions: What is being Auctioned, to Whom, and How?

While the auction formats used respectively by both Overture and Google are more complex than the discussion above would indicate, the basic structures described above should be sufficient to appreciate various facets of these word/phrase auctions. As in any auction, one factor that we would expect to play a significant role would be the price someone was willing to pay for the word/phrase. As with many other types of auctions, however, determining exactly what one is buying in word/phrase auctions is sometimes unclear (Smith 1989, pp. 27–29). Some of these uncertainties mirror similar uncertainties noted earlier bearing on provenance, rarity and category; some, however, are new. Whether new or old, pretty much all uncertainties relate to determining exactly what is being bought and sold.

When phrased this way, it would seem quite apparent that what is being bought and sold in these auctions cannot actually be the words/phrases; ignoring for the moment copyrighted names and expressions, words and phrases are public goods. So what is being bought and sold? The most obvious answer would appear to be 1) some specific display space, 2) in a sponsored-list of websites, 3) generated in response to a particular word/ phrase search, 4) linked to one's own website or advertisement. It is not the word or phrase one seeks to own, but the response, or more specifically the Internet traffic, that a particular word or phrase will generate. But this raises many new questions.

Should restrictions of any kind be set for the words and phrases allowed to be auctioned? Curses and slanderous sayings should probably be prohibited, but what, if anything, else? How many different display spaces should be allocated to a particular word or phrase? For how long should one be able to "own" such a space or such spaces for a given word or phrase? Should there be restrictions on who can own such spaces? To put this slightly differently, should the websites seeking spaces in response to particular word or phrases be required to be a "legitimate" site for that particular word/phrase search and subsequent Internet traffic? Given the stated purpose of the search engine to generate useful responses for those initiating searches, should factors other than the price paid by the various website owners be taken into consideration in determining placement on the sponsored list? Even though particular words and phrases are not actually being bought and sold, should there be guidelines governing what words and phrases can be used as markers?

Assuming all of these questions can be satisfactorily answered, how should "ownership" or "right" to specific space on such sponsored listings be delineated and valued? Even assuming that an auction format should be used, which

of the various possible formats should be used?[8] How often should these auctions be run? And finally, should any or all of these rules be subject to change and if so what should be the rules for making these changes?

The variety and number of questions posed above reveal that we are dealing here not only with new types of auctions, but with auctions that in order to operate need to resolve a range of definitional tasks that are not encountered in more familiar auction markets. Fortunately, while distinctive in many ways, they lend themselves to the basic categories of definitional transformations introduced earlier insofar as they deal with determining what is being bought and sold (Proposition 1a), who can participate (Proposition 1b), what market rules and practices are required (Proposition 1c), and the ways that these tasks will be accomplished (Proposition 2). As we will see these auctions also address Propositions 3 and 4.

Reconstituting Familiar Things in the Internet

Digital technology, on which all search engine activity is grounded, by making it possible to copy and disseminate ideational/symbolic forms at a speed and in volume that would have been unimaginable just a few decades ago, has profoundly altered the nature of these products. Individuals can access and copy all sorts of written and artistic materials and send it to scores of people in a matter of minutes. This has become a major issue in the music industry with teenagers and others sharing copyrighted music. There is considerably more involved here, however, than simply a difficulty in monitoring the Internet. The ability to reproduce and share these materials in these new ways has also served to redefine their status as owned properties. More specifically, questions arise as to whether these are in fact the same product since each is a new copy. There is also the fact that these copies often have only a very short life span; some may be stored for future retrieval much as a book placed on a top shelf, but other are literally eliminated through some form of deletion. There is also the fact that many of these materials arrive unsolicited. Finally, there is the added factor that many of these materials spend their short life span in a communal, shared space making the assignment of ownership at best problematic.

It could be argued that all of these transformations are due to the emerging digital and computer technology, not search engine auctions or even the Internet market place per se. While the technology plays a necessary part, it is Internet markets, including Internet auctions of varying sorts, not the technology per se that provide the ongoing interactions that actually generate these transformations and give them both their signification and their legitimation. This is clearly

8. For a discussion of various auction formats see Smith (1989, pp. 16–18).

the case with the word/phrase products traded by Overture and Google. Here again it is useful to put these developments within the broader context of media advertising.

Redefining Space: An Instance of 1a

The Internet "space" auctioned by Overture and Google is similar in many ways to the "space" bought and sold in traditional advertisements and marketing campaigns, in which companies acquire space in different media such as billboards, newspapers, radio and television to advertise and promote their products. In all of these cases, companies/individuals in an effort to acquire customers are willing to pay not only for various forms of advertisement, but also commissions and finder fees to intermediaries who might help them get the exposure/space they desire. The fleeting, transitory and ephemeral nature of website "space," coupled with its hyperspace linkages that transform normal spatial boundaries, represents a quite different arena in which spatial and temporal parameters loose their normal character and consequently the way Internet space functions as an advertising platform. This raises serious questions as to how such "space" is understood, which, in turn, raises question of how such "space" should be valued.

At what might be considered the simplest level, such space/cyberspace can be understood to be quite similar to electronic billboards, newspapers, radio and television capable of carrying numerous, easily changeable messages. As such any website could be used to carry a wide range of advertisements. One only needs to visit a few websites, particularly websites subject to heavy traffic, to see that this has become common practice. While some ads may be run for significant time periods, others occupy the screen for only a few minutes or even seconds. While such ads differ in significant ways from more traditional media ads, they have generally been seen to be amendable to the pricing practices used in other media where the bottom lines tends to focus on the number and types of people who are likely to be exposed to the ad. Ads priced in terms of expected exposures are commonly labeled as CPM ads, which stands for Cost Per M, where M stands for the Roman numeral of a thousand, which in this case stands for a thousand assumed viewers.

The interactive nature of the Internet coupled with its ability to link websites together, however, offers spatial transformations not possible historically in more traditional media. More specifically cyberspace enables one to move quickly from one space to another by the means of built in links. Such linkages have made possible new pricing practices for making use of such links. The most widely used of these new practices is commonly known as the "click-through," "click" or CPC — Cost Per Click — pricing method. Rather than trying to calculate the number of people who may be exposed to an ad, the click method prices an ad on the number of people who log onto the advertised

website directly from the website that carried the ad. This form of advertisement has grown exponentially during the last few decades. A third, less used, but more innovative, pricing method is referred to as the CPA method and stands for Cost Per Action, which bases payment upon an actual business transaction occurring as a result of a referred visit to the website. While both CPC and CPA programs are unique to the Internet, their pricing has not required any sort of revolutionary procedures. Working from existing CPM rates and finder fees rate, both CPC and CPA rates have tended to be individually set/negotiated through affiliated merchant programs. Nevertheless, it is worth noting that the interactive component of both CPCs and CPAs is inherent whereas finder fees and the like or clearly add-ons. Moreover, the pricing of these ads as well as their popularity is subject to a much higher rate of change than in other advertising media (Proposition 3).

While technology played a necessary part in these developments, they have been due primarily to various attempts to market the Internet. The very ideas of CPMs, CPCs, and CPAs emerged and became applicable framing of Internet space only as a result of attempts to buy and sell such space. Technology clearly played a role in this process, but market practices were even more important. This is clearly revealed in the way new market practices, particularly innovations by Overture, built on these earlier developments.[9]

What Overture thought of doing was to take the interactive component inherent in the Internet one step further by creating a new method for generating such traffic. The basic idea was to create a search engine that would respond with sponsored ads to individual Internet searches. In short, to create a space in response to a specific request rather than leaving it to searchers to find what they were looking for on their own. The challenge was to develop a protocol for doing this that would be seen as legitimate by the commercial companies sponsoring the ads, the websites featuring the search engine and the public using the search engine. Such a protocol would have to do the following:

1. Establish a method of categorizing searches in terms of the words or phrases entered;
2. Create a means for determining how sponsored responses would be selected;
3. Determine how competing sponsored responses would be treated;
4. Generate a method for determining how different results would be priced and paid for; and finally
5. Construct a system that could do all of these things in real time.

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9. During most of the time that this research was being done, Overture was still dominant in the area of sponsored search engines. Though Google has become the more dominant player recently, the focus on Overture in the text is appropriate since the basic model being used by Google is the one instituted by Overture.

Creating a New Auction Format: An Instance of 1c

Given the literally thousands of words and phrases constantly being searched; the various and diverse reasons for these searches; the nearly equally numerous companies that provide goods and services associated in some way with practically any word or phrase; and the economic variability of these goods and services — all of which are in constant flux, Overture elected to adopt an auction format. More specifically, Overture adopted an English, second price or Vickrey (1961) auction for designated words and phrases; bids increase with the highest bidder winning but the winning bidder pays only the bid of the second highest bidder rather than his/her actual bid.[10] It is not only particular bidding system that makes these auctions unusual, but also what is being auctioned coupled with the way winning bids are converted into actual payments.

First, bidders are not bidding for a given item, even one as ethereal as a website ad and link to be shown on a selected website at a specific time as is done with banner ads and most other linked Internet advertisements. They are bidding rather to have their website ad and link shown in response to a particular word or phrase used in by someone engaged in a search engine search. It is actually more complicated than this, since Overture not unreasonably elected to publicize more than one response per search. What the bidders were actually bidding on, therefore, was their ranked position in the list of responses that a particular search would generate. The highest bid is assigned the top position in the list; the second highest bidder the next position and so forth.

But the innovations continue. In keeping with the "click-through" pricing practice for website banner ads described above (CPC), Overture elected to structure the auction so that bidders would be competing by indicating how much they would pay for the "traffic" or "hits" generated by their position on these lists rather than by searches. There are a number of other unusual wrinkles to these auctions. The auction is presently an ongoing auction and at any given moment a higher bidder can take their position in the list. When this happens, however, their financial liability is not ended. All that happens is that their position is now lower in the list, but the charge for traffic coming to them stays the same as long as the bid below their bid remains the same. (The second price format described above in which the price paid for each winning bid is determined by the next lower bid is used in pricing all "winning" bids regardless

10. It may sound strange that the winning bidder only has to pay the second highest price; it makes theoretical sense, however, since the second highest price is generally considered to be the Pareto optimum bid. Although Vickrey won the 1996 Nobel Prize in economics for his work describing and explaining this particular system, the Overture auction is one of the very few auctions that actually use it. For further discussion see Smith (1989, pp. 71–72).

of their ranking in the list.) This means that both a participant's position in a given list and the price paid for the traffic generated by the position whatever it might be, is likely to be in flux even if the participant does not change his or her bid. This flux is accentuated by the fact that there is no minimum increments for increasing bids and bids can be changed or withdrawn at any time. The auction goes on twenty four hours a day, seven days a week and the whole process is highly transparent with everyone's bid publicly available to all other bidders.[11] In an attempt to adjust to these various factors, it is quite common for participants to use simultaneously a range of different bids that they are continually entering and withdrawing for given words and phrases in response to the bids of others and the general flow of the auction. This is an issue to which we shall return.

Transforming Words and Phrases: Another Instance of 1a

It is not just the auction process and the sense of "space" that have been and continue to be subject to transformation in these word/phrase auctions; the words and phrases being auctioned are also commonly transformed. At the simplest level the auction serves to establish a form of property right that previously didn't exist. The florist who continually maintains the top spot in the response list to "yellow roses" has in effect established a dominating claim to "yellow roses." It is not just words like "flowers," "vacations," "chocolates," and "sunshine," that are subject to this auction and the entitlements that a successful bid engender, but word such as "life," "death," and "truth". Equally, if not more, interesting, than the entitlement of "ownership" per se, has been the transformative effect on these words that has accompanied the establishment of such "ownership."

We normally think of words and phrases in terms of their connotative and denotative powers. What meanings do they call forth and what do they point to? In the context of sponsored search engine lists, such powers play at best a secondary role to what might be called their connectivity powers in virtual Internet space. In virtual Internet space, for example, "yellow roses," is just as

11. The decision to make all bids public has further complicated the second price/Vickrey format since it allows bidders to increase the cost to those above them by raising their own bids. Keeping the bids private, however, wouldn't really alleviate this problem since bidders could discover them on their own fairly easy by continuing to increase their bid until they topped the higher bid and then simply decrease their bid. If everyone engaged in such discovery strategies, it would generate a great deal of havoc without actually having much long-term impact on prices. Overture has elected to make them public as the lesser evil. Many participants, however, still dislike the process, which explains in part the failure of such second bid auctions to be more widely adopted.

likely to connect you to a bar called Yellow Roses, a greeting card company with a yellow rose motif, an exotic dancer called The Yellow Rose, a resort famed for its yellow roses and so on as it is to connect you to a site selling fresh, or even artificial, yellow roses. Words and phrases function more as *e-handles* and as handles are subject to quite different interpretations and construal. Whereas the words "creeks," "streams" and "brooks" are common connotative and denotative substitutes for "river," as a search engine substitute "rivir," especially in a phrase like "rivir trips," is likely to work much better. Similarly, whereas "yellow flower" may appear to be highly specific connotatively and denotatively, on the Internet, as noted above, it may be quite catholic. In contrast, whereas GBS22 — the common beginning of a series of General Electric product code numbers — is meaningless in most contexts, it will generate numerous matches on any Internet search engine. To summarize, words and phrases that are normally experienced embedded in connotative and denotative meaning structures confront us as embedded in Internet space; a space in which words and phrases are linked by similarity of letters, simple association, Internet use and other quite particularistic characteristics.[12]

Innovations in Participation Rights and Reputational Rankings: An Instance of 1b

In most economic paradigms, little need be known of participants other than their willingness, ability and reliability to follow through on an agreed transaction, i.e., to pay the agreed price for an item or to deliver the item for the agreed price. Moreover, the identities of the buyers and sellers are normally assumed to play at most a minimal role in determining the prices of goods exchanged. This is far from the case in many Internet markets. Because Internet markets lack the face to face contact and interpersonal familiarity characteristic of most other market, participants in Internet markets are often required to establish themselves in a formal manner as legitimate, or minimally recognizable to other participants. The demand for some sort of identity verification is

12. The unique connectivity properties and resulting transformative power of these markets is further enhanced in Google searches as a result of Google's various proprietary algorithms used to rank websites. In Google sponsored searches, the bids offered by the various competing websites are themselves subject to a re-evaluation based upon how connected the website is to other websites. As a consequence the highest website bidder for a specific word or phrase may be ranked lower than another more "popular" website. In and of itself, this would seem to be a case of some people's money being worth more than others. Given that the actual income generated for Google by these CPC auctions is dependent upon the number of click-throughs resulting, a more popular website paying less per click-through might well generate more income being ranked number one on a list than a less popular website paying more per click. Whatever the monetary logic for Google, the result is that there is yet another, quite unique rationale for linking particular words and phrases to particular websites.

increased by the fact that because of the absence of these traditional constraints, the Internet has been subject to a good deal of false presentations, with individuals often assuming a multitude of different identities. One example of such an identity process is the feedback information about buyers and sellers maintained as reputational data by Ebay;[13] a similar reputational system is used by Yahoo.com for judging the proprietors of its various Yahoo Stores.

Overture, however, by assuming an active role in determining who can and cannot participate in various transactions pushes the reputation issue in new directions. It does this through a process of editorial reviews. You need permission before you can bid on particular words and phrases, which is, in turn, determined by your ability to show that you have a product or service that is a legitimate counterpart to the word or phrase being searched. Without such guidelines and control, a pornographic site might seek to get its website, or more likely a deceptive link to its website, on as many lists as possible. Even ignoring the ethical implications of such an occurrence, the end result would not constitute a rational outcome of the search.

While the scrutiny of potential transactional partners is normally not seen to be a formal part of the market process, it admittedly isn't new to markets. Market participants have historically been interested in knowing something about those with whom they are dealing. Most commodity markets, including all major financial markets such as equity option markets to be discussed later in the paper, for example, are grounded in particular exchanges that have membership requirements and fees. As a corollary and simultaneously, market participants commonly also seek to project a presentation of themselves that they believe will be to their advantage. What is different about many emerging Internet markets is that the generally taken-for-granted procedures for insuring some sort of minimum legitimacy of all participants is often lacking. Safeguards, such as the membership rules and credit restrictions of most traditional exchange auctions, the personal contact of most retail markets, or the guarantees provided by most retail merchants, are absent. There is the added factor that the overall fluidity of these markets serves to raise questions as to what the practices should be, whether they pertain to the items exchanged, the exchange process, or who can participate.

Market Interactions and "Taking the Role of the Other": Proposition 2 Revisited

As noted earlier the essential element in the interpretive, "taking the role of the other" aspect of price setting markets is that participants are not simply focused

13. The easiest way to understand how this system works is to go to the Ebay site at www.ebay.com and go to the buying or selling tip links and then click on the feedback link.

on the actions of others, but also trying to grasp the mindsets that govern these actions. As such they are more interested in various bidding strategies than particular bids. The various practices discussed above, such as avoiding common words, locating undervalued commonly misspelled word, using cryptic part numbers, employing multiple bids, continually entering, removing and changing bids, adopting different and multiple market personas, while continually trying not only to work out the strategies of the other participants but to mislead them regarding your own strategy, evidence this interpretive, interactive component of these auctions. Obviously, all aspects of these practices are not grounded in interpretive interactions among participants. Google's algorithmic governed protocols for judging connectivity and ranking sites, for example, are interpretive free. On the other hand, a good deal of interpretive effort is expended trying to unravel these protocols in order to maximize one's own rankings, including the emergence of a whole consulting industry dedicated to assisting auction participants in these activities.[14]

It should also be noted that some interpretive grounded practice can provoke negative reactions. The fact that many participants dislike the "highest bid, second price Vickrey" auction used by Overture (see note 9) is due to the fact that other participants can use the information gleaned from this process to increase the cost to others without assuming any real risk on their part. Put slightly differently, the interpretive character of these markets enables participants to engage in strategies which seek primarily to hurt others rather than to maximize their own gains.

What remains, however, as one of the most significant outcome of the interactive, interpretive, definitional character of these markets, or any other market for that matter, is that such markets are continually reproducing themselves (Proposition 3). Sometime they do this with great fidelity to their earlier form while at other times they do so with significant difference. As a consequence, some markets are highly stable with little besides prices changing, while in other markets everything including what is being exchange, who is participating, and

14. The increased growth and reliance on specialized consulting firms to assist vendors in this process, coupled with the utilization of sophisticated technology, which makes possible CPC pricing and the ability to enter and withdraw bids continually, provides the means whereby these word/phrase auctions may undergo a fundamental metamorphosis. A metamorphosis, I must add, that in significant ways would serve to undermine some of the very market characteristics that this paper is affirming. Simply put, participants are experimenting with programs that can 1) generate word/phrase lists based upon various strategic assumptions; 2) manage the timing and pricing of how these words/phrases are submitted and withdrawn from a range of different auctions; and 3) evaluate the overall economic viability of the different entries. In short, participants are experimenting with ways in which the interpretive strategies emphasized in this paper can be technologically and analytically implemented (Knorr Cetina and Bruegger 2000).

market protocols may be subject to some form of definitional transformation. In the case of word/phrase auctions continuing changes are likely.

How Do You Price Financial Value? Equity Options and the Surfacing of Volatility

Whereas word/phrase auctions represent the emergence of a completely new, and somewhat strange, market arena, options and option markets, though comparatively new in their own right, are part an established, long-standing network of financial markets. Despite their illustrious market pedigree, option markets reflect many of the same types of definitional transformations that characterize work/phrase auctions. To appreciate the ways they are both like and unlike their more traditional forebears, it is useful briefly to examine these forbears.

The Symbiotic Character of Financial Instruments and Financial Markets

By definition options are a particular type of financial derivative, which, as their name would imply, are based on other more traditional financial instrument, primarily stocks and bonds.[15] While these more traditional financial instruments come in a variety of forms, I would suggest that what they all share and what most characterizes them is the intrinsic symbiotic relationship between these instruments and financial markets through which they are exchanged. Without financial markets of one sort or another it is hard to imagine that financial instruments would exist in the defined and distinct forms that they do. It would be even harder to imagine how they would be valued.

There are two corollaries to this market dependency: 1) Financial instruments tend to be exchanged steadily if not continuously[16] through auction markets, and 2) They are described almost exclusively in terms of the monetary values generated and assigned to them in these ongoing transactions with comparatively little attention given to external factors that might be assumed to underlie these evaluations.

Here it might be argued that market value is generally the most significant factor assigned items exchanged through auction markets. In comparison to

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15. For further sociologically grounded discussions of option markets see MacKenzie and Millo (2003), Millo (2002), Baker (1984) and Abolafia (1996a).
16. Given that most financial instruments are presently subject to sale twenty-four hours a day, seven days a week somewhere, the adverb "continuously" is strictly speaking correct. In practice, however, most transactions occur only during the trading hours of the major world exchanges, which means five days a week during the normal five to seven hour trading day of most major exchanges.

financial instruments, however, this is simply not the case. Whatever the interest might be in the financial value of precious jewels, artistic masterpieces, vintage wines, antique automobiles or grand mansions, there is always a corresponding interest in other factors pertaining to the objects in question. With financial instruments, however, for all practical purposes, market value subsumes all other factors. Admittedly, the company, agency or state that issued the bond, equity or currency as well as expiration dates, interest rates and other such factors are noted, but even these factors tend to be subsumed under the market value assigned at any given moment. One could go so far as to say, in fact, that financial instruments are by and large not only equivalent to their financial value, but exhausted by their financial value.

This situation is really not surprising given that financial instruments are first and foremost forms of monetary capital and as such are, as Simmel (1990, pp. 146–152) noted some time ago, inherently abstract quantities. A million dollars worth of currency is worth a million dollars; a stock portfolio valued at a million dollars is worth a million dollars; a million dollar bond is worth a million dollars and so forth. There is a very real sense, in fact, in which specifying the financial value of a financial instrument at any given moment is circular. Financial instruments represent the pure financial value of items of one sort or another quite separately from any other inherent characteristics of the items in question. Such "pure value" is generally considered to be the items exchange values, which means its market value. This situation, however, creates a paradoxical situation since for an item to be tradable it would appear that there would need to be some independent means for different participants to come to a consensus regarding what its value should be at a given moment.[17]

Smith (1981, pp. 11–66), reflecting a broad and common Wall Street understanding of this process, has documented how such collective values are socially constructed in terms of a range of governing market narratives and practices. More specifically, to use his framework, he shows how stocks tend to be defined and evaluated in terms of 1) economic factors associated with the companies they stand for (the fundamentalist view), 2) perceived buying and selling pressures within the market place (the insider view), 3) past market patterns of the instrument itself (the chartist view) or 4) market responses to specific market events (the trader view). Beunza and Stark (2003) observe an analogous situation in the way different types of arbitrage transactions are framed.

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17. The neo-classical economic paradigm, as noted above, resolves this problem by simply assuming that participants bring to the market place their own individual preferences, which are then revealed in the market and determine the market price. How participants acquire these preferences is an issue that is outside of the paradigm. It is specifically this issue that a sociological account of market practices is equipped to explain.

Maintaining the Face Value of Financial Instruments

As supportive as these analyses are of the constructivist character of these markets, they all focus on the ways participants assign values to particular items at a particular time with little to no attention given to how these values change over time. This is not an issue of major concern with most commodities, which, unlike financial commodities, are usually bought and sold to be used in the production of other goods. The situation, however, is quite different when dealing with financial commodities, which are generally expected to maintain their basic constitution over time. To accomplish this end, they are expected to generate their own "profit," or what Marx (1959, pp. 332–382) some time ago aptly referred to as their "use" value. That is the value attributed to financial commodities at any given moment normally "assumes" some future additional income in the form of interest or dividend payments or increased capital evaluation. Predicting such future income tends to be more problematic than ascertaining present exchange values of particular items within the governing narratives pertinent to these items; it requires its own unique narrative.

The evaluation narratives governing most commodities, as noted above, tend to be linked to the assigned values of other goods and services related to the use to which the commodity in question is normally put; these other values are themselves commonly determined in the same way creating webs of evaluation. The evaluation narratives governing most financial instruments, in contrast, tend to rely upon assessing expected income in terms of comparative "use" value, adjusted for possible diminutions or gains over the stipulated time of the investment due to changes in inflation rate or other factors such as bankruptcy, takeovers, fraud or other unexpected market developments. Expected income perceived as higher than income for capital invested in comparative financial instruments will — through the market process — normally increase the evaluation of the financial instrument; conversely, an expected income perceived to be less will normally serve to decrease the evaluation of the financial instrument.

Given that the value assigned to a financial instrument is initially set by two constants — the amount of capital invested and normal use value rate for that particular instrument, and one variable — perceived risk, subsequent increases or decreases in evaluations are generally due to reassessing the assumed risks.[18] Without variable risk, the values assigned to pretty much any financial instrument would remain relatively constant given the stability of the expected rate of return to cover use-value and the self-defining nature of the initial

18. The term "risk" is here being used simply to denote "chance" not in any technical way to distinguish it from "uncertainty" (Knight 1921). This is an issue, however, that will be examined in more detail later.

financial investment. Risk, however, is considerably more difficult to quantify since it embodies and reflects a number of other factors, which are themselves often difficult to determine and may vary from case to case. It is one thing to identify risk as the major factor in determining variations in the values assigned to financial instruments, therefore, but quite another thing to determine how it should be quantified in a given situation.[19] As such, risk contributes its own definitional variability in how financial instruments are valued. This is of particular importance when we focus on options since options are defined almost exclusively in terms of risk. In order to grasp why this is the case, we need to offer a fuller account of such options.

Options and Risk

Options are rights to buy or sell financial instruments or other commodities, at a preset price for an agreed period of time; they do not, however, oblige one to do so.[20] Rights to buy are referred to as "calls," rights to sells "puts," and the preset agreed upon price for which the stock can be bought or sold, "the strike price." The duration time for which options rights generally last is from a month to a year, though some options, called "leaps," can run for more than a year; in

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19. When the instrument is a loan, be it a mortgage, bond, certificate of deposit or personal loan, risk of loss is commonly framed in terms of the borrower's ability and trustworthiness to repay the loan under the conditions agreed upon. Colloquially speaking is he or she "good for it;" in banker's terms, is there sufficient collateral. And secondly, assuming that the resources exist, does the person have the right moral scruples and discipline to honor his or her debt by repaying it as promised (Alya and Rona-Tas 2001). When the instrument represents an ownership investment in a venture, the financial resources of those with whom you are investing, while relevant, is not of primary importance, but rather the potential income producing capacity of the venture. Is there a good business plan? What is the competition like? Similarly, while the moral character of those with whom you are investing is not ignored — you do not want to be robbed, more attention is normally given to the recipient's business intelligence. Where the risk in lending money seems to be grounded in resources and rectitude, the risk in investing in a venture seems to be grounded in economic or market conditions and economic or business rationality. Another important difference is that while risk in the case of a loan is with rare exceptions exclusively negative — you may lose part or all of your investment, in the case of an ownership investment, it can be both negative and positive; you might lose part or all of your investment, but your investment may also increase.

    While the broad nature of the risks entailed in both situations may appear clear-cut and straightforward, determining how to fill in the blanks can get very complicated; sufficiently complicated that many financial analysts earn a lot of money trying to do so in practice. It gets so complicated, that most people, most of the time, simply overlook the fact that quite different rationales are utilized in the two situations.

20. Futures, the other major type of derivatives, in contrast, are obligations to purchase or sell some commodity for an agreed upon price at a particular time in the future, hence the name future.

each case a specific "expiration" date is set, usually the third Friday in the particular month that they expire. The price for an option tends to increase with the length of time before it expires; inversely, the option price tends to decrease the greater the difference between the option's strike price and the present price of the underlying stock.

Since options are not obligations to buy, they are only likely to be exercised when the price of the underlying stock is higher than the strike price of the option. Given that the stock price does not normally surpass the strike price of most options during the life of the option, i.e., before the option expires, most options are never executed. Even if the strike price is attained before the expiration date, the option is more likely to be sold without actually being exercised and converted into stock. The reason for this is that converting the option into stock requires putting up the additional capital and paying larger commissions than entailed in simply selling the option for a profit. As a consequence of these factors, options not only do not have any inherent financial value, they also are seldom transformed into other instruments with any inherent financial value. (It should be noted that notwithstanding everything that has just been said, options that are "in the money," i.e., the difference between the options strike price and the present market price will generate a profit, can be exercised at any time by the option holder, forcing the seller of the option to either deliver or accept the underlying stock.)

Framed this way — as equal to variations in the prices of their underlying financial instruments — it is understandable why the value of an option is commonly perceived to represent/equal the risk entailed in owning the underlying financial instrument. Options don't have a risk component so much as they are risk. Moreover, while the amount of money put at risk in buying an option, be it a "call" or a "put," is limited to the money invested, the risk encumbered by selling such options is opened ended since one is liable for any difference in price between the strike price of the option sold and any consequent price change of the underlying stock. Where such price movements generally represents only a small part of the total invested capital of the underlying financial instruments be they of bonds or equities, such price movements may well equal the full value, or even more, of options.

By detaching possible future price changes from the underlying financial instruments, options remove the risk component of these financial instruments. This enables investors and traders to separate the risk of a market price change of an investment from its given, or some specific, capital value. Much as financial instruments are the abstract embodiment of financial value, options are the abstract embodiment of the risk component of these values. Since option contracts can be structured to last for different lengths of time, and since their strike prices can be set close to the prevailing price or substantially higher or

lower, options enable one not only to buy and sell risk, but also different degrees of risk.[21] These situations pose very different questions and issues than those raised by more traditional financial instruments. The pertinent question within the context of this paper is "What governing narratives has the market generated to deal with these issues and questions?"

On the face of it, it might seem as if we should simply use the same factors used in determining the analogous risks associated with the underlying financial instruments from which these options are derived described in note 17. If it is possible to calculate and value the particular financial risks involved in holding particular bonds or stocks, why should it not be possible to determine and value such risks in the form of options? Isn't this what we do regularly in a range of different fields when we create and price insurance policies? It is, moreover, basically the process that has traditionally been used in evaluating the other major form of derivatives, namely, futures.

These tried and true methods for calculating risk when dealing with other financial instruments do not work with options, however, because, as noted above, whereas with financial instruments themselves the calculated risk remains embedded in these instruments, options stand alone as pure risk.[22] Even a fairly large variation in calculated/assumed risk when attached to the underlying financial instruments will normally be modest in comparison to the overall valuation of the instrument; a similar variation when applied directly to an option, in contrast, will commonly represent a very significant portion of the total valuation of the option. Such differences have the added consequence of making the comparatively large variations associated with options appear as not much more than informed guesses in comparison to the minor variations associated with more traditional financial instruments, which can commonly be accepted as due to some minor technical difference. While a twenty cent variation in pricing the risk of a stock valued at approximately one hundred dollars is likely to be acceptable as part of an overall evaluation, for example, a similar twenty cent variation in the pricing of a fifty cent option on this hundred dollar stock is likely to be seen as unacceptable.

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21. Because options enable one to both acquire and eliminate various degrees of risk they can be used conservatively or speculatively. Generally selling risk is a conservative strategy and buying risk a speculative strategy.
22. Options can be seen to stand alone in ways besides those mentioned in the text. Bonds and stocks maintain their corporate/institutional ties regardless of who owns them; options have no such ties. Moreover, while it could be argued that the values of options over the long run are linked to the values of their stocks, and hence the corporations, options don't exist over the long run. As an option trader once remarked to me, "Options are like free floating balloons; the only connection they have with the underlying financial instrument and related institution is the [name] attached to the option, which dangles from it like a trailing, but unconnected string."

This comparative greater volatility created practical impediments. Because of the large variations in valuations, the great majority of even sophisticated investors were averse to option trading prior to 1973; this, in turn, caused a lack of liquidity (Carruthers and Stinchcombe ob. cit). As nearly every trader with whom I discussed this issue remarked, given their highly variable valuations it was too difficult to generate timely price consensuses demanded by the market. Traders need not agree on particular prices of particular options before entering into a market transaction, but they did require a sufficiently narrow range of difference coupled with a general consensus on how items are to be valued and an agreed upon negotiating protocol to allow coming to terms on specific prices in a timely manner; none of these things existed for options prior to 1973. They also needed ways of comparing "on the money" "puts" and "calls" of a given stock, expected drops in premiums over time and between options with different expiration dates, and premium sensitivity to movement in the underlying equity. In short, they needed more than a way of calculating individual options; they needed a more encompassing narrative that would enable them to grasp what was happening in the market as an ongoing process.

Privileging Volatility: The Emergence of the Black-Scholes-Merton Pricing Model and the Chicago Board Option Exchange

Two things occurred in 1973 to change this situation fundamentally: 1) A radically different method based on a mathematical algorithm, generally referred to as the Black-Scholes or Black-Scholes-Merton pricing model,[23] for not only determining option valuations, but also providing a theoretical framing of option was introduced; and 2) The Chicago Board Option Exchange (CBOE) was opened on April 26, 1973.[24] Where previously few options were traded, in 1973 over 1,000,000 option contracts were publicly traded on the CBOE.[25] By 1981 over 100,000,000 contracts were being traded. This figure grew to over 300,000,000 contracts in 1987, only to decline dramatically with the stock market crash of 1987; the volume of option trading did not return to this level until 1997. Between 1997 and 2003, however, volume tripled with a total volume in 2003 of over 900,000,000 contracts.[26]

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23. The model was seen to be of sufficient significance to earn its authors the Nobel Prize in Economics in 1997.
24. Since 1973 three additional option exchanges opened and more are yet promised.
25. Since the exchange did not open to late April with a modest day of only 911 contracts traded, even this total does not fully reflect the exponential growth in trading. This data is available on the CBOE website, www.cboe.com.
26. See CBOE website.

While this dramatic growth in option trading could not have occurred without an option exchange and the political machinations that made it possible, it is generally accepted that the key factor in this growth was the Black-Scholes-Merton pricing model. In order to have an active market, participants must be able to agree on a particular price for a specific item rapidly under changing markets. For this to occur, participants, as noted above, must not only rely on approximately identical evaluation accounts, but also be able to mutually narrow whatever valuation differences they might have in terms of these accounts. They must feel that they are operating in the same universe even if they differ on some specifics. The Black-Scholes-Merton pricing model provided the basis for this sort of trading. What is equally true, but often not noted, is that it is highly unlikely that the Black-Scholes-Merton pricing model would have been widely embraced without the market demand for such a pricing model, coupled with its sensitivity to the trading realities of financial markets. In short, whatever the theoretical strengths of the pricing model, its adoption was due primarily to the market demand for such a pricing model.[27]

Although the model is too complex to explicate in detail here (see MacKenzie and Millo 2003 for a more detailed account), one crucial point needs to be highlighted. In generating an option price, or more correctly an analytically "correct" option price, the Black-Scholes-Merton model relies heavily upon past relative price movements of the underlying stock — how much higher and lower the price has been during the recent past than its present price, rather than on projections of future earnings or other economic factors utilized customarily in pricing equities. Such relative past price movements are generally designated as the volatility of the underlying stock. In short, the Black-Scholes-Merton model defines risk in terms of the past volatility of the stock rather than in terms of perceived possible future economic or business factors customarily used to calculate the risk component of the underlying stock.

The Black-Scholes-Merton model entails other definitional market novelties. It not only privileges volatility, but also frames and defines this volatility in terms of a statistical account that assumes normal distributions and probabilities rather than in terms of actual past price behavior. That is the model assumes that price movements of the underlying stock, either up or down, will be normally distributed with the probability of such movements both up and down decreasing as the size of the move increases. As such, just as the model makes no attempt to predict whether the price is likely to go up or down based on such

27. That even a Nobel Prize does not insure that a theoretical economic model will be adopted by the market place is evidenced by the widespread failure of the Vickrey auction paradigm discussed earlier in the context of word/phrase auctions to be adopted by practically all auctions before being adopted by Overture.

factors as expected future events, which is customarily done, it also fails to incorporate customarily expected increases in volatility in extreme price movements. While both of these characteristics are secondary, they further speak to the degree to which risk is defined quite differently in this model, and hence options, than in the underlying financial instruments, be they stocks or bonds. Where such value was and is defined primarily in terms of economic resources and moral character when discussing bonds, and in terms of economic productivity, rationality and return on capital when discussing equities, in the case of options, economic value is defined and calculated in terms of various statistical, mathematical formulas applied to past price movements of the underlying financial instruments and equities.

An added definitional innovation introduced by the model, which relates to the complexity of the model, is that the actual determination of volatility, risk and hence value generally requires computational support. In the 70s and 80s this support was often supplied by crib sheets that functioned somewhat like the old slide-ruler; today most participants rely on a range of computational hardware and software capable of rapidly computing the algorithmic values of particular derivatives under changing market conditions. This dependency on not only on modern technology but also on the collaboration of humans and machines echoes a similar process noted earlier in our discussion of word/phrase markets.[28]

These developments evidence the extent to which fundamental financial concepts have undergone dramatic definitional transformation as part of an ongoing market process. They do not, however, reveal the full extent to which these developments were directly influenced by the sort of interactive market processes discussed earlier. To grasp the extent to which the adaptation and spread of the Black-Scholes-Merton pricing model required not only individual traders to accept it, but for it to enable traders to actually use it in their own trading interactions with each other, it is necessary to track how it has continued to evolve as ongoing market practices and governing meaning structures have continued to mutually refashion each other.

Continuing Market Refinements

Where initially option trading was only in "calls," followed by "puts" with a variety of strike prices and expiration dates, traders quickly began to create new option clusters to take advantage of what they saw to be discrepancies in market values of these options as compared to their predicted analytic values.

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28. On ways in which technology interfaces with traders see Knorr Cetina and Bruegger (2000, 2002) and Callon and Muniesa (2005).

Discrepancies, which it should be noted, exist not only in terms of the mathematical formulas used to generate the analytic values of various options, but also in discrepancies between option values and perceived street values. The former types are made up of a mixture of offsetting options in which the overall value is computed using the assumed values of the component parts, while the latter will normally include stocks.

Again the combinations are too many and too complex to describe in detail, but some of their names such as "down and aways," "swaps," "spreads," "straddles," "butterflies" and "covered" strategies, have become fairly familiar to those who follow financial markets. These entities are intended to arbitrage perceived in-balances in the underlying options, to "hedge" one option against another, or to take advantage of what is perceived to be excess premiums. The bottom line, however, is that in all of these cases the economic landscape has been redefined once again, but in these cases primarily in response to ongoing market practices. A butterfly strategy, for example, may be built around a set of options — a classic butterfly strategy would entail being long 10 "puts" at 50 and short 20 "puts" of the same option at 40 and 60; they are the creation of traders, however, not the Black-Scholes-Merton pricing model.

Market practices have also impacted back upon how these mathematical formulas are defined. The Black-Scholes-Merton model, for example, has for all practical purposes been replaced by the Cox-Ross-Rubinstein model, which is more adapted to handling such things as dividends and callable American options. Even more indicative of the how market practices can and do redefine market values is the emergence and significance of what are commonly referred to as "volatility skews," which model volatility as increasing at certain extremes, that counter the Black-Scholes-Merton assumption, noted earlier, that volatility is normally distributed. In so doing, skews graft an experienced grounded expectation of how financial instruments behave in practice onto what was previously a purely analytical mathematical formulation.

Equally significantly for the central thesis of this paper, more specifically Proposition 2, is the extent to which the broad acceptance of skews speaks to the extent to which the pricing of options entails not only complex "calculative" moves (Callon 1998, pp. 3–26) on the part of individual traders, but also an ongoing process of interactive consensus making. Option markets are dependent not only on the highly innovative and abstract Black-Scholes-Merton pricing model, but also on a range of derivative narratives and the ongoing interactive processes — both actual and virtual — that support these narratives. What distinguishes these markets from more traditional price-setting markets, which from a social constructivist perspective also entail governing narratives and interpretive mutuality, is that these narratives tend to be more abstract and fluid than the governing narratives of more traditional markets requiring that participants' interactive imaginations be more self-conscious, interpretive and even speculative. Here a few examples might help to clarify matters.

A "spread" is a common option strategy in which a trader might buy 10 "call" contracts slightly above the present price of a particular stock and then sell 20 "calls" on the same stock with the same expiration ten points higher. Such a strategy generally costs little if anything since one is selling twice as many lower priced higher "calls" than one is buying. Such a strategy is considered a "bullish" strategy — it profits from an "up" market — since the trader is likely to make money if the stock advances provided that the stock doesn't advance over twenty points. The strategy also has the advantage that the trader won't lose money if the stock declines. If the stock does advance over twenty points, however, the trader will be short 10 contracts, which equals 1,000 shares. If the stock continues to advance, this can become very expensive. A common strategy used to protect oneself if such an advance seems to be in the making is to "build a butterfly on top." What this requires is to buy an additional 10 "call" contracts ten points above the 20 contracts that the trader is short. Such a strategy is likely to cost the trader some money, but it could also save him/her from a major loss. The trader could, of course, attempt to recoup the loss by selling another 20 contract another ten points higher.

There are a wide variety of such strategies. The key here is to understand that each strategy is built on an understanding of the ways in which different option contracts are related to each other and the underlying stock. An understanding that may have its roots in the Black-Scholes-Merton pricing model, but which is also embedded in a much richer narrative filled with metaphors, concrete experiences and a shared discourse than stipulated by the Black-Scholes-Merton metaphor or the narratives associated with most more traditional markets.

While the account of option markets presented above speaks to the extent to which option markets typify and legitimate both the items traded and the market practices themselves (Propositions 1a and 1c), and ground these activities within interactive, mutually interpretive social practices (Proposition 2), practically nothing has been said about how these markets structure participation (Proposition 1b.) This omission does not signify that the question of participation is of little importance or that ongoing market practices play no role in who participates. The absence of any explicit discussion of participation is due rather to the fact that participation in option markets is, for the most part, a simple "yes or no" designation determined either by formal rules or voluntary abstinence. In both cases, ongoing market practices play a significant role establishing these "limits," but the process generates fewer definitional variations than is the case with either the types of items exchanged or the market rules.

The formal rules component is a direct outgrowth of the fact that option trading occurs through a few option exchanges, such as the CBOE, which are membership restricted exchanges. Non members can trade in options, but they must do so through exchange members. While these membership restrictions are subject to institutional revisions, they are formulated primarily in terms of SEC requirements and the willingness to pay the various membership fees. It is the

restrictions that govern the voluntary participation of non-exchange participants, which are more directly subject to ongoing market practices. Here the issue is twofold: Does one wish to participate and if so can they find a broker/brokerage firm linked to the various option exchanges who is willing to take his/her orders. In response to both of these questions, a positive answer is primarily dependent upon the potential trader being sufficiently solvent and knowledgeable to manage options. The great majority of investors, both amateur and professional, are not and voluntarily abstain; most of those who do not voluntarily abstain find it impossible to find a broker, or more accurately a brokerage firm, willing to accept their orders since to do so would be in violation of SEC rules. The few who do become involved either quickly learn enough to survive or withdraw. In either case, the ongoing market quickly sorts out those who are able to participate and those who are not, again either by a voluntary withdrawal or by having their account closed. As a stock broker who became active in options in the early 1980s when options were first becoming popular said to me: "A number of my clients wanted to get involved with options once I started to trade them, but I was only able to bring a few along. Options are just a different world. Most of them just couldn't handle it and I would have been very vulnerable if any of them got hurt and sued."

Though only a few traditional stock traders may have made the transition to option trading, the conceptual lines separating stock and option trading have become very blurred when it comes to evaluations. Not surprisingly and consistent with Proposition 4, the major impetus for this blurring has resulting from "option" thinking intruding into more traditional stock transactions. Stock traders are still interested in trying to identify those stocks that they believe will outperform the market as a whole. They still consequently rely on traditional factors such as price-earning ratios, expected growth, future products, recommendations, support levels and market momentum (Smith 1981, 1999). For traders who are also involved with options, and even many who are not, a whole new vocabulary has also come into play as evidenced by the extent to which option and search engine terminology and metaphors have seeped into common everyday discourse.

Discussion and Conclusion

Though this paper has concentrated on demonstrating the extent to which word/phase search engine and equity option markets operate as definitional practices as articulated in the four propositions introduced in the beginning of this paper, it is the claim of the paper these markets are not unique in this respect, but merely evidence this aspect of price-setting markets more manifestly than more traditional markets. They do this largely because the definitional transformations occurring within these markets deal with abstract

parameters, such as volatility, space and time, which tend to have broader and deeper consequences than more concrete and specific parameters. The significant extent to which they embody definitional practices is also due to the interactive intensity of participants required in these markets. These factors combine to fashion these markets not only as evolving practices in their own right, but also as practices that impact on the larger society by disseminating new framings and mindsets into the society at large.

While it is beyond the scope of this paper to present all of the ramifications of considering price-setting markets as definitional practices, I would like to propose three programmatic steps that would serve not only to provide further support for this paradigm, but also enrich our understanding of markets in general. More specifically, I would like to indicate some of the ways accepting markets as definitional practices can 1.) Enrich a number of comparatively new insights into the nature of markets in general; 2.) Assist in explaining a range of emerging market related issues; and 3.) Enhance our ability to study market practices by greater use of a range of qualitative research methods.

1.) *The Widespread Benefit of Recognizing Markets as Definitional Practice*

There is a catch twenty-two aspect to documenting the taken far granted manner in which price setting markets are commonly accepted as definitional practices. Put quite simply, because markets tend routinely to resolve definitional differences, often by bridging difference with new designations and characterizations, the process often goes unacknowledged. The changing mindsets and framings remain tacit throughout. Even most quite mature markets continue to be involved with resolving definitional ambiguities. If you probe professional market traders in practically any auction market, as I have done on numerous occasions, "What is this markets really all about? What makes it tick?", they are more likely in one way or another to respond "Defining value." Moreover, when you ask them to elaborate they will nearly always give you an account that mirrors the interactive, interpretive, social account presented above.

Such answers, it should be stressed, in no way negates the fact that most market participant are deeply interested in acquiring personal economic gains. It merely underscores the fact that most professional market players understand that any such gain requires understanding how each market continually reproduces the definitions, framings and rules that determine the operative values within that market. Such values are seldom if ever pre-givens lodged in the individual preferences of the participants. They are not there ready to be revealed through an allocation process commonly assumed to be the market. They are yet to be created through the interactive process that is the market.

In making this claim, I am both employing and inverting Hayek's (1989) claims regarding the superiority of markets over other forms of allocation. I

agree with Hayek that markets are preferable to other means of allocation insofar as they entail the voluntary exchange of goods and services. I differ, however, as to the underlying factors that make such voluntary exchange possible. It is not that markets reveal pre-existing preferences of the individual participants, which then governs how goods and services are allocated, but that markets as interactive and interpretive processes enable participants to generate the values that enable allocation.[29]

Another way of formulating this is to recognize that however important their allocation consequences, price-setting markets are also experienced as interpretive, interactive practices; as such they embody Goffman's (1959) dramaturgical paradigm in which all social actions, even self-oriented actions, require managing symbolic structures. Recognizing and embracing markets as interpretive, interactive practices, I would suggest, also serves to deepen our understanding of a range of market insights including the importance of monitoring fellow competitors, i.e., others functioning in a role similar to yours in contrast to those with whom your are actually engaged in exchanges (White's 2002) and protecting market "niches," in contrast merely to maximizing profits (Fligstein's 2001). It is generally more important to know how your fellow competitors understand a situation than your exchange partners, because it is your fellow competitors who most share your understanding of what is occurring. Similarly, the need to protect one's own market niche rests to a large extent on the fact that it is primarily one's special knowledge of that niche and one's ability to manage definitional transformations that impact on that niche that enable you to prosper within that niche. Embracing markets as definitional practices similarly helps us to make sense of a wide range of behavior that may appear irrational, extraneous, unnecessary or simply unintelligible when seen as part of a definitional sense-making process (Beamish and Biggart 2003).

2.) *Accepting Markets as Pervasive Socially Transformative Agents*

Although it has been argued that definitional transformations occurring within particular markets can have broader social impact (Proposition 4), the instances presented have by and large been limited to definitional transformations occurring within the two auctions examined. Accepting markets as definitional practices in the broad sense presented in the text can also sensitizes us, however, to significant definitional outcomes and transformations occurring outside of

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29. I would also suggest that the increased global relevance and use of price-setting markets, what is often referred to as market globalization, has been due in no small measure to these definitional powers of markets, not merely their allocation efficiencies. This is a highly speculative claim, however, that is somewhat peripheral to the central thesis of this paper.

these markets. Volatility as the key parameter in determining financial value may have been generated within option markets, for example, but its influence in reframing how economic value is perceived and understood throughout society clearly transcends these option markets. Similarly, the transformations in the way advertising is valued, bought and sold as a consequence of the growth of Internet word/phrase search engine auctions have spread far beyond Google and Overture and even the Internet as a whole impacting across different media.

Such effects, I would suggest, however, are not limited to these markets or even markets like them. Values and meanings generated within practically any market are apt to be carried over into the larger society and influence behavior and attitudes quite unrelated to the particular market that fostered the initial definitional transformation (Krippner 2001). Anecdotal evidence would suggest, for example, that the rules of proper teenager dress, as well as more universal and ubiquitous attitudes toward modesty and sexual presentation commonly associated with dress codes, are being worked out by teenagers in the mall as much if not more than at home, school or church. More germane to the examples presented in this paper, the spreading influence of markets per se and internet and financial markets in particular seem to have engendered what might be called the "marketization" or "financialization" of society as a whole embodied in an increased reliance on financial and numerical labeling of objects and activities in general (Krippner 2005). The ever increasing trend to describe most jobs first and foremost in terms of their salaries rather than in terms of their specific duties, responsibilities, working conditions and risks, I would suggest, reflects this process.

This does not mean that factors other than salary have no significance. What it rather says is that the significance of these other factors is somehow subsumed by the salary. This is not, however, the one way relationship, commonly assumed, in which salaries simply reflect the pre-existing values assigned to the activities of the job. The situation is considerably more complex with salary outcomes not only being subject to a range of market factors, but also, in turn, impacting back on these factors. Moreover, these outcomes, which may appear on the surface to be purely economic in nature, are both subject to and impact on a whole spectrum of non-economic social ideations. The issue is seldom determining economic values per se. The more encompassing economic values become, the more economic evaluations become subsumed within a more encompassing social process revealing the extent to which market practices are inherently social practices.

A sociological constructivist understanding of these processes can also sheds light on how such things as pollution, air rights, personal endorsements, personal connections, histories, body organs, resort time shares, and other previously embedded properties have been established as exchangeable and

economically assessable in their own right. The challenge is not only to see how broader cultural and social values and meanings impact on the way these issues are framed economically, but also how definitional outcomes from attempts to subject these items to market processes feedback into the society at large. Accepting markets as definitional practices means that the impact of markets practices is not limited to economic issues. They can no more be ignored in examining broader cultural, social happenings than such broader cultural, social happenings can be ignored in examining markets. Before we can bring this type of social constructivist understanding of markets to these broader issues, we need to enhance the understanding we presently have. This requires a robust research agenda capable of documenting these processes.

3.) *A Research Program for Studying Markets as Definitional Practices:*

If, as argued in this paper, price setting markets operate as definitional practices grounded in the interpretive, interactive practices, what is required are more extensive ethnographic studies of markets in general and emerging markets in particular. Moreover, insofar, as the four propositions presented in the beginning of this paper identify key elements in the way markets function, these studies need to be attuned to each. While any research project needs to be individually structured in light of a wide range of factors, a few general guidelines seem appropriate:

1. To access and grasp a market as a definitional practice (Proposition 1), it is necessary to become immersed within the market as a true participant observer. If one is to understand how meanings and rules enable and constrain the market's practices and how these practices in turn fashion these meanings and rules, one needs to participate in these practices. Second hand accounts while informative and useful are not sufficient in themselves. In order to recognize and follow the correct paths, one must often first experience what it means to be lost. Formal analytic market models may work for solving various economic problems, but they seldom, if ever, embody the behavioral complexities essential for a sound sociological account.
2. In order to actually become immersed in a market, it is necessary to interact with a range of market participants, because it is these interactions that generate the meanings, rules and practices that constitute the market (Proposition 2). For such interactions to be authentic, one needs to acquire the status of a legitimate "other" sufficient to support the mutual "taking the role of the other" behavior germane to the generation of mutual understanding.
3. As evolving practices (Proposition 3), markets need to be studied over time. Good ethnography by definition takes time. Time is of particular importance when one is interested in understanding social processes. Given that markets

are continually evolving, one can argue that one can never get the complete picture in any specified period of time. While this is true, it doesn't prohibit one from understanding particular process occurring within specified time periods. Research sites can also be profitably revisited. While it is always difficult to determine when a site has been sufficiently studied to move on, snapshot studies seldom if ever reveal what is happening.

4. Market ideations affect non-market practices as well as market practices (Proposition 4.) Markets as social practices are embedded in a web of other practices. As such they are both continually influenced by these external practices and in turn influence them. While any study requires one to focus and draw boundaries, recognizing and accepting markets as definitional practices as well as allocation processes can and should serve to sensitize one to the fact that the ways in which markets mutually interact with non-market practices commonly transcends the flow of goods and services.

In closing, it should be stressed that the view that markets should be accepted as significant definitional practices, does not entail a "price of everything, value of nothing" view of the world. In the cases examined we have, in fact, seen that markets do much more than price items. Pricing an item may serve to subsume numerous other factors, but it does not in and of itself strip the item of all other values or significance. In fact, the ability to price an item often requires a more explicit recognition of such values and significance. Consensual prices allow participants to compare items; quantifiable prices also enhance participants' abilities to calculate (Callon 1998) and strategize. Such prices, however, do not require participants to attempt to maximize their own profit; they can just as easily be used to equalize or maximize collective benefits.[30] Market generated meanings and values, in short, are in principle no more predetermined than meanings and values generated in more traditional settings such as family, church and state. Neither are they likely to prove necessarily advantageous or detrimental. Rather, they and the social practices that generate them demand the same level of reflexive and critical input that all value and meaning generating social practices require. This necessitates, however, that we first recognize and accept the full extent in which markets are definitional practices engaged in generating values and meanings. To use one of Robert Merton's (1987) classic expressions, markets have become premier "strategic research sites" for

30. By privileging the definitional function of markets over the allocation function of markets, a sociologically grounded market paradigm allows for a much greater range of rational, calculating market strategies than does the neo-classical "maximizing of individual utility." In short, while Callon is correct in arguing that markets are "formatted," the format need not be restricted to an economic format (I am indebted to an anonymous reader for formulating this point.)

examining this definitional process. Real markets are evolving social practices; they need and deserve to be understood as such.

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