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* PREFACE

The brassy shouts, ringing bells, and thrashing arms of the floor traders are the most recognizable sounds and sights of Wall Street. On the trading floor of the New York Stock Exchange (NYSE), the fevered pitch of buying and selling stock certificates sets the tone for global finance at its most clamorous. The business media offer a daily dose of trading images—heads in hands amid the debris of discarded tickets when the market is down, arms raised in frenzied activity when the market is rising—as they diagnose ever-changing economic conditions.

Despite its centrality to the image of American economic dominance, this iconic place is under threat. In April 2005, the NYSE announced that it would merge with Archipelago, an all-electronic stock exchange based in Chicago. Archipelago's trading system would replace the tumult of the trading floor with the hum of online circuits, ushering the recalcitrant NYSE into the electronic era. Speculators enthusiastic about the union between the two exchanges propelled the price of a membership on the NYSE to $2.6 million. Yet players on both sides of the merger debate noted that the transition to electronic trading would come at a high cost, one that could not be measured in dollar terms.

Digital dealing on the Big Board would effectively end floor trading at the exchange, transforming the way traders had conducted business for more than two hundred years. Many NYSE floor dealers lamented this change, resisting the new technologies. Many others considered electronic trading inevitable and worked to define the terms on which the NYSE would go digital, seeking to secure the future of their institution and, at the same time, a handsome profit for themselves. On both sides of the divide, generations of traders have made the NYSE a crucible of capitalism that electronic trading is poised to smash. For them, the exchange is a place where financial firms built on family connections, personal trading skills, and local control of a key global market come together in one famous build-

ing. As brokers traffic in stocks, slivers of ownership in the world's most prestigious companies, they embody American economic mastery. Foreign officials and American celebrities acknowledge this as they accept prized invitations to ring the opening bell. The platform set above the floor provides a perfect vantage point for viewing the imposing sight of thousands of individuals united in the struggle for profit.

Electronic trading is designed to splinter this flesh and bone market into separate parts. Traders in the new digital dealing rooms sit within the walls of private trading spaces—whether banks, small firms, or their own homes. They surround themselves with the tools of online exchange: computer monitors displaying stock and commodity prices, news wires, and predictive charts. These instruments objectify information, facilitate calculations, and enable autonomous actors to buy and sell instantly with the touch of a finger. They offer access to the full ensemble of the market directly through the screen. Digital dealers are exquisitely connected, yet they act alone.

The editorial page of the *Wall Street Journal* (April 22, 2005) noted the demise of the trading floor as it lauded the deal: "While humans may continue to play a role in large or complex orders for stocks that don't trade often, the majority of trading will probably go electronic." The fate of trading floors in Chicago, London, Paris, Montreal, Tokyo, Sydney, and Singapore has confirmed this prediction. Scenes of traders sitting quietly behind computer screens quickly replaced the action of hangar-sized trading floors where men—and it was mostly men—competed for profitable deals, bringing the market to life with their bodies and voices. During the 1990s and early 2000s, financial exchanges across the globe underwent contentious transitions similar to the one taking place in New York, putting an end to forms of trading and institutional arrangements that were often, as with the NYSE, more than one hundred years old.

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Nowhere were these battles fiercer than in Chicago, where the futures exchanges, the Chicago Board of Trade (CBOT) and Chicago Mercantile Exchange (the Merc), had helped the city become a hub of global capitalism. During the 1990s, these long-standing membership organizations wrestled with electronic trading and its proponents' promises that new technology would help them achieve the dream of truly global markets. The Merc adopted electronic trading quickly after its leaders convinced members that the new technologies would give them a competitive advantage over other exchanges. The directors also dissolved its membership system in order to become more flexible, reasoning that a conventional corporate structure would allow the organization to maneuver at digital speed. It even went

public, so that floor traders at the NYSE could buy and sell stock in the cutting-edge Chicago market.

At the CBOT, however, digital dealing was far more controversial, and the struggle over the future of the exchange lasted a decade. The struggles at the CBOT over how to respond to the new possibilities of electronic trading allow us to see what is at stake not only for the Chicago floor traders, but also for markets more generally. Like their counterparts at the NYSE, CBOT members had money on the line. Electronic trading devalued access to the trading floor and dragged down the value of their seats. Like the NYSE floor traders, the Chicago dealers had built a living around the skills of buying and selling hand-to-hand. Most of Chicago's floor traders lacked the Ivy League pedigrees and MBAs that had become prerequisites for jobs in finance, and few could be confident that they would survive in a marketplace that no longer valued their abilities to make deals face-to-face.

As the world's exchanges went electronic, many of the CBOT's established leaders fought to preserve the pits, the open outcry trading, the membership structure, and the distinctive cultural environment of trading that had evolved in the city. Their opponents ridiculed them for old-fashioned sentimentalism, insisting that the transition was inevitable and warning that the delay would not only cost members dearly, but also render the entire CBOT expendable and obsolete.

The Chicago traders became more anxious when they looked across the Atlantic. In London, electronic exchanges had already driven futures traders off the floor, marking the demise of open outcry. The exchanges in Chicago and London had close ties, since the Chicago exchanges were the model for the London International Financial Futures Exchange (LIFFE), the British financial futures exchange. In London, some of the traders pushed off the floor had sought work as taxi drivers, others painted houses. The lucky ones got jobs in banks trading online. For some enterprising Chicago traders, however, the omen was an opportunity. They crossed the Atlantic with aspirations to remake the new market, opening boutique firms that would export Chicago trading styles—built on aggressive action, bravado, and bold risk-taking behavior—and distinctively American beliefs about economy and culture to London's exchange.

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What was so compelling about electronic markets? Proponents of the new, digital dealing systems argued that trading through an electronic network would be fast, efficient, and transparent, displacing the antiquated system of person-to-person exchange. Separating individuals by fiber-optic cable and isolating them behind private terminals would allow a purer market to

emerge, with anonymous, autonomous individuals replacing the trading "neighborhoods" and tight in-groups that evolved on the trading floor. The new electronic systems would offer pure individual competition: only the fittest would flourish, and those unfit for market competition would wither away.

At their inception in the mid-1800s the trading pits themselves seemed a novel and efficient technology for cleaving insular trading cliques and making the trading floor into a place where men could conduct business entirely on their own. Electronic technologies have made them seem insufficient. The advent of online markets created a new opening to use technological and human elements of the market—computer screens, techniques of trading, and the composition of trading rooms—to push even closer to economic ideals of autonomy for individuals and competition among them.

Yet there is no technologically determined script for changing the constitution of the marketplace. Shifting economic activity from the trading floor to the dealing screen requires many projects that I call "practical experiments" in market building. These experiments—in architecture and technological design, recruitment, self-discipline, and even the aesthetics of trading spaces—aim to bring economic ideals to life, and no ideal is more important than the competitive individual. The modern individual is often described as endowed with the properties of economic reason and competitiveness. But these are not innate predispositions that need only to be set loose. Even in the peak places of the quest for pure profit, individuals and environments must be shaped, managed, honed, and reconstructed to create the competitive situations that anchor capitalist practice. How market managers, technology designers, and traders attempt to equip men with market reason is the subject of this book.

* ACKNOWLEDGMENTS

Tracing the transformations of financial trading required many kinds of travel. But wherever I went I benefited from the guidance and support of a broad constellation of financial professionals, academic colleagues, friends, and family. My first debt is to the traders, managers, designers, and exchange officials in Chicago and London who gave their time to this project. Their generosity and cooperation are the foundation of this research. I would particularly like to thank the owners and managers of Perkins Silver and the trader known here as David for the crucial help and access they provided me.

As is conventional in ethnographic writing, I have created pseudonyms for people who offered their private reflections and experiences, many of whom shared with me a trading desk, cups of tea, and all the daily activity of traders' working lives that I write about here. Although I have renamed the trading firm that appears here as Perkins Silver, I would not try to hide the identity of the Chicago Board of Trade, one of the biggest players in global futures markets, or the other financial exchanges. The executives who directed the CBOT during my research are the public representatives of the exchange, and so I use their real names.

This book took shape amidst the intellectual guidance I received as a graduate student in anthropology at the University of California, Berkeley. Its trajectory began with the support of my advisor, Paul Rabinow, who recognized an anthropological project in the economic rationality of futures market and then guided me as I conceived, conducted, and committed an analysis to paper. Aihwa Ong constantly reminded me that a combination of human practices and technological materials lay behind the transnational phenomena that I was witnessing, and then challenged me to find them. Manuel Castells focused my attention on the urban nodes that organized financial markets and dared me to investigate the connections between the institutions and actors that shape the space of flows. Berkeley also

provided the foundation for absorbing intellectual exchanges and enduring friendships with fellow graduate students, even as we scattered around the globe for research and jobs. I was privileged to get both careful criticism and steady support from Arianne Chernock, Stephen Collier, Jeff Juris, Nalini Kotamraju, Andrew Lakoff, Elizabeth F.S. Roberts, Natasha Schull, and Rachel Sherman. It's hard to imagine writing this book without them.

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The soul of this book is in Chicago. Doug Mitchell, at the University of Chicago Press, lived up to his billing as the most effusively encouraging editor in the business, and Tim McGovern was equally helpful. I am grateful to them, and to their colleagues at the press, for their confidence in the book. Owen Gregory, the archivist of the Chicago Board of Trade, guided me through the more dusty stretches of CBOT history. The Special Collections Department of the University Library, University of Illinois at Chicago, kindly provided images from the Chicago Board of Trade Records (CBOT neg. 111, 75-68[1-1], 75-68[1-9]). The wonderful photographer Bob Davis captured the action of the trading floor in many of the images that enliven these pages. The Chicago Board of Trade gave permission to take these photos, but has not reviewed the book, and makes no representation regarding the accuracy of the content of the publication. Such responsibility clearly lies with the author.

It was fitting to finish writing this book in the financial capital of New York City. My colleagues at New York University—Tom Bender, Neil Brenner, Doug Guthrie, Phil Harper, Walter Johnson, Tim Mitchell, Harvey Molotch, Kim Philips-Fein, Mary Poovey, Mary Louise Pratt, Andrew Ross, and Daniel Walkowitz—welcomed me with both insightful commentary and true support. I am looking forward to all the exchanges to come.

Any book on markets should acknowledge where the money came from. Financial resources for research and writing came from the Social Science Research Council Program on the Corporation as a Social Institution (with

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The support of close friends and family has been essential at every stage of crafting this book. Rona Talcott and Herb Davis welcomed me into their home when I did fieldwork in Chicago and helped to teach me about both the city and the small world of global traders. Over the course of this research they became great friends. Then they became my in-laws. I wish that Herb and I could share this one final book.

During my stay in London I lived with Priscilla Roth and Nick Garland. I didn't believe my friend Gabe when he told me that his mother would invite me to stay for the duration of my research. I was astonished when she did. Since that time Priscilla and Nick have become like family, and their kitchen table is my favorite seminar room. Many long-standing friendships have sustained me through the peaks and valleys of my writing process. Thanks to Mia Baricini, Matt Brown, Debi Cornwall, Jacob Gersen, Sarah Goodman, Adam Gross, Julia Gwynne, Heather Johnston, Valerie Reiss, and Megan Stephan. I am thankful to have them in my life.

Carolyn and Alan Grey, my mother and stepfather, gave me a model for adventures, both intellectual and otherwise. From my father, J. Gordon Zaloom, I inherited both a healthy skepticism and the strength and verve to pursue my own answers—the best legacy a parent could leave. Although he claims to not understand what I've been up to these past several years, my uncle, Roy Zaloom, never wavered in his support of my pursuits.

My deepest thanks are reserved for Eric Klinenberg. Our relationship and this book began together and he has supported me at every stage along the way with love, optimism, and an unflagging willingness to edit my prose. I am lucky that completing this project is only the beginning of our life adventures. I dedicate this book to him.

* INTRODUCTION *

Finance from the Floor

A photograph of the Chicago Board of Trade hangs in a crowded, central passageway of London's Tate Modern gallery. Every inch of its six-foot length vibrates with financial frenzy and spins with the disorder of time and space. The picture induces the vertigo of the contemporary world, and the frame spills over with traders, clerks, brokers, computer terminals, and telephones. The acid colors of trading coats swirl in and around the dealing pits. Hands and faces blur as they work to buy and sell financial commodities. The motion is not all in the present, though. Andreas Gursky, the artist, digitally layered the image to show traders who were once there and have now gone. Trading cards, bits of newspaper, and financial statements shine through spectral bodies. The camera can record only their traces as they hurtle headlong into the future. Just as past, present, and future blur together, space is also unstable. The trading area collapses inward as the plane of the floor tilts forward into the frame. The composition lacks a distinct center. The viewer is off balance—neither directly in the melee nor hanging above it.

This picture of a turbulent economy contains a few orienting markers—the rings of the trading pits, the padded railings that contain them, the rows of telephone booths that angle stadium-style, and the stairs and hallways leading in and out of the marketplace. The instruments of financial technology suggest that informational orderliness might be found on the trading floor, but instead they too are part of the din. A stack of price screens and monitors rises at the front of the frame. Electronic order books, telephones, paper trading cards, and time and sales sheets are scattered about the floor. The technologies of financial knowledge suggest quick access to concrete data that link the outside world to the trading floor. But even these informational objects cannot cut through the swirl of the market. There are simply too many of them, an excessive proliferation of the technologies of reason. Instead of imposing order, they provide conduits for the frenzied



Intro.1 Andreas Gursky, *Chicago Board of Trade II* (1999). Copyright © 2005, Andreas Gursky/ Artists Rights Society (ARS), New York/ VG Bild-Kunst, Bonn.

currents of money running through this trading floor. Both the equipment and the bodies of the traders are channels of a massive force.

The photograph is not a portrait of the particular character of the Chicago Board of Trade trading floor. As the curator and art critic Peter Galassi has written, the piece is a portrait of this financial market, "as a global institution and as a model of contemporary behavior."[1] Gursky's image has its place at the Tate Modern precisely because the Chicago Board of Trade (CBOT) is an exemplary site of modernity, a place that offers a refined case of financial speculation and the circulation of money. In this location, everyday relationships to the potential of money and the necessity of trade become extreme. Financial professionals bring together flow, speed, and technology in the pursuit of profits, and when thousands of them gather every day, they help create something larger—the market.

Gursky's image sends a clear message about the velocity of money and its disordering effects in the global economy. The market takes in vast waves of capital and spews them out again in a logic all its own. Yet for the crowd of spectators around the photograph, the commotion and disarray are entrancing. It is unsettling to examine the picture closely, especially because a literal understanding of the physical place, or of the traders' labor, is impossible. Instead, it is easier to step back from the photograph and absorb the overall impression of the global financial beehive.

Gursky captures the unease and amazement of economic life in an age of global markets. The postindustrial logic of speculation is partly responsible for this disquiet. In financial markets like the CBOT, there are no goods to trade. No grain or currency changes hands. There is only the accounting of gains and losses tabulated against traders' accounts at the end of the day. Here, capitalism is a pure search for profit, without any clear connection to commodities that people make or use. Unencumbered, the whirling of capital is alluring, and Gursky is not alone in his fascination. Observers from anthropology and the social sciences, the humanities, and the popular press have focused on the growth and speed of finance. Like Gursky, many of these cultural critics strive to understand global markets as a whole, both as a set of economic arrangements and as a reflection of the ways people live and work today. Much of this writing examines the effects of the market's financial velocity and its mercurial nature.

In much contemporary cultural commentary, the economic order of factories and nations is swept away by the digital symbols of financial deals. These descriptions have a metaphorical flair. For instance, David Harvey famously claimed that new financial regimes produce "flux, instability, and gyration."[2] He infused the financial market with its own volition and manic logic, claiming that capital does not keep its shifting ways isolated in the market. The constant search for new territory and the proclivity for taking a quick profit reproduce themselves in culture and individual affect.[3] The triumph of capitalism and its market-based reason is matched by new kinds of enchantments. Jean and John Comaroff direct us to the ironies of the parallel rise of hyper-rationalization in financial and legal regimes and the spread of occult practices. Their analysis of the "conditions-of-being under millennial capitalism" points to salvation and magic as much as to market logic.[4] Above all, the image of flow runs through the writing of both social and cultural observers, capturing the movement between places, adding to the mystical image of the market, and focusing our eyes on rivers of trade whose currents have the urgency of a natural force. The metaphor appears so often that it has lost its novelty. Flow is global common sense. But the image has an unfortunate side effect, encouraging analysts to position themselves as observers, standing at the river's edge rather than jumping in to understand the human actions and technological materials that make global exchange happen. Even when it is carefully defined and contextualized, as in Manuel Castells's account of the network architecture that structures informational economies and the space of flows, the powerful image of rapid flow draws attention away from the social processes that bring flows to life.

Many anthropologists, from Bronislaw Malinowski and Marcel Mauss to Claude Lévi-Strauss, Arjun Appadurai, and Karen Knorr Cetina, have shown how exchange stitches together collectivities separated in time and space. The same is true for global financial markets—they are engines of exchange

frequently conceived of in metaphors of flow. They link individuals, cities, and collectivities through the process of trade. Gursky, Harvey, the Comaroffs, and Castells are showing something important. Contemporary markets are mesmerizing and immense. They are both a symptom and a cause of a changing world where trading links cities, organizations, and individuals. Financial exchange brings together some of the most powerful elements of the contemporary economy: calculative wizardry, information technologies, and the sharp wit of individuals drawing profit from the endless circulation of money. Markets are intimidating and confusing, and, above all, they have important consequences, enriching the fortunate or wiping out vast assets in an instant. Yet there is another equally powerful and far more prevalent image of markets, one that is difficult to reconcile with the confusion that global markets inspire. This other image portrays markets as zones of rational action, engines of risk management, places to profit and to protect wealth. Markets organize and filter information, matching supply and demand. Markets are separate spheres, apart from the social and cultural world, ordered by principles of self-interested action.

We need to take a closer look at markets if we want to transcend the idea that they are rational economic tools or, alternatively, that they are engines of chaos. In recent years social scientists from different fields have reinvigorated this field of research, drawing out the architecture of markets, as Harrison White, Neil Fligstein, and Mark Granovetter have done, and investigating the human action and technical scaffolding that make economic calculation possible, as Mitchell Abolofia, Michel Callon, and Donald MacKenzie have done.[5] At a still finer resolution, we begin to see that markets pose a particular set of problems, especially for the people who work to shape them and seek to draw their livelihoods from them. Financial markets are objects for inquiry into the culture and economy of contemporary capitalism. They are particular spaces of economic practice. In these markets, traders, managers, and designers constantly define for themselves, and for the markets as a whole, what constitutes principled economic action. They also debate how to create conditions that will make principled action possible. This means that market-makers work with the existing materials of the market—technologies, architecture, habits, and routines—to create what they would consider to be a better market, one where individuals can draw profit from their own financial acumen more than from their connections to others. They also reflect on how to make themselves into ethical actors and apply disciplined techniques that allow them to draw profit from the market.

Managers, designers, and speculators labor with and in these markets every day. Each of these positions—manager, designer, speculator—is defined by a relationship to the market and not simply by the individuals who occupy them. Individuals move in and out of these positions, bringing their experiences on trading floors with them to management offices and design firms. However, each position forces them to confront a slightly different set of problems. For designers, the key problem is how to think about the market—What is it? Where is it? Who acts in it? Most important, how can they bring the market more into line with a particular vision of how it *should* work? They analyze the technological and human components of the market with the goal of shaping an impersonal system that provides information to each participant equally, so that the most successful traders are the fastest and most agile *individuals*, regardless of their connections or social characteristics.

Managers have a different set of problems. Like designers, they face the question of what the best market might look like, but they are also concerned with how to implement these ideas, given the already existing marketplace. The managers of the CBOT organization had to contend with the physical structure of the market—the buildings of the CBOT and the technologies, like telephones and hand signals, that shape traders' actions in the market. Managers of trading rooms must work with the existing habits of traders that they want to shape or to reform. Their question is, What is the proper relationship of the individual to the market? Of course, their primary job is to organize profit-making activity for their firms. But profit is conceived as an end. Managers approach this problem by organizing the social composition of a trading room and shaping the conduct of others.

Speculators face a similar problem that challenges them to think about the means of profit-making. Speculators ask themselves, How can I conduct myself in a market to draw profit? This requires that they consider the trader's relationship to the market, to others inside the market, and to themselves as confronted by the market. In other words, the problems I consider here are problems of ethics: What is the proper relationship between thinking and acting in the market? What is the relationship between the norms of economic action and the material and human form of the market?

While I was doing research, a particular event was underway, a realignment of the technological and human materials of the market. A transition from face-to-face dealing to online trading was changing the market in two key ways. First, it changed where the market was. It was no longer located in the rings of trading pits and in the bodies and voices of traders gathered there. Now, the market was an entity beyond location that traders tapped into through computer terminals. This change also challenged the human foundation of the market. The market was not made up of individuals who thought and felt the markets through their bodies and connections to others.

The designers of the computer interfaces and dealing rooms were promoting a relationship to the market based on observation and more explicit analysis. Traders were now expected to watch the market and act on it, rather than being the market and acting in it. The technological possibilities of digital systems raised the interconnected problems of how the material form of the market and the human form of market reason should be related.

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As a graduate student in anthropology at the University of California, Berkeley, I encountered a wide and contradictory set of views about financial markets. First there was the analysis of the external effects of the market versus the technical study of the market's interior workings. On a more public stage, market celebration raised another contradiction. In the late 1990s the Bay Area was the epicenter of a stock market craze fueled by information technology and speculative logic. My twenty-something friends monitored the value of their stock options from their desks at dot.com firms, watching their paper gains grow and grow as the stock in their companies changed hands again and again. Many more waited for Wall Street to take their companies public, making their shares tradable on the NASDAQ. Each time I drove across the Bay Bridge to San Francisco, a billboard reminded me that E*trade could help me turn the bud of my graduate stipend into a blossoming balance if only I would sign up for one of their active trader accounts. A sign designed to look like an old motel advertisement displayed both the wit and wealth of Yahoo! At the same time, news media like CNNfn and MSNBC kept us all abreast of the smallest shifts in stock-fueled fortunes. The sheer energy of the market was palpable, but as a graduate student I was looking in from the outside.

The vigor that markets were bringing to the streets and upscale restaurants of San Francisco collided with the more skeptical depictions of markets I gleaned from reading anthropologists, sociologists, and geographers. There celebration clashed with anxiety about the market's effects. First, I learned that the market in technology stocks was only a tiny fraction of the world of professional financial management and trading.[6] The swift trading in bonds and specialized products known as derivatives contracts were changing the landscape not only of finance, but also of politics and culture. In print, financial markets and the information technologies that supported them were credited with the breakdown of nation states, the rise of global production, the abandonment of the welfare state, and the rise of a global business class whose wealth grew larger as the wages of working-class people diminished.

Yet most of the authors I read approached these markets from the abstract perspective of political economy. I learned about the economic changes

that financial markets brought and their effects on the cities of the world, but I did not see the interiors of these markets, where finance defined a way of life and labor. People did not make appearances in most of these accounts. I began to read business publications like *Business Week* and the *Economist*, which profiled practitioners of finance and the issues they faced in the day-to-day business dealings. From the pages of these journals emerged a world beyond Internet madness and theoretical abstraction. Cities, organizations, and individuals were all hard at work securing their places in global finance networks, trading financial instruments, forging alliances, and adapting organizations to new technologies. Even though globalization was often discussed as a *fait accompli*, the pages of the business media showed how firms and traders were bringing it into being as they tried to catch up with the idea. In other words, these actors were identifying problems and defining solutions to create greater profit from a constantly changing geography. This was not chaos, or the greater abstraction of market efficiency. Reading the critiques and praise of those in finance and business on their own practices led me to ask questions about the theories I was reading. But the business press and the economics journals did not answer them either. I set out to analyze global finance as a series of practical problems that the executives of financial exchanges, technology designers, and traders were working out themselves in their everyday labor.

I left Berkeley and headed for Chicago. Chicago is not the first city that comes to mind for most people when they think of finance. Wall Street towers and the imposing columns of the New York Stock Exchange are the market's global symbols. Chicago, however, has a special place in this universe. It is the capital of derivatives markets. Derivatives contracts are a special kind of financial product whose value is linked to another financial commodity, like bonds, or a "physical" commodity, like wheat. Futures and options are the two most common derivatives, and these are the staples of the Chicago marketplace. The city's derivatives exchanges run centralized markets for trading in these contracts. Derivatives have a dual life. They are tools of hedging, or risk management, and they are also tools of speculation. The Chicago exchanges bring together thousands of traders who work the derivatives markets for second-by-second profit. The work of these speculators ensures the market's liquidity. They are available in the market throughout their work days. The willingness to trade at all times allows banks outside the exchange to complete their deals whatever the amount and whenever their strategists choose. Traders are at the heart of derivatives markets and their culture of circulation, and Chicago is famous for its traders.[7] Global players bring their business to the shores of Lake Michigan for their skill and for the experience of the Chicago exchanges in derivatives dealing.

No longer "hog butcher to the world," Chicago now labors to create a global bazaar in these specialized financial goods.

I arrived in Chicago in the summer of 1998 and moved into a basement apartment about two miles from the financial district. The family friends who owned the house provided more than shelter. Their son, David, was a futures trader at the CBOT and had agreed to help me with my research. I called his house in the North Shore suburbs and began by asking if I could talk to him about trading. He cut me short. "I can't tell you anything. It is just something that you have to see for yourself. What did you say you're doing this summer?" I said that I was planning on researching the exchanges and doing some preparatory interviews. "Forget that," he instructed. "Can you be at work on Monday?" With one phone call to the firm's owner, he convinced the firm to hire me as a runner at the Chicago Board of Trade.

The CBOT looms over the city's main financial artery, LaSalle Street. But, like most other workers at the exchange, I approached from the rear. The elevated trains of the Chicago Transit Authority stop just behind the building, and my first morning the train was packed with traders and clerks on their way to work. I followed the mob down the stairs and underneath the enormous structure that connected the office building with the brand new trading facility. The offices of Perkins Silver looked down on an open courtyard that brought light and air into the executive offices. The secretary behind the elegant maple desk sent me to find Jim Alba, who ran the floor operations for the firm. After a gruff introduction, he sat me down with a stack of documents that outlined the hand signals, products, and market terminology of futures trading. They also gave instruction on how to conduct oneself, which I had to master for the exchange's own test. To gain access to the floor, clerks were required to demonstrate a basic knowledge of the rules of market conduct—from prohibitions on verbal abuse and throwing objects to the basics of pit trading. In the exam room deep in the basement of the Exchange, the new clerks grumbled over this scholastic exercise. The proctor handed us our graded exams and our newly minted badges with the same hand.

My first job was on the grain trading floor, delivering orders from the clerks at the phone banks to the traders in the pits. The clerk would answer a customer's call, scribble down the order, and shove the sheet under a time stamp. At the thump of the stamp, I snatched the paper from the clerk's hand and dove into the tumult. Runners elbowed each other out of the way. Discarded paper scraps slicked the floor. The noise was often deafening. One of the phone clerks scribbled a cheat sheet for me on a trading card, but even with the guide in hand, I confused the wheat and soy pits and brokers, and found myself lost in the shouts of traders as the market slid and peaked throughout the day. After a couple of weeks I could leave the homemade

map in my pocket. My sense of the trading floor fell into place. In the meantime, I leaned on the phone clerks and other runners for help interpreting what I saw. I learned that many of them were there to launch their trading careers, so they, too, were hard at work deciphering the financial melee around them. Working the phones and customer orders was commonly the first step in getting to know how futures markets worked. From there I could begin to learn about the labor of financial exchange, as many traders do themselves.

Although I began in the agricultural futures room, my firm soon moved me to the much larger financial room, the engine of the exchange. This shift took very little adjustment. The work of the financial floor and the grain floor was essentially the same. The difference lay in the enormity of the financial floor and the products in which the financial traders were dealing—futures based on the debt of the American Treasury and on the movement of the Dow Jones Industrial Average (DJIA), as well as several more arcane contracts. I worked at a "desk," a long table lined with phones dedicated to the swelling business of the DJIA pit. Standing behind the phones, the clerks flashed urgent deals to brokers with hand signals and shouts. Legless seats swung out from the desks, but as I quickly learned, there was little time to sit.

Each morning I arrived at the CBOT at 6:45 a.m. and proceeded through a network of corridors and elevators to the firm's office. In the coat room where the traders' garish clothes hung, I donned my own oversized trading jacket coordinated with the firm's colors. I placed my notebook in a pocket alongside a stack of trading cards and took the elevator down to the fourth floor, the level dedicated to the trading rooms and set apart from the governing structures and back offices of the exchange. Security is tight around its perimeter. Each employee swipes an identity card and presses through a turnstile as a guard looks on. Traders and clerks open their pockets and purses for scrutiny.

Each morning, the clerks prepared for the opening bell, compiling orders and making predictions about whether the market would be rising or falling. But we were not the first to arrive. On our way from security to the desks, we passed a buzzing room full of clerks who had been there since 5:00 a.m. correcting errors from the previous day's work. On the trading floor, the pit slowly filled with traders examining their charts, looking at overnight reports from other markets, and gossiping. As 7:20 approached, everyone got quiet and waited impatiently for the buzzer. At its electronic screech, business came flooding into the market, feeding the raucous energy of the trading floor. Thousands of excited traders and clerks packed together is an irresistible thrill. Each day, however, the market would die down to a steady hum, and I used the opportunity to talk to the traders who trickled out of the pits and set up interviews for after the trading day.

It did not take long to see that the traders were preoccupied with a single

issue—electronic trading. They were right to be concerned. In the spring, the Paris exchange had opened electronic markets. Weeks later they closed their trading floor. Later that year, the CBOT traders watched another coup. The German exchange, then called the Deutsche Terminborse (DTB), launched an attack on London markets, where futures on German treasuries traded. Again, it did not take long for the London pits to fold. The CBOT and its traders set their jaws for a fight. They argued that the CBOT had developed pit trading, that the liquidity of the market was legendary, that the cold operators of computers could never provide the kinds of markets the devoted pit traders gave the world every day. To fend off competitors, the CBOT opened its own after-hours electronic market, called Project A. But that did not deter a challenger with offices inside the building. That summer, Cantor Fitzgerald, a bond-trading firm headed by the infamous Howard Lutnick, set up an electronic exchange to deal in CBOT products. The new exchange soon folded, but the writing was on the wall.

As rumors about electronic trading deluged the financial floor, the firm I worked for was making its own plans. They were setting up shops in London and New York that specialized in online futures trading. I asked the firm's owners to bring me along. With six months on the trading floor behind me, I headed off for London to work for Perkins Silver as a new recruit among ten new traders. Each morning before sunrise in the fall and winter of 2000, I arrived by tube in the heart of the City, London's financial district. Along with my fellow trainees, I studied formal trading techniques in a classroom and, on the trading floor, adjusted them to my own risk-taking appetites. After the training, I traded German Treasury bond futures on a Perkins Silver account. I interpreted the market according to my new skills and gained the direct experience of risking money that is central to traders' experience of their own work. I spent nine hours a day with eyes fixed on my screen and fingers lying lightly on the mouse, poised to click the second an opportunity for profit appeared.

In both cities, my base was the trading floor. But I wanted to gain a view of the market that went beyond the floor. After work and during subsequent visits, I delved into archives, interviewed officials at the exchanges and technology companies, attended meetings on the reorganization of the industry, and reviewed documents and media reports that discussed the changing composition of futures markets from Singapore to London. From the CBOT trading floor and my seat at Perkins Silver, I worked to map how the changing terrain of global futures trading was rearranging the problems of circulation.

From the field's earliest days, anthropologists have examined patterns of exchange in places far from the economic centers of North America and Europe. Today, the world's powerful financial centers are the ones that need

explanation. The mysteries of markets touch our lives, but few outside the financial profession understand them. I realized that no field site would be more challenging, puzzling, and important than financial markets, especially the derivatives markets of Chicago and London. From these cities, where organized financial exchanges, banks, and traders arrange and propel capital flow, I could begin to answer questions that neither anthropology nor business texts were asking. What were the places, people, and technologies that generated the flow? How did men shape themselves into risk-takers? What were the codes of conduct, strategies, and responsibilities of actors inside these markets? And how did this personal labor draw on and, simultaneously shape, the focus on rationality, profit, and competition that we think of as market values? How did these markets come to have a cultural infrastructure that allowed them to operate as a single, global force? What binds markets in and across time and space? Ultimately, how is financial circulation managed, imagined, and produced?

The change from face-to-face to online markets is not only a story of a disjuncture; it is also the story of strong continuities in the forms of financial exchange, as well as in the modes of exchange and practical ethics of markets. Anthropology offers tools to trace both the changes and continuities. Ethnographic fieldwork and the blended approach of cultural economy draw together economic practices, forms of knowledge, and disciplines that shape individuals into economic subjects in a way that can deepen our understanding of the contemporary complexity of an economic ethos. Following a long history in anthropological approaches to the economy, economic geographers Ash Amin and Nigel Thrift point out that "the pursuit of prosperity must be seen as the pursuit of many goals at once, from the meeting of material needs and accumulating riches to seeking symbolic satisfaction and satisfying fleeting pleasure."[8] This is true even, as we will see, in places explicitly designed to purge any other values from the pursuit of profit.

The approach I take here traces back to the roots of modern social science. Max Weber developed an understanding of the connection between economic systems and ethical orders, and Georg Simmel described the power of money to connect socially distant individuals, to mute passions, and to ignite economic lust.[9] This heritage informs the contemporary work of anthropologists such as Stephen Gudeman, Bill Mauer, Daniel Miller, Hiro Miyazaki, and Analise Riles, who are beginning to study the intersection of economic and legal domains as governing the economy and profiting from exchange increasingly become the province of legal specialists.[10] I also draw on themes from the anthropology of exchange, the anthropology of reason, and the social studies of science and technology in order to make sense of the creation and destruction of the technologies in the Chicago

futures markets, to analyze traders' ways of thinking, working, and living in the market, and to chart the extension of Chicago-style trading and forms of conduct to the City of London.

Anthropologists have long contested accepted ideas about the economy based in ideas about the nature of "economic man," drawing lessons about the competition for information that makes up economic exchange, arguing that economy is a category of culture, and, most recently, pointing to the ways that contemporary economic systems are built on revision and adjustment. Each of these arguments contests the idea that a unified core of economic impulses underlies human action. Fieldwork and the anthropology of exchange came together in Bronislaw Malinowski's *The Argonauts of the Western Pacific*. The father of ethnographic research devoted two years to documenting the *kula*, a type of trade practiced in the Trobriand Islands and arrived at his key conclusion that the *kula* was far from a pure economic system, arguing directly against explanations that reduced human economic action to a search for utility. In fact, trading in objects like necklaces, he contended, was more important than bartering in utilitarian goods like food and tools. His argument flew in the face of the "dismal fiction" of a "primitive economic man" driven by the satisfaction of basic need and the principle of least effort.[11]

Following his lead, work on exchange and economy has had a long and productive history in anthropology. Marcel Mauss continued Malinowski's project to engage arguments about the economy at home in France. In his classic work, *The Gift*, Mauss used the transactions of the *kula* ring to fight the oversimplified utilitarianism that dominated French universities. Mauss did not share the view that simple desire for useful goods was not the complete picture of an economy. He set out to show that the obligations of *social* credit and debt could not be separated from the exchange of commodities and that paths of trade bound together groups widely dispersed geographically and kept them together over time. Mauss was explicitly challenging the widely held view that market economies work by bringing together self-interested individuals aiming to satisfy narrowly defined needs. His approach struck a balance between the person who was always interested in calculating and manipulating her own social standing and the collective ideas about value, spirit, and status that hold the *kula* together.

Later both Clifford Geertz and Marshall Sahlins wrote against strictly economic visions of exchange and wealth. Geertz's essay on the bazaar economy of Morocco showed that the search for information, the manipulation of uncertainty, and client networks among vendors were integral parts of the economic picture. At the same time, Geertz sought a "reciprocally seditious" dialogue with economics that would allow for a more subtle understanding of the sociocultural nature of exchange.[12] Marshall Sahlins's essays in *Stone Age Economics* returned to Mauss's engagement with classical economists, aiming to "definitively abandon this entrepreneurial and individualist conception of the economic object." He claimed that "[e]conomy' [is] a category of culture rather than behavior, in a class with politics or religion rather than rationality or prudence: not the need-serving activities of individuals, but the material life process of society."[13] However, his argument does not take into account the active production of rationality within a "reflexive modernity," where creating systems based on principles of efficiency and individual competition is an end in itself.[14] Ulrich Beck and Anthony Giddens, who have both considered the importance of modern reflexivity, leave open to investigation the specific processes that pattern reflexive modernization, particularly as it concerns the global circulation of capital. Part of this patterning arises from the design of modern systems that shape behavior and constitute new collectivities and from efforts to correct and improve them. Attention to designers who act as "technicians of general ideas" can help to make the leap between the construction of systems and spaces where, in each, economic ideals of designers work into the material forms they construct.[15] Studying the construction of physical forms and organizations, and the shaping of individuals' conduct can clarify how these cultural processes contribute to market rationality.

Other anthropologists hover at the edges of modern economic practice, seeking sites where "culture" contests "market logic." However, the objects of society and culture, those two spheres that might stand against the economic juggernaut, are now materials for constructing markets. The makers of markets are themselves inspired by social theories. This pattern becomes most clear when new technology inspires managers, designers, and traders to create new ways to realize the ideal of autonomous individuals and a pure economic sphere. The industry's shift from face-to-face interaction to online technologies pushes the existing ethos to the edges of its own practices, creating opportunities for reflection and innovation. In the construction sites of financial markets, social categories are manipulated in the designs of trading rooms and dealing screens. Society and culture do not exist outside the market. Instead, the profit-seeking opportunities they offer are building blocks for new forms of trading, and their challenges to rationalization make techno-social systems seem incomplete even in their moment of implementation. The "edges" these anthropologists search for are already within.

Investigations of the overlapping areas of economics, ethics, and techni-

cal specialization fit well with anthropology's cornerstone method, ethnographic fieldwork. Today, anthropology is more associated with fieldwork than ever before.[16] The understanding of what makes up a field, however, has changed. New objects for anthropological study emerge when novel practices and ideas about our ways of life, work, and politics arise.[17] Financial markets are just such objects.

* CHAPTER ONE
Materials of the Market

Chicago has always thrived on the tension between the chaos of capitalism and the order it requires. This has never been more apparent than it was during the city's tremendous expansion in the nineteenth century. In *The Jungle*, Upton Sinclair's main characters approach the city by train and experience the sensory and perceptual confusion that commerce creates. "A full hour before the party reached the city they had begun to note the perplexing changes in the atmosphere. It grew darker all the time, and upon the earth the grass seemed to grow less green . . . And along with the thickening smoke they began to notice another circumstance, a strange, pungent odor. . . . It was an elemental odor, raw and crude; it was rich, almost rancid, sensual and strong." Chicago's infamous stockyards belched out an oily smoke, which spread "in vast clouds overhead, writhing, curling; then uniting in one giant river." The sounds from the yards trick the ears of Jurgis, Sinclair's proletarian hero. "You scarcely noticed it at first—it sunk into your consciousness, a vague disturbance, a trouble. It was like the murmuring of bees in the spring, the whisperings of the forest, it suggested endless activity, the rumblings of a world in motion."[1] Sinclair's analogies from Jurgis's rural past jar the reader as he shoots us headlong into the landscape, the necropolis of cows and pigs.

The yards were famous not only for bloody acts but also for the modern techniques developed there. They represented progress and made Chicago the meatpacking capital of the world. Hogs and cattle from all over the western United States converged on Chicago to be killed, dismembered, and efficiently distributed to eastern cities. Chicago turned pigs and cows into money, an alchemy that involved thousands of miles of grazing land, the invention of feedlots, and the all-important technology of the railroad. By the 1880s Chicago was butchering thirteen million animals a year.[2] Efficiency and centralization were vital to the success of the yards.

In the yards, no animals met their end as efficiently as the hogs. Handlers

corralled them to the slaughterhouse and arranged them in a neat row on a gangplank. Slaughterhouse workers chained the animals' ankles to an enormous horizontal disc and opened their veins. As the wheel turned, it yanked the pigs into the air, bleeding and squealing, before dropping them into a vat of boiling water that removed the bristles from their skins. Their bodies were then stripped of flesh part by part on the "disassembly line," each section and shred destined to become a commodity. This method was an important inspiration for a later industrialist, Henry Ford, who mimicked this orderly model of death and dismemberment in his automobile plants. His admiration focused particularly on the meatpacking industry's refined division of labor, the intricate order behind the foaming rivers of blood that ran through the slaughterhouses.[3]

The most famous products of this hog's hell were meat, soap, and hair brush bristles for the growing masses of America, and enormous wealth for captains of commerce like Philip Armour and Gustavus Swift. But the by-products of the stockyards overtook the city. In Chicago, capitalism reeked, and the less savory yields of urban growth proved difficult to manage. The odor of rotting animal waste wafted over rich and poor neighborhoods alike. The coal fires that stoked the city's manufacturing painted a "lead-colored sky," as Frank Norris famously described it in his novel *The Pit*. In 1871, city engineers reversed the direction of the river, sending the malodorous waste away from the city and from Lake Michigan, the source of its drinking water. Redirecting nature in the service of the capitalist metropolis saved the noses and health of city dwellers, but the less prosperous towns along the river and downstate paid the price.[4] Nor was engineering able to achieve a perfect fix: during storms, the underside of Chicago's rapid economic expansion surfaced. Sewers overflowed with a noxious effluvium of urine, manure, and blood; despite the best efforts of the city's planners, the by-products of the city's success could not always be eliminated.

Representing Abstraction

The pigs of Chicago's stockyards squealed and kicked on their way to becoming commodities. A physical infrastructure and human hands were required to heave, can, and transport their meat. Across town, a different relationship to the materials of the market also emerged. In 1848, a group of businessmen came together at a flour store on South Water St. Amidst the growing commercial disorder and ever-expanding profit, they founded the Chicago Board of Trade (CBOT), an organization that would help develop both the urban potential of Chicago and the city's distinctive market in futures contracts.

Their "market" was an idea that harnessed time, collapsed space, and ordered prices without spilling a drop of blood. Their challenge was to create the smooth circulation of commodities demanded by their abstract vision. Markets in these "products" had to be imagined and built. First, the members of the CBOT began to construct a site of trade that reconciled an abstract notion of the market with the physical structure of the city and the architecture of the CBOT's marketplace.[5]

Under the direction of the CBOT, the space of the city became the space of their trade.[6] The city the CBOT merchants encountered presented both material opportunities and barriers. The sandy harbor and marshy ground of Chicago clogged trade. An infrastructure that would ease the conditions of trade between Chicago and its hinterland and between Chicago and the powerful cities of the eastern seaboard were primary concerns of the newly formed organization. Beginning in the mid-1800s, influential merchants lobbied for and funded the growth of railways, bridges, harbors, and buildings in the city of Chicago. Under their watch, Chicago grew to support the abstraction of the market, and the market grew to encompass more and more territory. Agricultural markets fused as Chicago's network of railroads, telegraph lines, and trading connections linked the western plains with the East Coast.

Within the city itself, architecture presented another way to shape the space of trade, and merchants created new infrastructures for their markets in the buildings the CBOT erected. They built the tallest and most impressive buildings of their time to give shape to the ideals of centralized, competitive, markets in abstract instruments. The members of the CBOT raised the city of Chicago and their organization together as they created a material form for the market. As the market grew, the CBOT erected new buildings. Each iteration of the market was an opportunity to renegotiate how to make markets in stone, wood, and steel. The story of how the CBOT's members and leaders accomplished their projects demonstrates how politically and economically powerful actors work with the materials of city space and technological infrastructure to create the material form of a market.

Order

Futures made possible the circulation of commodity prices without the physical commodity changing hands. The CBOT built the futures market on the ever-changing value of wheat and corn, and there speculation thrived. But at first, the founders of the CBOT were concerned not with creating a market but with the transportation and banking challenges that faced businessmen in the growing metropolis. Development of the city, particularly

its transportation infrastructure, was essential to the circulation of commodities and the commercial interests of themselves and their peers.[7]

These merchants first needed to govern and develop their own organization. The idea of membership was central to the mission of the CBOT. Each member had a single vote. Committees of members investigated the commercial issues of the city and the internal issues of the organization and proposed solutions to the members. At the inaugural meeting, the first committee formed was given authority to draft a series of by-laws. The CBOT also created committees to monitor the activities of the organization's members, guide the development of business in the city, and coordinate efforts with the Boards of Trade in other cities. The members extended the idea of governance by their peers as they drew on mercantile history to argue for self-regulation: rulings on disputes, merchant's law instructs, should be made by other merchants familiar with the customs of business. Separating themselves from the authority of civil law, the merchants and traders of the organization would monitor and adjudicate the actions of the CBOT and its individual members.

The members soon adopted the regulations and elected their first president, Thomas Dyer. Born in the east, Dyer was a manufacturer in Atlanta before settling in Chicago. His pork-packing business put him at the center of the city's traffic in commodities. Other founders had interests in real estate, transportation, and banking. Six of Chicago's first twenty mayors were CBOT members, reinforcing an already tight link between city government and the commercial interests of Chicago's entrepreneurs.[8]

While the members of the CBOT were working to establish the commercial hub of Chicago and develop connections with the cities of the east, they were also beginning to create a new kind of market that would organize the agricultural markets of the nation by establishing a market in the *price* of grain. In 1857, the CBOT began trading in "to-arrive" contracts that established an agreed upon price for grain to be delivered on demand. However, these "warehouse receipts," as they were called at first, never had to be exchanged for grain. Instead, the difference between buyers and sellers could be settled for cash as the price of grain moved. By 1855, the daily sessions of the CBOT were roiling with trade both among merchants and among speculators trading on the changing prices of grain. Just a few years later, government provisioners began trading with CBOT speculators to coordinate the feeding of the Union troops during the Civil War. Their business helped consolidate the already thriving national market in grain prices.

The price of futures set in Chicago unified the nation's commodity markets by creating a single price for wheat for traders and merchants from New York to St. Louis. The grain yields of Kansas and the hogs of Iowa dominated

the agricultural trade of the city. But their heft made them difficult to handle. To make a national market in grains and meat, Chicago's merchants forged new tools to trade these physical goods by creating abstractions that transcended geography and time.

A futures contract is a contract between individuals to provide an agreed amount of commodity at the expiration of a "delivery" time set in three-month cycles by the CBOT. These abstract tokens represent wheat and oats from any location—Kansas or Wisconsin, the farms of the Millers or the Taylors, it did not matter. The contracts were a way to trade large amounts of grain even when these grains were still seeds in the ground. Futures contracts enabled traders to set the value of grain months ahead of its reaping with only symbolic reference to the physical commodity. The paper token of the futures contract allowed crops to pass through the hands of speculators without their handling a single sheaf of wheat.

Like money, futures contracts created the ability to buy and sell with ease.[9] As they circulate, they create a new source of value apart from the material goods that lend their value to the contract.[10] As information about the coming harvest changed, so did the price of futures contracts. Each increase or drop created an opportunity for the members of the CBOT to make a small profit on the price change, selling their overpriced contracts or buying into a rising market. The CBOT allowed for trading that had less to do with physical commodities and more to do with the profits to be made from fluctuations in perceived value as the information about future harvests changed.

The merchant members of the CBOT became speculators and disciples of the market both in the movement of physical commodities and in the techniques of speculation that their changing prices allowed. But the speculators of the CBOT did not simply deal for themselves. They had an economic and civic mission. Through the work of the CBOT's members, the organization steered the city's development to facilitate trade and create business opportunities, making strategic connections with other cities that made Chicago the capital of the region and the coordinator of western commerce. The CBOT marshaled economic, political, and technological resources and led the drive to create a capital for American agricultural commerce. They dedicated themselves to the growth of the city's markets and fostered new technologies, primarily the railroad and the telegraph, to secure their city's commerce and their own fortunes.

The Chicago Nexus

That they would succeed in establishing Chicago as a commercial nexus was not certain. As the members of the CBOT well knew, there were other seri-

ous contenders to become America's hub. For a while, Cairo, Illinois, seemed poised at the brink of success as rail lines and federal influence converged on the city. According to the Charles Taylor, a contemporary historian,

> Great expectations of the future of Cairo were entertained by well-informed people throughout the country. . . . The *American Railway Times*, . . . anticipating that Cairo rather then Chicago would reap the greatest benefit from the construction of the railroad, published an article of which the following is an extract: 'The Illinois Central Railroad will be the largest single railway enterprise in the United States. Cairo, which is situated at the lower terminus of the proposed road at the junction of the Ohio and Mississippi rivers, will in all probability be one of the largest of our western cities.[11]

A federal bill supplied more than two and a half million acres to the State of Illinois to construct a line of the Illinois Central Railroad from Cairo to Galena. Chicago had to fight for a "branch" of the railroad. However, the tributary soon overtook the main trunk line in traffic.[12] With William Ogden, Chicago's first mayor and the nation's first railroad baron, at the helm, the city's combination of water and rail transport cinched the city's success. At the outbreak of the Civil War, Chicago was the world's largest railroad junction, with more lines meeting within its borders than any other city on earth.[13]

Chicago had another, more established, competitor for the position of western gateway city. St. Louis waterways supported its claim to be the great western city and transportation hub. Situated at the junction of the Missouri and Mississippi Rivers, the city's rivers seemed to have natural advantages for transporting grain to market. It had logged seventy-five years as the key western port and principal trading partner for New Orleans. St. Louis merchants cleared furs from the west and trafficked in other commodities on their way to and from the frontier. In addition, a narrow channel north of St. Louis meant that all upstream river traffic had to stop there to transfer to smaller boats. But it was St. Louis's connections that eroded its dominance; Philadelphia was the city's major trading partner, and the eastern metropolis was already losing markets to New York. St. Louis merchants began to switch their alliances to New York, but slowly and too late. New York capital had established ties to Chicago merchants, providing pricing advantages, and railroad money had already helped establish Chicago as the west's rail hub.[14] The great spokes of railroad lines were made far more powerful with the introduction of telegraph lines. The merchants of Chicago could intensify and multiply their relationships with traders in other cities through the wires. The first telegram arrived in Chicago in the same year that leading local merchants founded the CBOT. On January 15th, 1848, at the corner of Lake and Clark Streets, a telegraph in the office of Colonel J. J. Speed tapped out a message from Milwaukee. Soon messages from the east and Chicago's urban kin of the northwest were flowing in. The first greeting sent between Detroit and Chicago read, "To Milwaukee, Racine, Southport, and Chicago.—We hail you by lightning as fair sisters of West. Time has been annihilated. Let no element of discord divide us. May your prosperity as heretofore be onward. What Morse has devised and Speed joined let no man put asunder."[15] The telegraph led to a coordination of commerce, prices, transportation, and politics among these regional centers that had been impossible before.

The members of the CBOT grasped the importance of the city's technological infrastructure. At first a voluntary organization of leading Chicago merchants with no legal status, the board was nevertheless central to promoting the city as a business center. It existed to promote "her commercial interests by more united action then heretofore" and was "the center of deliberation on nearly every question in which Chicago had an interest." Its influence was felt from city hall to the halls of Congress.[16] The board regulated commerce through the region, passed tolls on canal freight to and from the Mississippi, and debated how to manage the ever-increasing flow of information with telegraphic expansions. The men of the board lobbied Washington for land grants to complete the Illinois Railroad. They were so successful that Senators Stephen A. Douglas and General James Shields, both from Illinois, sent special congratulations.[17] In 1850, when sandbars blocked the Illinois River, hampering commerce, the board again sent representatives to Washington to lobby for making the port more navigable.

The CBOT's influence was critical in building and maintaining the city of Chicago and in coordinating northwestern commerce. After a spring flood that destroyed nearly every bridge in the city, the board reestablished communication between the north and west sides of the city to keep the metropolis running. City authorities worked with the board to issue bonds for rebuilding the harbor, and the board shouldered the financial responsibility for negotiating the securities and managing the funds.

By the end of the nineteenth century, Chicago had become the largest grain distributor and the meat-packing capital of the United States. The board's imprint was stamped on its bridges, harbor, and railroads, and local merchants developed new techniques for transporting the weight of grain sacks, beef, and pork through its stockyards. Yet the movement of physical goods was not the greatest achievement of the board. Its greatest innovation was in pricing American provisions—not only for the city and the region but for the entire country and eventually for the world beyond its borders. This

project established Chicago as both a regional capital and a site for coordinating the nation's agricultural markets.

The Nation as Market

The CBOT was instrumental in creating a market at the national scale for grains and its other products. Two problems had hampered its visions of connection. First, the distances that separated the prairie from the plains and the seaboard meant that communication was only as fast as the fastest train. The invention of the telegraph addressed this problem by separating travel time from communication time, creating informational bridges between cities and regions that overcame time and distance. It also created a new scale for the politics and market of the nation. More important, the telegraph created a double vision of the market. The first originated in the building of the CBOT with its markets rooted in a particular place and history, and the second seemed to defy location. Suddenly, information emanating from all corners of the United States and all over the world could move grain markets in Chicago. This was a fundamental shift in the concept of commerce. A market was no longer a *place* to buy and sell commodities. The telegraph helped create *the* market, a new entity that existed all the time and everywhere. The free flow of information across space made the market appear as a separate entity simultaneously composed of each its individual participants, and created a single entity that transcended them all.[18] With technology that enables a flow of information disconnected from place, the market appears to be a force outside of and more encompassing than the actions of the individuals that compose it, obscuring the daily acts of coordination, planning, and exchange that shape the market and its circulation. The political and economic work of rationalizing exchange united the commercial space of the nation and cut the market loose from its physical and geographical anchors.

The CBOT did not acquire its singular identity on its own. The country's boards of trade developed standards of reliable commercial news and price quotations that established trusted information sources and consolidated the market's unity. This was done with such effectiveness that in 1884, a prominent historian of Chicago could claim that, "the system of gathering all important commercial statistics has been carried to a point of comprehensiveness and accuracy far beyond that of the Government bureau of statistics." The rhetorical force of the CBOT's efforts in Washington and the Chicago city government belie the discursive opposition between market and government knowledge.[19]

The reliability and accuracy of market information was of keen interest to Chicago traders. At its third annual meeting, in 1851, the CBOT adopted a rule forbidding members to give "untruthful or bogus reports of their transactions, on pain of expulsion."[20] This move toward truthfulness and transparency in commerce was not based simply on moral principles; it was also necessary for making Chicago a center of nationwide commerce. In a national arena, where the reputations of individual traders were not known, commercial agents could only rely on the reputation of the organization. It was imperative for the CBOT to police both the conduct of its members and the information that flowed into and out of its pits, to develop and maintain fair prices and accurate information, and to establish and enforce the regulations that would secure a sound reputation that would allow the extension of commerce beyond the borders of the Chicago business community.

Cities maintained different standards for measuring weight and quality, a technical problem that slowed trade, hampered distribution, and divided commercial regions. Accurate information and interconnection were not enough to extend the boundaries of the market to meet those of the nation. A certain set of standard measures now had to be imposed on provisions in a market where products could move easily across geographical boundaries. The CBOT had created a series of exact standards for the inspection, warehousing, and shipping of grain to make traffic between cities and regions possible, but their adoption in Chicago was not sufficient. They had to be adopted throughout the country to create the fluidity necessary for national agricultural commerce. Chicago worked to standardize measure and coordinate commerce with boards of trade from Milwaukee to Buffalo.

The first innovation was standard grading of quality, a process that made one bushel of wheat classified as "winter wheat" fungible with any other.[21] This allowed for centralization of the grain market in the elevators of Chicago. Farmers and their representatives sold to the elevator owners and released the products of their fields into the vast rivers of "winter wheat" that flowed through Chicago. These standard grades did even more than create new centers for trade. They also helped to make information about oats, corn, and wheat consistent, which allowed for a buyer's easy judgment; winter wheat was winter wheat no matter where it came from or who grew it. The boards of trade scrutinized standards that disconnected commodities from their place of production. With standards in place, information about grain could circulate without reference to individual farmers or particular fields.

The problem of measuring grain matched the more intangible problem of grading its quality. When the CBOT was founded, farmers and buyers measured grain by the bushel, an inconsistent measure of size that main-

tained the connection between the specific lot of grain and the farmer or owner who produced it. Despite shifting from carriage to boat to train on a trip from Kansas to New York, Jones's bushel remained Jones's bushel until it reached its final buyer. Measuring grain by weight did something miraculous. New standards for measurement allowed shipments of grain to be combined, shifting title from the farmer to the warehouse owner, who could resell a thousand bushels (by weight) of wheat to New York merchants without reference to the farmers who had grown it.[22] This system helped make grain a true commodity, disconnected from the place of its production and its producer. As with grading quality, in order to have this new standard fulfill its potential for easing commerce, other cities had to be convinced to adopt Chicago's standards.

Chicago's prominence in the grain markets lead other inland ports to follow in this reform. The shared standards facilitated transactions and solidified the connections between market centers. New York's merchants, however, who bought much of the West's shipments, remained recalcitrant. Their business remained tied to the Atlantic commerce of the British Empire and the system of standards that bound them to these traders. Forsaking British standards in favor of inland American ones would forcibly redefine their commercial alliances, and American trade had not yet proved more profitable than Atlantic trade. New York was already an end-point for American commerce, and its merchants therefore felt less pressure to adopt measures that would ease trade in vast bulk.[23] They may also have been reluctant to follow the lead of cities they did not feel were New York's commercial equal.

The Chicago Board of Trade and its allied associations in Milwaukee, Toledo, and Buffalo bristled against this impediment to commerce. The grain merchants of the west chose Buffalo to lead the charge on New York. Trapped between buying in the west by weight and selling in New York by bushel, these merchants fought to impose their standard. In June 1854, the Buffalo BOT adopted a resolution that put pressure on New York to capitulate:

> Resolved, That this Board of Trade strongly disapprove[s] of the practice of measuring grain as now existing in the city of New York, and view it as detrimental to the interest of produce dealers generally, and particularly to those making shipments direct to that market, occasioning thereby unnecessary delays in unloading boats, and vexatious disputes and losses to shippers and owners of grain.
>
> Resolved, That this Board view the antiquated custom of measuring grain as practiced in the city of New York, as an incorrect and illegal method of ascertaining the number of bushels and the practice ought to be abolished and an uniform system of selling and delivering by weight, adopted.[24]

But pressure from inland cities could not sway New York. When it did break down in 1870, it was a crucial step in integrating the geography of the grain market, but by then, the capital of the grain market was not in dispute. It was Chicago.

The Architecture of Finance

As the CBOT and its markets grew in size and significance, the members committed themselves to carving out a place in the city that would match their growing stature. The directors built a succession of three buildings in the heart of Chicago. These buildings were not simple containers for the labor of traders; the buildings themselves shaped the market within their walls. Just as the bridges and railroad tracks created a material infrastructure for Chicago's commodity markets, the CBOT building's dealing floor, trading pits, and corridors established a material form for the market. The flow of information, the shape of competition, and alliances between firms were all shaped by the interior geography of the CBOT buildings. The executives of the CBOT and their architects were conscious that each building was an experiment in the social shape of the market, its symbolism, and its civic significance. The struggle over the shape and meaning of the market created the CBOT's most poignant symbol—the 1930 building that stands at the intersection of LaSalle and Jackson in the heart of Chicago's Loop (see fig. 1.2).

Buildings are unusual technological artifacts because they require enormous sums of capital investment and can last for hundreds of years.[25] The CBOT buildings provided an unusual opportunity for experimenting with the physical form of a market. Because its business expanded so rapidly and continuously over the course of a century, the organization built structures to keep up with the pace of growth. Each structure bears the imprint of its many constituencies and their ideas about the proper arrangement of their marketplace. The building constructed by the CBOT in 1930 and its additions bring these stories together.

LaSalle Street is one of Chicago's most important avenues. It cuts through the heart of the Loop, in the center of Chicago's business district. Like Wall Street, its New York counterpart, Chicago's financial world takes its name from this thoroughfare. LaSalle Street may define Chicago's financial heart, but derivatives, like the CBOT's futures contracts, define LaSalle Street. The Chicago Board of Trade, the Chicago Board Options Exchange, a spin-off of the CBOT that has grown to rival its progenitor, and the Chicago Mercantile Exchange, now the largest futures exchange in the world, are LaSalle Street's global players and some of the world's busiest derivatives exchanges. Financial tales are etched on its architecture.

Although Chicago's working shoulders are most often connected to hog butchery, the derivatives story is just as defining for the city. None of these stories is more important than that of a building that does not carry a LaSalle Street address: the 1930 building at 141 W. Jackson Boulevard. From the layout of their trading floors to the decorative details of the elevators and the façades, the designs of the Chicago Board of Trade buildings reveal a fundamental transition from a market based in the abstractions of the midwestern grain trade to the markets for financial instruments based on abstractions of government debt.

But the importance of architecture goes beyond this modern story. The buildings, trading pits, and technologies of the CBOT shape the ways that dealers conduct their business within the confines of the Board,[26] The CBOT buildings create markets by arranging bodies and communications in space and guide their movements through channels of concrete, metal and stone. They assemble the information technologies, the speculators, and the organization in one space, define the actions that *can* happen there and the actions that *must* happen there to produce successful deals in futures contracts.[27]

: : :

The 1930 Board of Trade Building shows how new configurations of place, space, and time organize the mechanics and symbolism of trade. The buildings, trading floors, and dealing pits themselves were the outcome of a complicated process of growth, quarreling, and the exercise of power. The finished building renders the designers' vision of the market durable, fixed in stone and cable; it cements the role of the CBOT in Chicago; and it imposes routines on the conduct of traders as they make the trading pits churn, linking the physical form of the building to the proper operation of the market. The 1930 building held two significant promises: it would make the market more efficient by allowing more business into its halls, arranging the trading floor according to market principles, and channeling the arrival and dissemination of information. It would also anchor the board's place in the city of Chicago as a key financial institution inseparable from its host. There were conflicting ideas about how to move forward with the ten-million-dollar project. The stakes were high.

The building completed in 1930 was the third building dedicated to the exchange. The first space specifically designed for the CBOT was the Chamber of Commerce, which was destroyed in the Great Chicago Fire of 1871. The exchange rebuilt the structure, but it soon outgrew the space, and in 1885 the CBOT built its first structure at Jackson and LaSalle.

Height was a key design element for each of the buildings that have stood



1.1 Completed in 1885, this CBOT building was the first to stand at the corner of Jackson and LaSalle. Courtesy of Special Collections Department, University Library, University of Illinois at Chicago.

on this site. At ten stories, the 1885 building cut an impressive figure on the Chicago landscape. It was the tallest building in the city and the first commercial structure to have electric lighting. A tower jutted from the building, an image of Chicago's financial power that linked the national and international aspirations of the city with the commercial prowess of the CBOT. As the designers must have intended, the structure's luminous bulk was a defining feature of Chicago. It awed Frank Norris, whose prose practically

trembles as he describes the structure in *The Pit*, "The lighted office buildings, the murk of rain, the haze of light in the heavens, and raised against it the pile of The Board of Trade Building, black, grave, monolithic, crouching on its foundations, like a monstrous sphinx with blind eyes, silent, grave—crouching there without a sound, without sign of life under the night and drifting veil of rain."[28] Norris notices the Board of Trade Building not simply for its financial power (he describes the building after hours) but for its monumental physical presence in the "great gray city" of Chicago.[29] The building embodied Chicago's project of urban greatness through private commercial strength.[30]

Its great mass was divided into three elaborately adorned parts, each crowned with a pyramidal tower. An enormous clock hung under the eaves of the most prominent gable, lending a modern touch, and reminding Chicagoans of the connection between time and money. Seventeen elegant stained-glass windows offset its unwieldy design. The most significant of these connected the business of the board with forces beyond the control of even the most masterful traders: the morning sun shining into the trading room illuminated the allegorical figures of Agriculture, Commerce, Fortune, and Order. The windows were designed by John La Farge, a nineteenth artist, critic, and designer, and fabricated by Tiffany in New York. La Farge's works in glass and paint still hang in Harvard Memorial Hall, Trinity Church in Boston, and the Metropolitan Museum of Art in New York. Such art aimed to express the CBOT's cultural prominence through commerce. The Sunday *Chicago Tribune* (February 4, 1929) reported that the mayor and a committee of federal, state, and city officials who presided at the opening of the building in 1885 were suitably captivated.

Several objects and documents were deposited in the polished cornerstone as the foundation was laid in 1882. The tokens fixed the time and place of the building's creation and memorialized the citizen merchants of the city who built it. They included a list of members of the CBOT, a city directory for 1882, a copy of the *Chicago Inter Ocean* for December 31, 1881, containing a statement of the trade and commerce of Chicago, and a set of United States postage stamps. The building, however, ultimately fell victim to expanding business. In the early 1920s the CBOT's leaders began making plans to erect a skyscraper on the site.

The Art Deco tower that replaced the initial building rises forty-four stories above the street. The lines of the building draw the eye straight up. Several stories up, a stylized stone eagle guards an enormous clock that is buttressed by two figures. On the left, a stone image of a hooded ancient clutching a sheaf of wheat. Three stories tall, the icon represents the farmers of the Fertile Crescent, who first cultivated grain. On the right, a figure



1.2 The CBOT's Art Deco tower, completed in 1930 and crowned with a statue of Ceres, the Roman goddess of grain, remains the exchange's signature building and a Chicago landmark. Courtesy of the Board of Trade of the City of Chicago.

of a Native American, adorned with stylized feathers, grips stalks of corn. A pyramid crowns the top of the building, supporting a thirty-one-foot cast aluminum statue of Ceres, the Roman goddess of grain and the harvest, who guards the business interests of the men below. Every morning, traders and the clerks, office staff, and managers who support them file through heavy brass doors adorned with images of agriculture. This skyscraper, designed by Holabird and Root, the first of two buildings that now house the Chicago Board of Trade, was finished in 1930 and dominates LaSalle Street with an imposing grace. Its vertical limestone ribs and its stylized, machine-worked details, evoke an era of commercial brilliance and individual flash.

But the finished building hides as much as it reveals. The New Building

Committee had considered and rejected several other designs for the building that also satisfied city setback regulations and provided ample office space for the CBOT to rent.[31] The competition was fierce. Architects from Chicago and New York lobbied for the contract. One eager architect wrote to the New Building Committee to support his plan with flattering arguments for its symbolism and future profitability:

> I believe this proposition merits serious consideration because, first—a building of this type will be a monument to the City of Chicago as well as the home of one of the basic industries of the country; second—the project can be easily financed because of the substantial value of your . . . holdings; third—because if properly handled the project will show a substantial return on the money invested.[32]

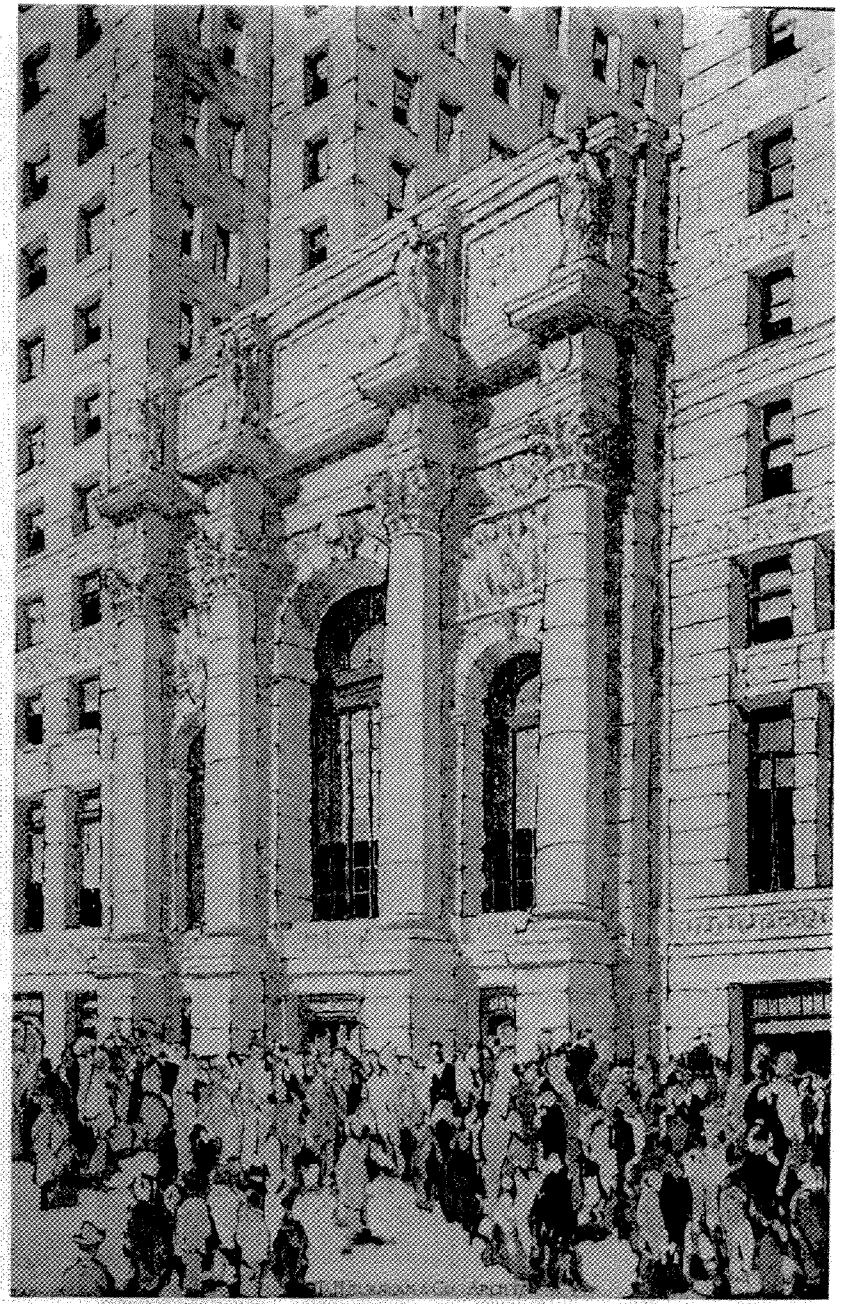
Of course, every competing architect might have made the same claims. The differences were in the drawings.

The offices of famed Chicago architect Daniel Burnham submitted drawings of a building adorned with neoclassical ornaments. Their design frames the building's main entrance with an arcade of Corinthian columns, each topped with a classical figure in full round and elaborated with Latin commentary. Enormous windows garlanded in stone swags face LaSalle Street, overwhelming the doorways, which appear miniscule in comparison. In the drawings, the street bustles with sketchy figures of pedestrians, but the imposing neoclassical details seem to shut them out of the edifice. It is a clumsy design that confounds the civic meaning that Burnham had achieved in designs for the Chicago World's Fair. The cornices and pediments on the CBOT building strike the wrong balance between civic purpose and finance.

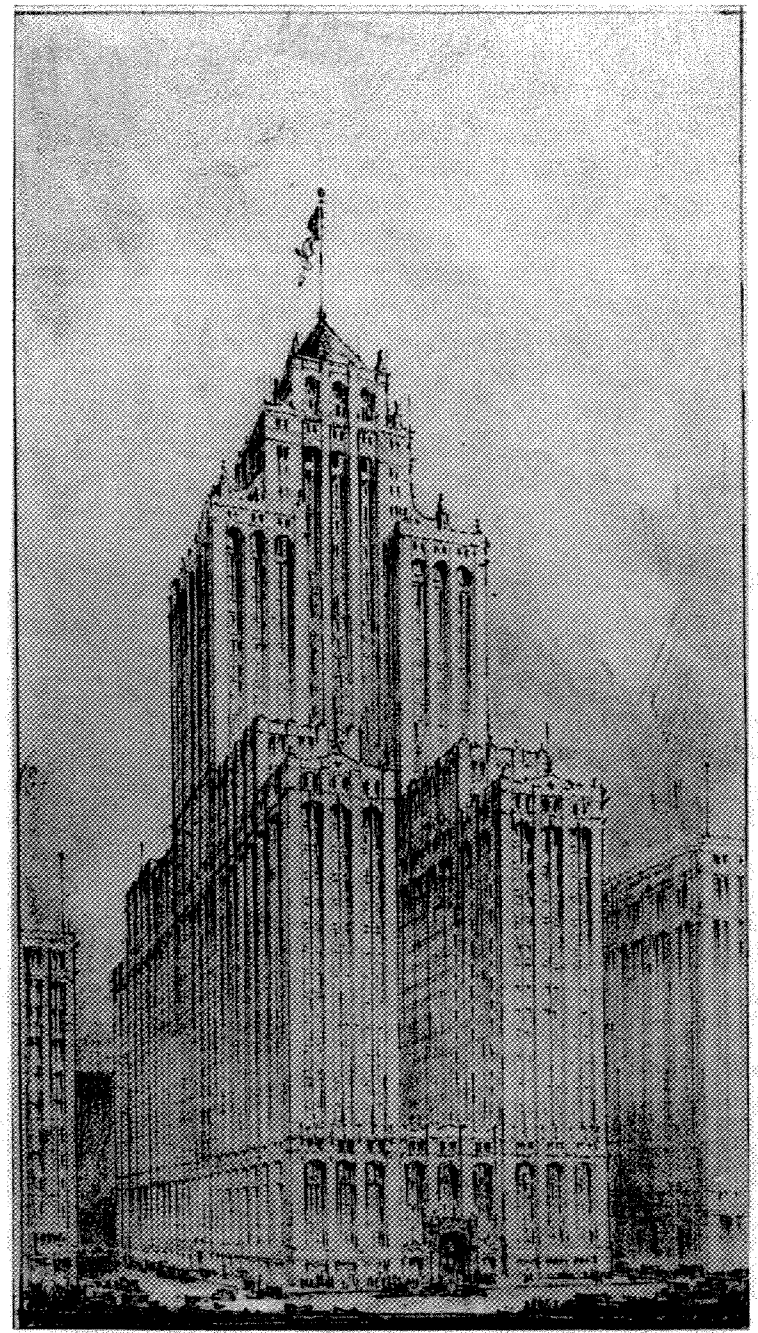
Alfred Alschuler, on the other hand, favored a neo-Gothic design complete with ornamental buttresses, reminiscent of the recently constructed Tribune Tower just a few blocks away. In his drawings, a flag tops the skyscraper's central spire. In a medieval city, the flag would be a signpost; it would make urban space legible by marking a palace or center of commerce. The giant flag, however, is superfluous. By its sheer size, the forty-story building, which would have been easily visible for miles, would need no other adornment to signal its place in Chicago's landscape.

More Modern

Holabird and Root's modern skyscraper won out.[33] Their design brought together the high style of capitalism with the board's modern project—profit through distilling and abstracting nature into circulating commodities. Rather



1.3 The Burnham firm's submission for the architectural competition buries the modern mission of the CBOT behind enormous neoclassical columns and statuary. Courtesy of Special Collections Department, University Library, University of Illinois at Chicago.



1.4 Alfred Alschuler's skyscraper design appealed to the CBOT's taste for history, adding medieval details to this cathedral of capitalism. Courtesy of Special Collections Department, University Library, University of Illinois at Chicago.

than harking back to the Middle Ages or classical times in its symbolism, the building's direct and forceful lines swept into the future. Like the financial work of the CBOT, the building was dressed in the symbols of an ongoing project—making trade faster, more efficient, and more far-reaching, ultimately supplanting nature with a man-made system of trade.[34]

The story is in the details. As the 1885 building came down, the icons of Agriculture, Commerce, Fortune, and Order gave way to machine-tooled nickel decorations that acknowledged the centrality of technology in the contemporary practice of agriculture. The Goddess of Grain and the ancestors of cultivation may seem pure emblems of an agrarian past and present, but the new building's adornments suggested the relationship between the CBOT, modern technologies, and the future.

Art Deco made its official debut at the 1925 Paris exhibition. In 1930, such architecture was cutting-edge design for the "cathedrals of capitalism" like the CBOT building and the Chrysler Building in New York. Unlike the avant-garde architects of the time, who bared the structure of their buildings in the spare aesthetic of the International Style, Art Deco designers flaunted the power of money with the glamour of variegated marble and extravagant lighting systems that made the interior glow. The sumptuous materials and copious, lively decorations of Art Deco invoke a modernism that explicitly links design to the worship of capital. More is more modern at the CBOT.

The details of the building highlight the board's particular technique of capital accumulation. Abstract images of plants and flowers swirl with a machine-precision finish. These decorations are geometric and angular, accentuating their stylized, man-made quality. The images express a distance from the organic world even as nature is exploited, much as do futures contracts themselves. The details bring this denaturalization to life, showing off the transportation technologies that brought grain to market and people across oceans to engage in commerce. The building's lower floors are adorned with granite inlays of stylized zeppelins and ocean liners. The paneled gates that guard the entrance to the 1930s trading floor show intricate scenes of the planting, harvesting, threshing, and milling of grain, and at the end of the cycle are depictions of the transportation technologies that bring the wheat, corn, and other grains to market. These images reveal the importance of machines to agriculture. In the planting panel, two men and a woman sow a field while smoke curls out of two tall smoke stacks behind them. In the second panel, a threshing machine spews out wheat as the two human harvesters seem to be retreating from its presence. The ship's panel contains no representations of either grain or human presence; rather, a silo's contents are unloaded into the cargo hold of a ship via a chute without the intervention of human hands.

The design of the Board of Trade Building tells us that human abstrac-

tions, like futures contracts, and technology now dominate nature. No longer is the trade in grains symbolically linked to the gods of Agriculture, Commerce, Fortune, and Order. Expertise and technological equipment are the essential conduits of commerce.

Gathering Constituencies

Even though the New Building Committee thought that the Holabird and Root design clearly drew together the board's missions of modern commerce and urban grandeur most effectively, they had to gain the CBOT membership's approval before they could hire the architects. Henry A. Rumsey, chair of the committee, set about assembling a constituency to support their decision. As with every major plan at the CBOT, the members had the opportunity to vote. Whether or not each member preferred the Art Deco splendor of Holabird and Root's building was less important than the way the vote brought together the collective opinion of the members. After the vote took place, the varied opinions of the membership were solidified into a single choice that sealed the shape of the building and reinforced the network of traders. The vote gave the members a collective investment in the design.

In addition to representing the consolidated and ordered opinions of traders, the building was also a site for bringing together and arranging alliances between organizations, and individuals, and for making concrete their commitments to futures markets. The destruction of the 1885 building eradicated an older set of alliances and opened an opportunity to reconfigure the network of actors that made up the CBOT and reconstruct markets. It was an opportunity to reinforce some connections and sever others.[35] Henry Rumsey selected the associations and interpretations to be established and strengthened.[36]

Rumsey began a chain of communications with members in Chicago and in other key cities. His far-flung supporters whipped up the vote, persuading other off-site members to send in ballots. Rumsey, looking to enlist the influential Dennis & Co. of Baltimore, wrote to emphasize the symbolic role that the building could play in the Maryland company's business. "If we have the wonderful building which is projected you will certainly be proud to visit us some day and take your friends into the new building or put its picture on your letter-head."[37] Others didn't need convincing. E. P. Peck of the Omaha Grain Exchange simply sent congratulations, as did H. F. Shepherdson of the Minneapolis Grain Exchange. Rumsey replied to Peck with gratitude: "Handsome is as handsome does. May I say once more that we have had a worthy representative, mentally, physically, financially and spiritually in your good self in recommending the erection of the finest structure

grain business knows or Chicago has ever had. You know the Committee thanks you for this splendid work and personally I am more appreciative that [*sic*] I can tell you."[38]

Grain traders and bankers outside Chicago used their votes to link themselves and their businesses to the future of the CBOT and its building. Rumsey and the board's leadership clearly wanted to make the building the symbol of the organization's national commercial strength, worthy of support and investment.

What Is in an Address?

Planning the new building had helped Rumsey draw together the board's constituencies of traders outside Chicago, as would at least two other moments in the building's early life. The opening of the new building provided an opportunity to establish and sustain ties with other businessmen and their organizations. The CBOT was clever about buttressing its trade and influence through alliances. To announce its opening, the CBOT sent clay models of the new building to officers at financial, transportation, and technology corporations, including the president of the Chase National Bank in New York, the president of American Steel Foundries in Chicago, the superintendent of the Little Rock Cotton Exchange, the president of the Omaha Grain Exchange, and the President of the Erie Railroad in New York.

The board also used the majesty of the new building to claim its place among the nation's most important institutions. Laying the cornerstone provided an opportunity to bring together representatives of organizations that worked with the board and institutions whose financial stature the board matched or to which it aspired. The ceremony included the president of the New York Stock Exchange, the president of the Chicago Stock Exchange, the governor of Illinois, the mayor of Chicago, the secretary of the Department of Agriculture, and the governor of the Federal Reserve Bank. The ceremony allowed each of these institutions to show its support.

Some connections were made more material by sharing space with the CBOT. From the beginning, the Chicago Stock Exchange was housed within the CBOT's walls. In addition to creating a place for its own financial operations, the board's new building provided vast rentable space. The CBOT did its best to fill the offices with desirable tenants, emphasizing in its advertisements its physical and symbolic location in the heart of Chicago and the part it played in America's growing financial prowess. The promotional booklet that the CBOT distributed to potential tenants juxtaposed a photograph of LaSalle Street ending in the imposing, modern CBOT tower with a drawing of Wall Street, obliquely presented and ending in Trin-

ity Church. The images are accompanied by the caption, "At the head of LaSalle Street. The Board of Trade Building dominates the financial center of the middle west." The juxtaposition makes clear its claim for inclusion in the company of the great financial institutions of America, if not the world.

The CBOT building committee banked on such a reputation to draw tenants, confident in the claim of their architects that, "In spite of the rather large amount of office space on the market at this time, we consider that the enormous prestige of the Board of Trade coupled with its unique advantages of location in the heart of the financial district justify the erection of a building of maximum capacity."[39] Renting space in the CBOT building, they thought, would create opportunities for companies to maintain close ties, both symbolic and real, with the eminent institution.

Apparently, many organizations agreed and set up offices in the building. Listed on the 1931 roster of tenants are newspaper companies such as *Barron's Financial Weekly* and the *Wall Street Journal*; transportation companies, including the Canadian Pacific railway and the Duluth South Shore and Atlantic Railway; and telecommunications companies, including Western Union and R.C.A. Communications Radiograms; and industrial and agricultural powerhouses like Armour and Company, and Cargill Grain Company. Offices in the Board of Trade Building not only provided ready access to the CBOT markets, but also allowed tenants to be part of the expanding influence of Chicago's financial world.

The city itself had an interest in connecting to its workings. The Chicago Transit Department sought office space in the new building, and the Chairman of the CBOT Transportation Committee worked to secure it. Going over the head of the New Building Committee, he wrote directly to the board of directors to ensure that Rumsey would provide substantial space for the Chicago Transit Department. The chairman argued that it had always had headquarters in CBOT and that the Transit Department represented "all of the Chicago railroads in transit shipment matters. It maintains the records pertaining to the in- and outbound shipments of grain, seeds and the products of our mills and factories and certifies the freight rates. Our shippers are necessarily in constant contact with the Transit Department and having it located in our building is a great convenience to them." He reiterated the connection between the CBOT and the city's services and infrastructure, which the organization had worked so hard to build in the nineteenth century.

The CBOT also emphasized the advanced technologies incorporated in its new building in order to attract tenants. Elevators and telephones connected the trading floor with office workers both inside and outside the building, short-circuiting the distances between them. As the CBOT advertised, their Otis elevators were "[t]he finest vertical transportation in the world." In addition to speeding workers to their desks at the literal heights of commerce, the elevators accelerated communications, helping clerks to whisk messages between the board room and the offices of trading companies. Elevators had an even more powerful counterpart in the telephone. Skyscrapers are only possible because elevators allow rapid and effortless movement between the upper floors and the street and to the upper floors of other buildings.[40] But with the telephone, distance and height were no impediment to communication.

In addition to forging business connections, establishing communication with the market, and distributing market information, the CBOT building was a place for traders to congregate as men. In between rounds of dealing, they could visit the tailor to keep up with the latest fashions or stop in at the barber shop to get a haircut. A cigar stand and a soda fountain area were also included in the original building plans. Such amenities offered additional opportunities for the board to exercise its connections with city government. In typical Chicago fashion, Christopher Paschen, Chicago Commissioner of Buildings, wrote to Rumsey asking for assistance in securing the cigar stand and fountain space for a friend.[41]

The connections and services available to the new tenants were crucial. But symbols of the building's prominence were not yet set in stone. Even though the CBOT building was located in the heart of the financial district, its mailing address was not yet firm. Such a common detail as a street address was a subject of keen discussion between representatives of the board and the tenants, all of whom sought to stabilize the building's symbolic potential. Writing to another official at the CBOT in 1930, H. Rumsey recounted a conversation with a representative of Quaker Oats over the proper address of the building.

> Dear Mr. Clutton:
>
> In talking with Mr. Murray of Quaker Oats after I had suggested to him that they use as their address Board of Trade Building, LaSalle at Jackson, he intimated that he thought it would be a splendid feature on the letterhead of everyone connected with the Board of Trade or in the Board of Trade Building.
>
> This would tie the Board of Trade Building up with LaSalle Street, the world's greatest financial highway west of Wall and a street having something that Wall Street has not namely: The Board of Trade Building.[42]

All official CBOT communications were headed with a graphic of the building. Eventually, a phrase was added to the logo—"Serving the Nation since 1848." Rumsey and his counterpart at Quaker Oats were both con-

scious of the commercial and urban connections that an address crystallized and used that to draw a specific connection between the organization of the CBOT, its city, street, and building. The CBOT tenants piggybacked on this connection and used the board building to claim a place of commercial and cultural significance that could rival New York's.

The Trading Floor: Element of Design

However lucrative rental income was, the board's main mission was the production of markets. The skyscraper was constructed around the hangarlike trading room that defined the building. But the design of the trading floor was a source of conflict.

From the design of the trading pits to the placement of the telephones and the material of floorboards, the architects, board officials, and members debated the proper arrangements with intensity. The construction and layout of the trading floor guide the daily paths of the traders and configure whom they can see and hear, their access to information, and what communications technologies they can use instantly and which they must stretch to procure. These spatial arrangements mean money, and the CBOT's members had fiery opinions about how it should work. The trading floor that was finally built was the product of competing interests and the powerful figures that mediated them. Rumsey, the board's negotiator and decision maker, swapped letters and conducted innumerable conversations with the architects, builders, and members of the board over the years during which the building was conceived, planned, and constructed.[43] His correspondence shows how he mediated between traders, customers, architects, and concerned members of the city bureaucracy, who all had an interest in the shape of the building. The CBOT that now stands is an artifact of Rumsey's skillful handling of these exchanges. Once it was erected, it consolidated a network of individuals, commercial interests, and urban planning concerns in its stone form.

Rumsey's committee recommended plans to the chair of the board of directors, who had the final say. But there was little disagreement between the board of directors and its committee. Rumsey was the guiding hand behind the building, synthesizing interests and making the final decisions about what would be built and how. He made sure not only that the design allowed for compromise between interests, but that assembling physical plans was an opportunity for experiment. During the design process, he could bring the marketplace more closely in line with the ideals of commerce, shaping the pits to reflect market principles of individual competition and smooth circulation, and making them literally durable.

For Rumsey and the building's designers, the trading floor, or the board room, as it was called, was the central concern. In the board room, traders produced futures markets, but producing the board room took some feats of engineering. First, it required a vast open space at the building's core. Six huge trusses, each weighing 227 tons, held up the skyscraper over the enormous hall, eliminating the need for support columns that would block the movement and view of the traders. The wide-open arena allowed traders to circulate easily between pits, the telegraph and telephone operators, their offices, and the smoking room where traders met clients. This space, at 165 feet long by 130 feet wide, with a 60-foot ceiling, gave each trader equal access to the markets and to the information he needed to trade. The design applied the market principles of order and equal access to information.

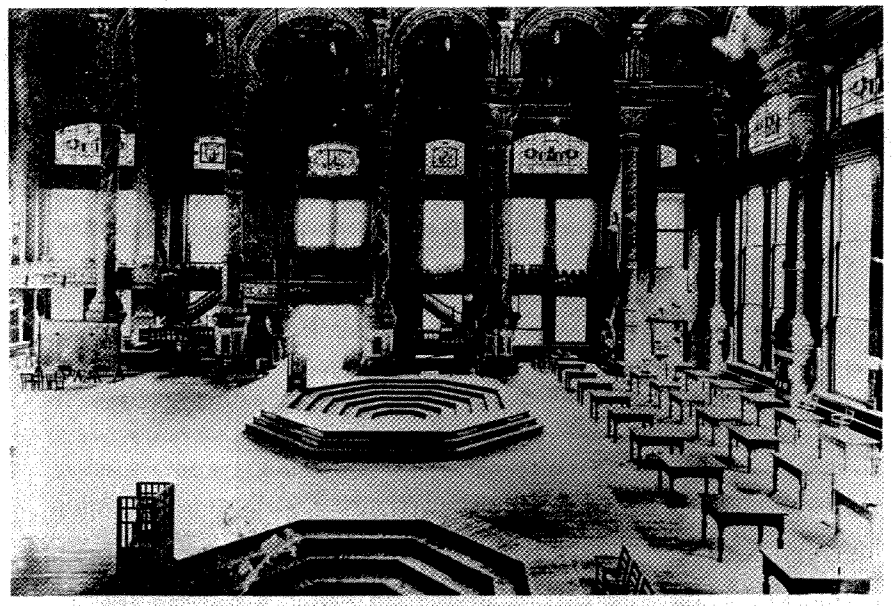
The board room of the older building had strayed from the ideal and had become chaotic as the CBOT grew. In Holabird and Root's 1927 memorandum on the older board room, the architects observe that "[i]t may be of some interest to note the changes that have come about in the board room in the last eight or ten years. First, the board room looks more dingy, more cluttered up and less orderly than it did some time ago. This is due to the demand for increased facilities." A cotton pit, a trading post for oats, several telephone stations, and a coat room for telegraph operators crowded the floor. More and more Western Union operators packed the desk surrounding their office. Companies overcrowded their telegraph stations with illicit operators. Swarms of clerks also congregated by the telephones, creating "a very unsightly condition" as the messengers elbowed their way to the phone lines.[44] Quotation boards, where the changing prices of commodities were recorded, were raised off the ground to make more room and operated from a balcony. The News Bureau was shunted into the smoking room as the markets they reported on ballooned.

The architects, builders, and New Building Committee debated how to turn this haphazard arrangement into an ordered whole. Creating a rationalized board room meant both providing good arrangements for the traders, giving each equal access to the market and its sources of information, as well as providing efficient conduits for prices between the board room's markets and the outside world. Each demanded close attention to the construction of physical space. Letters to and from Rumsey detailed disagreements over the kinds of communications technologies to include, where to place them, and how to set up the pits to optimize their operation. Luckily for the New Building Committee, an experiment in marketplace design was already under way. Before the builders began to wreck the 1885 building, the board reestablished itself in a temporary trading space not far from the new construction site. New arrangements and materials could be tested there. The

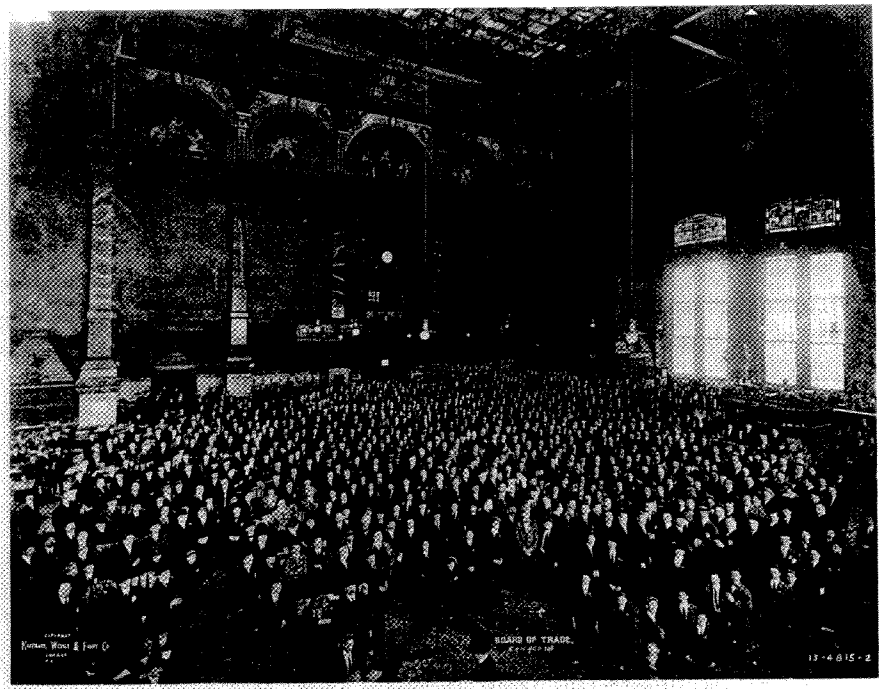
experiment showed that traders' concerns focused on their access to other traders' eyes and voices.

In the board room, hand signals and shouts conveyed prices and dealing offers, placing the body at the center of traders' dealing strategies. Floor trading was taxing physical labor. To take full advantage of the markets, a trader stood for hours a day among throngs of competitors jostling each other for advantage. For the interim trading floor to work, it had to provide a certain level of physical comfort for the traders and allow them to hear and see the sounds and gestures of their trading partners and the market as a whole. The acoustics of the hall were crucial to the operation of the market and to profits. Rumsey conveyed this to Holabird and Root in a request to use a flooring material for the permanent trading room that would absorb excess sound and be "easy on the feet." The architects dismissed wood, rubber tile, cork, and linoleum as options. The softer materials would quickly give way under the floor traffic and would, "in a short time present a dilapidated appearance."[45]

Unhappy with the architects' aesthetic intransigence, the board turned to a scientist for help. Rumsey hired Professor F. R. Watson, a physicist at University of Illinois, to analyze the acoustics on the temporary trading floor. There was apparently much room for improvement. A letter to John Hola-



1.5 Before the day's activity began, the trading floor of the 1885 building appears calm and orderly. Telephone stations and proliferating trading pits do not clutter the space yet. Courtesy of the Board of Trade of the City of Chicago.



1.6 Traders at the CBOT pose for a group portrait on the crowded trading floor. Courtesy of the Board of Trade of the City of Chicago.

bird from the New Building Committee conveyed the sentiments of the traders and communications workers from the experimental trading floor. Traders in the corn pit were especially piqued:

> Conditions are terrible, far worse than it was at the old Board; can't make yourself heard across the pit; in the old Board could stand on edge of pit with back turned and pick out and distinguish voices, impossible now; majority of traders are experiencing throat trouble since they began trading here; go home at night actually tired from the exhaustion of shouting in order to be heard and from the continual uproar and noise in the trading hall; in the old building were able to distinguish outstanding voices of men in the wheat pit or whever [*sic*] they might be, can't seem to now; . . . one could pick pit voices readily and locate their origin, but that is difficult now.[46]

Clearly the experimental space had failed to improve the market. The cacophony even threatened the accuracy of the price information coming out of the pits. A Mr. Chronister, who managed the CBOT's Quotations De-

partment, reported that the new space was "500% worse than the old building. The reporters have difficulty in getting quotations correctly and the traders themselves are unable to hear properly across the pit."[47]

If the quotations were incorrect, false price information would flow from the trading floor by way of the telephones, telegraphs, and pneumatic tubes that connected locations as near as offices in the building and as far away as England and Argentina. Demand for information from the CBOT was growing rapidly. For the new building, the architects expanded the electric wiring capacity of the floor and opened larger channels for telegraph cables to run from the board room to the offices of the Cleveland Telegraph Company, the Western Union office, and the postal telegraph stations. Although these companies provided the major public access to CBOT quotations, many firms maintained their own dedicated lines to the trading floor.

How to arrange the informational conduits of the trading floor was a hot button issue. Rumsey and the New Building Committee had to mediate arguments between traders, telegraph companies, and the architects over where the telegraph and telephone stations were to be located on the floor, and how to allot them to Western Union and other telegraph companies. Noting that "[a]t present there is more demand for telegraph facilities than ever before," the Holabird and Root plan provided for sixteen telephone booths in sight of the quotation board. Traders suggested configurations for the telegraphs and telephones. Arthur Lindley of Clement, Curtis & Co. suggested that the CBOT imitate the New York Curb Market and install stadium-style telephone banks to ensure that "every telephone man has a very clear view of the whole floor." Rumsey filed his letter and photos with "all the others of like nature."[48]

Holabird and Root were also concerned to make market information available to all participants. They noted that the haphazard arrangements that had grown up on the older trading floor had obscured the quotation boards. A fair market where skill and speed would determine profit required equal access to information. The firm set out to construct a board room that would give no inherent advantage to place. However, not all participants were willing to give up their privileges. Some member firms tried to manipulate access to telephones, aiming to gain advantage in the market by influencing the arrangement of space and technology on the trading floor. They pressured the board of directors to secure extra telephone lines that would support their own business. The president pressured Rumsey to accommodate their requests.

Rumsey objected to this departure from the ideals of an apolitical market developed under the direction of experts. He replied to the president's attempt to influence his plans with ire:

> Your Committee on New Building has been advised of the wishes of your Honorable Board . . . relative to . . . the installation of equipment for fourteen private telephones adjacent to the Wheat pit to the South.
>
> We must respectfully, but nevertheless earnestly, protest against such a plan. Two years of study and thought were dedicated to the main floor arrangement, for handling the business of the entire active membership rather than the few. The best architectural and engineering talent have counseled us in determining the best possible arrangement for our floor facilities, including private telephones. Two Boards of Directors have reviewed and approved of the lay-out, sponsored by your Building Committee.[49]

Some raised aesthetic objections to the new telephones. "It is the unanimous opinion that it would be a serious mistake to mark the superb Exchange Hall floor with this limited number of telephones," the building committee wrote. But mainly the committee objected on the grounds of equal access to information. Some firms had begun "flashing" their orders to the pit from the telephone lines, relying on the rapid hand signals that would become an integral and identifying part of financial pits. The New Building Committee saw this as introducing informational disorder. Flashing blurred the boundary between the pit and the outside market. The hand signals made customers' orders visible to attentive traders who could see them before they reached the open market. Rather than acting only with information available within the market borders of the pit, these traders could act with information from outside the boundaries of the physical market. Adding new telephones would therefore not only favor a select group of trading houses but also allow the market to spill over out of the trading pit. Rumsey's letter continued:

> It appears that the preference for these telephones is confined entirely to certain houses flashing their orders to the pit, and . . . this practice has been frowned upon in construction plans due to its possibility for special preference. Customer orders should have privacy, and it is a notorious fact that alert pit traders soon become aware of the signals of different houses and can thus define the character of orders before they actually reach the pit.
>
> Therefore, . . . there is no justification for making any variation in the plans for confining the private telephone privileges to the East and West wall of the building, as this plan avoids highly discriminatory positions, while benefits, if any from change, accrue to comparatively few firms.[50]

The New Building Committee stood by its responsibility to define the kind of information available. They had assembled the expert opinions that

showed them how to engineer information and shape the space of the trading floor. The design process they favored reflected the process of the market itself. They worked with the idea that conflict produced the truest and best design, just as it allowed the market to "discover" a price.

The 1930 building was the symbol of the board's place in the city and nation. The monumental design of the board room and the care that went into its construction asserted its central importance to the organization and the city. Rumsey and his committee had worked to create a board room that would draw traders, firms, and information into the pit. The design of the floor anchored the market inside the pit and created lines of communication that stretched away from it.

When the new building opened, the connection between Chicago and futures markets was undeniable. The Chicago newspapers crowed, declaring its central place in the city. The *Chicago Daily News* ran a photograph with the caption, "Impressive when viewed from any angle, the Board of Trade Building stands like a tall sentinel among the older structures that flank it on the east and west. On clear days it is visible to motorists starting northward from Hyde Park on the outer drive." The *Chicago Daily Times* for November 13, 1931, devoted a spread to the building with the following headline: "NEW BOARD OF TRADE BUILDING IN FRONT RANK OF CHICAGO'S POINTS OF INTEREST."

Smaller headlines defined other sections.

> THE SENTRY—LaSalle St., financial center of the west, stretches before this handsome temple of trade. The architectural marvel rises 44 stories into the sky; it value—land and building—is $22,000,000. Limestone is the predominant material used in its construction.
>
> BEAUTY GALORE—Inside and out, the Board of Trade Building challenges its fellows the world over.[51]

The Board of Trade Chapter of the American Legion offered yet another suggestion for making the building a spatial signpost for Chicago. John Fisher, the post's commander, wrote to recommend a beacon light for the top of the building, which would serve as a guide-light for the U.S. Air Mail pilots and would, "help to bring the name of the Chicago Board of Trade into greater prominence, not only among the people of Chicago, but of the United States as well." Finally, it would be the only beacon light west of New York atop a major building.[52] Although it is unclear whether a light was ever installed, it is certain that the American Legion officers had the right idea. The CBOT building was a beacon for the City of Chicago and its financial nexus for years to come.

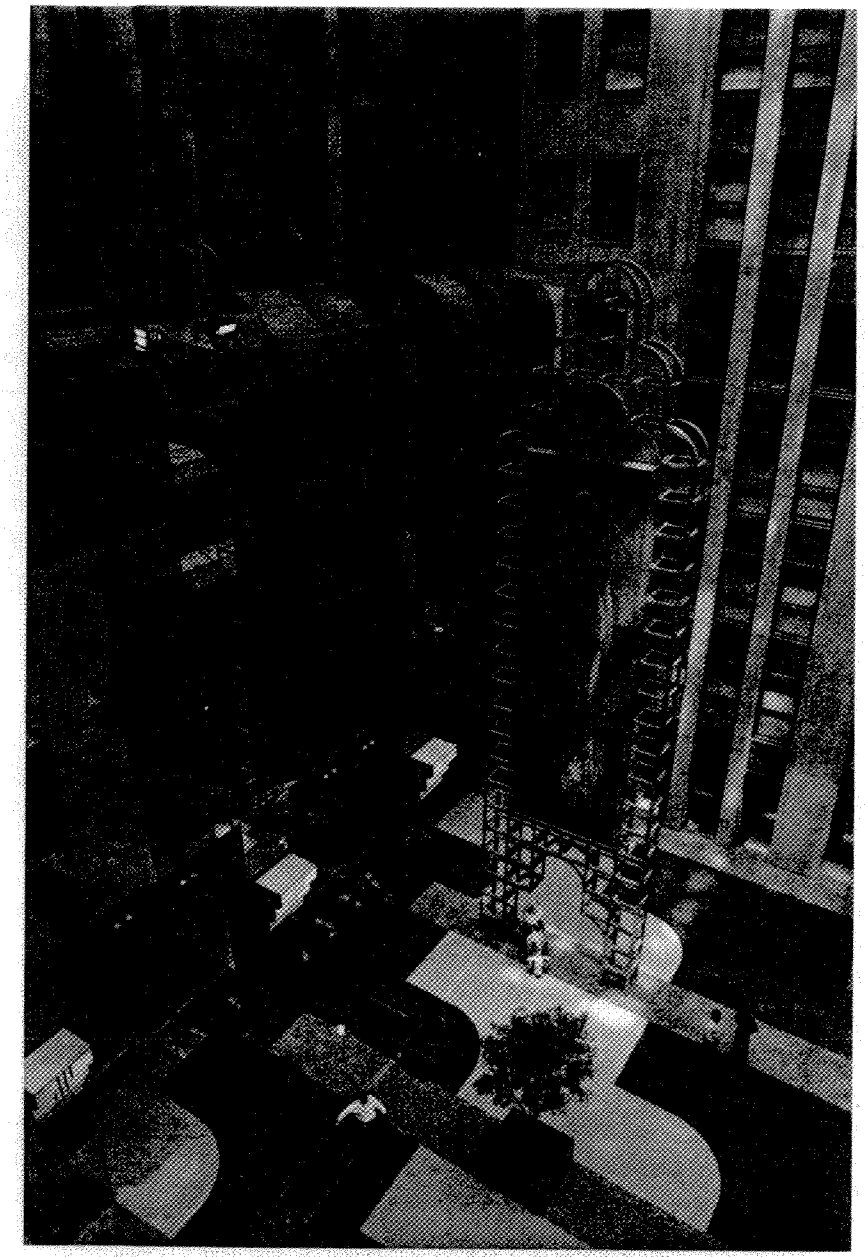
Architecture of Circulation

The story of the CBOT and architecture does not end in its Art Deco halls. The differences between the 1885 and 1930 buildings arose from a renegotiation of the material form of the market; the expansion of the 1980s provided another opportunity for the CBOT to reconsider the form and symbolism of its marketplace. Some fifty years after the construction of the Art Deco tower, the CBOT raised more questions about how best to express its markets and mission through its architecture, making plans to redesign its market space.

The room for expansion allowed for in the 1930 design could not contain the explosion of trade that followed the invention and development of Treasury futures markets in the 1970s and 1980s. By the late 1970s the expanding Board of Trade was stretching its machine-polished seams and began planning an addition and an improved trading floor that would be constructed behind the 1930s building. They commissioned Helmut Jahn, of the Chicago firm Murphy/Jahn, to design it. The differences between the Art Deco building and the new glass and steel addition reflected the evolution of the CBOT from its origin in industrial technologies and agricultural trade to an exchange built on the profitability of financial futures contracts—abstractions upon the abstraction of the U.S. economy.

The CBOT's place in the post-1970s global financial markets is represented by its material presence on the streets of Chicago. The new architecture embodied the emerging identity of the board, crystallized its alliances, and created a futures market outfitted with the latest technologies and guided by new principles of market action. These had changed radically since the wheat market dominated the trading floor. The gleaming new building, with its airy offices and sunlit interior, was appropriate for an organization centrally engaged in global financial networks. Illuminated from the inside, the building seems to float. Even though trading takes place in the hangarlike dealing room, the building's transparency expresses its connections to the markets beyond its halls.[53] No longer is the Board of Trade a financial space contained within Indiana stone, declaring its connections to agriculture and proclaiming its seemingly immovable place in Chicago. The new building's open environment replaces limestone solidity with an aesthetic appropriate to global network connections; its spaces bear little trace of Chicago's specificity.[54]

Instead, the 1980s building establishes a space of circulation that creates an image of swift, unobstructed flows, the market ideal for digital dealing, the newest market technology. The neon lighting and the boxy spaces of the 1980s addition retain little of the careful craft and local detail that established



1.7 The modern glass extension and airy atrium mix inside and outside, symbolizing the unobstructed flow of abstract financial futures contracts. The Art Deco portrait of Ceres that once graced the 1930 trading floor and reminded traders that their commerce was based in grain is now framed for nostalgic effect. Photo by Bob Davis.

a sense of urban solidity and regional significance in the 1930 building. Attachment to place can tie down the economic organization and individual; in financial dealing this threatens to draw attention from the space of trade and into the realm of civic obligations such as family attachments and city life, all of which threaten to impinge on financial judgments. Instead of dedication to place, the architecture of the Jahn building exudes abstraction and distilled commitment only to the circulation of colorless capital. The Board of Trade once reorganized the space of the city in order to build a market. Jahn's abstract structure reveals how organizations like the CBOT now understand the market as detached from place, a "disembedding" aligned with market ideals of unobstructed flow.[55]

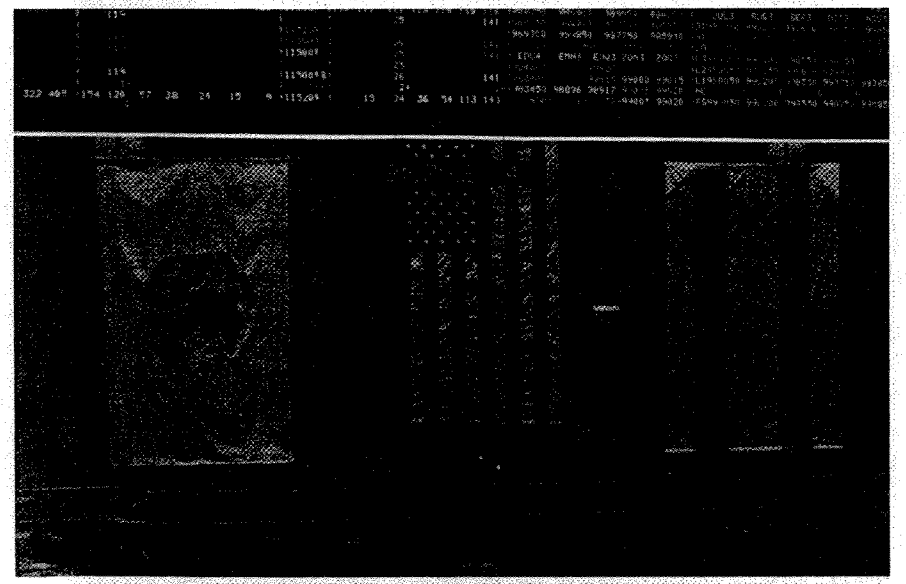
Yet at the core of the building is a contradiction to the architecture of circulation. After fifteen years, the CBOT added still another trading floor, an amalgam of digital information technologies and trading pits at the center of the exchange. A heavily guarded turnstile gives access to the fourth floor—a space with two separate sections: the agricultural room, where traders still deal in contracts for wheat, corn, and soybeans, and the now more powerful financial dealing room. From the grain room, a narrow passage opens into the enormous new space where financial contracts are traded. Pat Arbor, chairman of the Board of Trade in 1997, when he built this state of the art, $182-million trading facility, made it clear that the board's commitment to pit trading was unshakable. But the new trading floor already seemed trapped between its commitment to place and its mission of creating endless circulation.

Blair Kamin, the architecture critic for the *Chicago Tribune*, emphasized the connection between the city's master modernist architect and the new trading space designed by his successors, Fujikawa, Johnson, and Associates. "Anyone who ventures up to the trading arena itself cannot help but feel Mies's influence. The master almost surely would have been pleased by the straightforward power of the room's big, column-free space, by its flexibility to accommodate both expansion and future technologies, and by its lack of visual clutter—no small achievement for a building with about 27,000 miles of low voltage cable."[56] Yet elements of the new trading floor were more akin to the fortress architecture of contemporary Los Angeles.[57] It is an aggressively private space, a huge stone block just to the side of the main building. There are no windows. The walls of the new trading floor create a boundary for the market, severing it from the city streets beyond and ensuring that no information can be exchanged between inside and outside. There is no public entry to the building. The revolving doors are tucked under the overpass between the old and new buildings. The doorway opens onto an atrium where members exchange their street jackets for trading

coats. There are no chairs or places to linger. It is a clearly defined passage pointing to the trading floor. Traders pass through the guarded turnstile and ride up the escalator to enter the network of hallways surrounding the trading floor. The walls are unadorned granite, shiny, cold, and imposing. Short and shallow passageways cut through banks of phone desks to open onto a trading room the size of Grand Central Station. Diffuse, bright, fluorescent light comes from the fixtures four stories above. The walls of the financial room are covered in tall, gray panels covered with metallic-looking material. There are no internal walls to break up the space.

Circular structures raised above the floor level have steps inside and are ringed with padded railings for the clerks and brokers to lean against. Within the pits there are no places to sit. Long phone desks abut the pits, where clearing-firm clerks take orders and relay them to traders. When there is no one in the room, the sense of vacancy is absolute. There are no photos of family or friends such as might be found on cubicle walls in offices anywhere in the country. Nothing suggests what kind of commerce occurs at the exchange. The only signs of life outside this enclosed space are three flags on the east wall—the American flag, the Illinois flag, the City of Chicago flag, and a banner that says, "Welcome to the CBOT" on the north wall.

Despite its fluid, abstract architecture, the trading floor reveals a com-



1.8 The flags of the United States, Illinois, and the City of Chicago hang in the financial futures trading hall, marking the exchange's commitment to local and national identity, despite its global orientation. Photo by Bob Davis.

mitment to a particular market form: the trading pit as the nexus where commodities and information converge. With this new and costly structure, the CBOT leadership invested the organization in a particular vision of the Chicago market nexus. Arbor and his supporters argued that the millions of dollars spent on space and technologies to support the floor traders was nothing compared to the advantages their unique skills brought to the work of pricing and creating liquid markets. Digital technologies were excellent conduits of information to and from the trading floor, Arbor argued, but the essential technology of the CBOT was still the trading pits. All trading in American Treasury futures was channeled through these market arenas. Even when the board implemented an electronic trading system in the mid-1990s, it functioned as a supplement to the pits, operating when they were closed for business. This commitment to the pit, a specific place, and the local population of traders contradicted the logic of ubiquitous circulation.

The trading pit remains the CBOT's emblem and key tool for making markets. An image of a trading pit is emblazoned on the stone façade of the new trading floor, declaring the board's dedication to its method of trade. The same symbol is imprinted on CBOT business cards and on every publication that leaves the CBOT's central offices. The trading pit as a place and a technology at the heart of the exchange remains a defining feature of Chicago's distinctive commercial life. In the late 1990s, as the global futures industry was implementing digital dealing, the CBOT had to defend its commitment to the trading pit. The trading floor hidden within the architecture of circulation exposes the challenge that the CBOT faced. The meaning and function of the 1930 building had gradually given way as developments in technology and changes in financial markets allowed the board to reshape the material form of its marketplace. By the late 1990s the board was no longer able to sustain the contradiction at its core. Electronic technologies were replacing trading pits around the world. The price of a membership plummeted, and the board began to plan how to integrate electronic trading technologies, but the CBOT's historical attachment to open-outcry trading was not easily broken. The members' collective commitment to the cultural life and form of labor based in the trading pits was as fierce as the spirit of Chicago commerce. Although many of the arguments in the 1990s placed the computer at the heart of the problems of technology, we have seen how technological innovations, from bridges to telephones and architecture, have reshaped markets and raised challenges to older forms of exchange. Creating a material form for abstract exchange has always been a fundamental problem of the CBOT, and the shift from pit trading to electronic trading at the end of the twentieth century was only the latest phase in the modern project of creating the abstract space of mar-