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THE MECHANICS OF A COMMODITY FUTURES EXCHANGE: A CRITIQUE OF AUTOMATION OF THE TRANSACTION PROCESS

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Section 18 of the Commodity Futures Trading Commission Act of 1974 requires that the Commodity Futures Trading Commission (CFTC) determine, among other things, the "feasibility of trading by computer." This seemingly innocuous section is one of the most significant within the Act and carries with it ominous and revolutionary implications for futures markets.

Among the many public misconceptions about futures, none is more prevalent than the belief that futures markets operate in an antiquated fashion and that they have ignored the advances in technology of the last fifty years. Thus, it is generally concluded that the futures market system of trade execution by "outcry" is nothing more than a throwback to ancient times and a capricious gambit of the Establishment to maintain a system which benefits insiders.

A visit to the Chicago Board of Trade (CBOT), the Chicago Mercantile Exchange (CME), or the new Commodity Exchange Center in New York should dispel such erroneous beliefs. A visitor exposed to the tumult of these floors for the first time is usually so overtaken by the noise, color, and movement of people that he fails to notice the abundance of sophisticated electronic equipment which forms an integral part of the transaction process. Nevertheless, it does not take many visits to realize that futures markets utilize every available form of modern technology, and that they have done so at great expense and much more quickly than their counterparts in the securities field. From the time a futures order

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2. Id. § 22(a)(1).

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is placed with an account executive or registered representative anywhere in the world to the time its execution is reported back, the transaction passes through many sophisticated electronic systems. Highly advanced technology is utilized to process the order, quotation, transaction, and confirmation and to complete the back-office requirements of the brokerage firm.3

Furthermore, at the CBOT and CME, where approximately 70% to 75% of this nation’s futures transactions occur, there are ongoing studies of newer uses of technology with which to enhance the process of futures transactions. Thus, the futures industry is not bound to the status quo, but rather has quickly adapted itself to the world of modern electronics and computers.

There is one exception to this broad adaptation: The actual execution of the futures transaction is still carried out by “open outcry” in a pit and in the same competitive auction fashion that dates back to the beginning of organized futures markets 125 years ago. The bidders shout out their bids and motion with their hands to indicate their needs to the sellers, and the sellers do likewise to the buyers. A transaction is consummated when a buyer and seller have, by outcry, bought from or sold to each other.

In this era of advanced automation, it appears anachronistic to execute a futures transaction by shouting in the fashion of the old marketplace, and to transmit a futures order by a “runner” from the broker’s station to the broker in the pit and back again. Why incur the obvious cost, delay, and danger of human error and negligence?

The apparent alternative is to automate the execution process with a computer-based trading system by installing input terminals in brokerage offices or other suitable locations throughout the country and the world. Trained operators would act as “brokers.” Bids and offers would be recorded on the basis of time received and displayed for all to see on a CRT4 screen. Execution would be

3. For a complete description of computer utilization by the Chicago Board of Trade, which is very similar to the systems utilized by the Chicago Mercantile Exchange, see R. Burmeister, Current Status of Automation in Futures Markets (paper submitted at Conference on Automation in the Futures Industry, June 15, 1977, Washington, D.C.) (on file at the offices of the Commodity Futures Trading Commission (CFTC), Washington, D.C.).

4. A CRT, Cathode Ray Tube, is a display device, similar to a television picture tube, which, when equipped with a keyboard, can transmit and receive information over a computer system information channel.
electronically automatic and efficient. Section 18(a)\(^5\) addresses this alternative.

This issue was recently analyzed, under the auspices of the CFTC, at a special conference on automation in the futures industry.\(^6\) At this conference, a host of economists, professors of finance, and technological experts in the field of computers and markets submitted papers.\(^7\) Their viewpoints were based primarily on theoretical comparisons of manual and automated systems. With the single exception of Robert Burmeister, Executive Vice President of the CBOT, the prevalent view contained in the papers was that, generally, the benefits of an automated system outweigh the costs, and that there is no substantive reason the transaction process of futures markets cannot and should not be automated. This general view, however, was strongly criticized during the discussion following the presentation of the written material.\(^8\)

Generally, the proponents of automation were those who, albeit experts in their own field, had never or for any extended time "lived" or "traded" on the floor of an exchange. On the other hand, the proponents of the present auction system were generally experts who have spent a substantial part of their business lives on or connected with an exchange floor. The proponents of automation

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8. See Transcript of Proceedings, Conference on Automation in the Futures Industry, June 15, 1977, Washington, D.C. (on file at the offices of the CFTC, Washington, D.C.). The principal participants who were critical of the submitted papers were Willard Sparks, Former Senior Executive Vice President, Cook Industries; John T. Geldermann, Vice President, Geldermann & Co.; Stephen Greenberg, Senior Vice President, Bache Halsey Stuart, Inc.; Nathan Most, Director, Commodity Options Development, American Stock Exchange, Inc.; Lee H. Berendt, President, Commodity Exchange, Inc.; Donald E. Weeden, Chairman of the Board, Weeden Holding Company; and the author.
argued that the difference of opinion was based on the Establishment’s usual reluctance to change.\(^9\) There may be some truth to this contention, since the heaviest casualties of automation would be the floor brokers. Naturally, they would oppose a change which would replace them with a computer. On the other hand, one cannot lightly dismiss the arguments made by antagonists to automation, who explained at length that a mere theoretical analysis of this subject is insufficient, and that no valid conclusion can be reached by anyone not intimately acquainted with the auction system based on personal experience on the floor. The floor, they argued, as well as the floor broker, is such an important element of a viable futures market system that its replacement would destroy the system.\(^10\)

Having spent over twenty years on the floor of an exchange, and having developed an intimate knowledge of what makes a futures market successful, the author must agree with the latter view. It is necessary to take part in the futures system and either to trade on the floor or to be in direct contact with it to comprehend fully its function, its value, and its irreplaceability.

There are five major characteristics of futures exchanges which render substitution by an automated system impractical: (1) the special function of the floor; (2) liquidity and locals; (3) spreaders and scalpers; (4) unique characteristics of futures; (5) orders.

**The Special Function of the Floor**

The purpose of an exchange “is to provide and maintain an optimal, controlled, reliable environment which will insure to the users of its facilities the attainment of two primary objectives; namely, price discovery and a capacity to shift price risk on the underlying commodities represented.”\(^11\) The exchange floor houses the central ingredients and mechanisms which promote these objectives. Many of these ingredients can be replaced by automation without damaging the central purpose of the exchange floor.\(^12\) There is, however, one important function fulfilled by the floor

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that cannot be replaced by any form of computer automation: The exchange floor acts as a primary stimulus for opinions and ideas.

This special function was barely considered by the authors of the conference papers. One commentator casually dismissed the "crowd" function of the floor: "How important is the cacophony of a crowded trading floor, the smells and sights of a frenzied mob to the trading of intangibles? If you are not adaptable, they are probably essential—if you are, to be done with them will be a relief."

In other words, it is contended that elimination of the "crowd" is insignificant, and will, in fact, improve the system.

If this view were taken to its logical conclusion, then a host of "crowd" functions that are still considered important could soon be eliminated. Certainly any form of town meeting or political convention could be made obsolete by automation. Delegates could easily signal their political preferences through some computerized mechanism. The votes would certainly be tallied faster. For that matter, Congress itself could be eliminated. After all, Congress is nothing but a "crowd" of delegates representing its constituents. Congressmen could remain in their respective districts, where they are close to their constituencies, voting on issues by computer.

This is an appropriate analogy to an exchange floor. An exchange floor is similar to a daily convention. The traders and brokers act largely as delegates for their constituent customers. The price discovery process is much like an updating vote total. Until computers assume all "crowd" functions, the exchange floor, like Congress, has a special purpose which cannot easily be replaced.

Several hundred people (at some exchanges over 1000) gather daily in a large room where they have easy access to each other. During the course of the business session, the room is inundated with statistics, news, and information. Price movements are highly visible and command attention. Each broker is expert about one or more of the markets traded at his exchange. Each participates in the markets by either acting as a customer representative, acting as an order filler, or trading for his own account. Each is on the floor to buy or sell, or both to buy and sell the futures contracts open for trading. Thus, it is incumbent on each to read, see, listen to, and discuss every conceivable factor which affects price movement of futures contracts.

The natural result of such a setting is easily understood. The
exchange floor acts as a crucible of ideas, discussions, and arguments about futures and prices from which develop opinions resulting in bids, offers, and transactions. Moreover, the opinions generated on the floor further stimulate other opinions as they are transmitted through the communication networks and as they are intermingled with ideas originating off the floor. It is axiomatic that opinions create speculation and, that without speculation, there cannot be a viable futures market.

There are other special effects of an exchange floor which stimulate trading and which are nearly impossible to re-create within a computerized terminal system. A seasoned trader was once asked how he decided which market to trade on a given day. His answer, according to commodities folklore, was that he traded at the pit from which the noise came. This is a rather crude but common way to decide where to stake a great deal of money. Local traders are attracted to the “noise” or activity in a given market. Their attention is drawn by noise as much as by price movement. One cannot hear price movement or activity on a CRT. It is a normal human response stimulated by the exchange floor; to a degree, the floor depends upon it. Noise, body movement, highly visible quotations, and price changes all act as stimuli for liquidity by the locals.

To some degree, each physical stimulus, as well as the crowd aspects which form the opinion stimuli of a floor, can be reproduced in the sterile atmosphere of a brokerage office. However, it is naive to believe that the total result of a well-organized floor can be equaled by a computer network, however extensive or sophisticated. Not only are such offices necessarily limited in space, but their purpose is different. To duplicate the climate of the exchange floor in a brokerage office would require hundreds of smaller “floors” in each of which hundreds of CRT operators would congregate, discussing the futures markets. It is theoretically possible, but dubiously practical.

Even if each of the foregoing stimuli can be adequately reproduced in an automated system, there remains the question of participation. For the stimuli to be effective, a bid and offer must result; in other words, the person must somehow have access to the market to put his new opinion into action. On the floor of an exchange, the member does this by going to the pit and bidding or offering. He can do this within seconds of the time the idea is born. To place an immediate bid or offer in a brokerage office, every potential trader would need his own computer terminal. For
obvious reasons, a trader cannot wait his turn on the computer. The liquidity to be generated by his new idea requires immediate action. If he must wait for another operator to step aside before he can activate his own idea, then the moment of opportunity may have passed. Consider what happens when it is his turn and he does not have an idea at that moment; thirty seconds later, he may want to buy or sell, but it is not his turn. Furthermore, imagine a dozen potential traders (not to speak of fifty or one hundred) standing by a computer terminal. Does each take a turn at the unit in an organized manner, or do they simultaneously compete for access to the computer to activate their ideas? Or do the advocates of automation envision that every potential market maker will have a terminal in his own office, irrespective of its location? The complexity and cost of such a network are overwhelming.

The value of a large, central hall which permits potential market makers to congregate, which is organized to stimulate discussion and opinions, and which offers immediate and easy access to market action is so basic that its value is inestimable; much will be lost if such a setting is decentralized.

**LIQUIDITY AND LOCALS**

Mere opinions, however, are insufficient to maintain a viable market. The key ingredient to market viability is liquidity: the quantity of bids and offers coming to the market. The more bids and offers there are, the narrower the spread between them, and the more successful the market. Liquidity, therefore, determines the ultimate success of any futures market. Thus, it is important to analyze the sources of bids and offers. These sources can be categorized into two groups: bids and offers originating "off" the floor, and those originating "on" the floor.

Analyses made both at the CME and CBOT indicate that between 40% and 50% of daily transactions originate on the floor. Since transactions are the ultimate result of bids and offers, that is, liquidity, at least 40% of the daily market liquidity at the CBOT and CME is generated by members on the floor of the exchange. Thus, it is important to understand why this is so and whether this substantial portion of liquidity can be replaced by an automated

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15. Unpublished analyses prepared by the staffs of the Chicago Mercantile Exchange Clearing House and the Chicago Board of Trade Clearing Corporation (based on daily compilations by the CME and the CBOT).
system which would, by definition, eliminate the exchange floor, the floor broker, and the pit trader.

Few people really understand the components of a successful futures market. On paper it all looks rather simple: (1) a commodity whose cash price movement is such that commercial producers and users are in need of price insurance; (2) contract specifications compatible with the trade and fair to buyer and seller; and (3) speculators willing to assume the price risk shift from the commercials. Although these are the three main ingredients of any futures market, they alone cannot create a successful market. There are dozens of contracts listed on exchanges which have these elements but which have not become successful futures markets. There are many more which have been tried unsuccessfully and were delisted long ago. There are many more which theoretically have the necessary ingredients, yet no futures exchange has attempted to open a market for them.

Liquidity is the most important factor in market success. The constancy and number of bids and offers coming to a given futures contract is the fundamental difference between a viable market and one that will never be more than merely listed. What causes one market to have such constant liquidity and another to remain dormant is a mystery to even the most expert futures market observer.

It is fundamental to futures, as well as any other market, that the more bids and offers competing, the closer will be the spread between them. In other words, in a very liquid market, the spread between the offer and the bid is often the smallest increment allowed by the contract specifications. It is also fairly certain that a narrow spread means a "thick market." Accordingly, a market whose spread between bid and offer is narrow will attract both speculator and hedger. Only in such a market can they be certain that their prospective order will be "filled" near the last sales price. It is equally important that only in such a market can hed-

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16. A "thick market" is one in which sufficient numbers of buyers and sellers are available to take the opposite side of a large order without materially changing the price.


18. A "hedger" completes transactions in the futures markets to reduce risks which he incurs in the normal operation of another business, generally as a producer, processor, or merchandiser of a physical commodity. See generally id. ¶ 312.
gers and speculators assume that the going price is “fair.”

It is also fundamental that the more liquid a market is, the less impact a large selling or buying order will have on price. In other words, a commercial hedger cannot be certain of the prospective basis for his hedge unless he can be certain of the price range within which he can sell or buy a large quantity of the futures product. If his large order has a material impact on the futures price, he cannot, with any certainty, know that he will be able to establish his hedge at the desired price structure. Similarly, a speculator must know that he can buy or sell a quantity of a futures contract without adversely affecting the price, lest he injure his own position. Market liquidity, therefore, is the most important element in establishing and maintaining an active and viable market. While we cannot be certain if liquidity will develop within a given market, we are certain of those qualities which create such liquidity.

Floor members, or “locals” as they are known in the trade, are equivalent to market makers or specialists in the securities markets. They are the most important factor in creating inception-liquidity. They act as catalysts to create interest in a certain market and to insure that some bids and offers are made. They help to execute the first important “outside” orders which come to the market floor. They help to build an opening commitment in the contract, and they help to inform other traders. They help to keep the distant contract months, which usually remain totally inactive for long periods, “in line” with current price movement of the “nearby” contract months. Without question, time, money, and energy spent by locals on a new contract is fundamental to liquidity.

Just as “local” liquidity is important to get a new contract going, so is it significant to an established market. The continual flow of bids and offers coming to a given market depends heavily on local traders and brokers. The factors which give rise to the liquidity generated by local traders are tied to the exchange floor. The floor produces the climate, method, and incentive which prompt locals to act. Removing or replacing the floor and its pit system would unquestionably endanger the causes of local liquidity. These factors cannot readily be duplicated. The important fac-

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19. If the spread between offer and bid is wide, it is logical but erroneous to assume that either the bidder or the offerer is trying to take unfair advantage and is “out of line.” Most prudent futures market participants will avoid such markets.

20. Brokers often act in a dual capacity as brokers and traders. Thus, reference to locals includes the role played by brokers when they trade for their own account.
tors can be divided into the following: (1) the floor as an ideal mechanism to stimulate opinions; (2) the floor as a provider of easy access and incentive to put ideas into action; (3) the floor as a stimulator of competitive responses; (4) the exchange as a membership organization which can induce a "patriotic" response; (5) the pits as an impetus to psychological reactions; and (6) the locals' trading techniques.

Since the last-named component is the most important in creating local liquidity, it is reserved for a separate section. This article has illustrated the function of components (1), (2), and (3), and will continue throughout this discussion to refer to their importance. Therefore, it is necessary at this point to explain the reference to "patriotism" and "psychology."

That futures exchanges compete with each other is an established fact in the futures industry. All exchanges compete for the business of speculators, who are attracted to the most active markets. Thus, if the soybean market becomes very active, it is likely to draw business from another market. Similarly, when the meat complex or metal complex has a special reason for price movement, the speculators concentrate more on those markets and less on others. Naturally, as futures market participation grows, such effects will diminish in importance. However, currently and for the foreseeable future, all exchanges compete for participation from a limited segment of the population.

Frequently, different futures exchanges institute the same or similar futures contracts. Sometimes the specifications of the contract vary considerably, while at other times, they are nearly identical. In all such cases, however, the commodity is always the same. Sometimes, as recently occurred with gold, four or five exchanges may simultaneously attempt to institute trading in the same commodity; sometimes, as with silver or cattle, one exchange will attempt to institute trading in a commodity which has long been traded at another exchange. In all these situations, exchanges are in competition with each other. Each exchange spends large sums of money for advertising, public relations, special seminars, educational programs, and literature. The goal of each exchange in such competitive actions is to establish itself as one of the primary markets for the commodity in question.

In many ways, local brokers and traders of each exchange are drawn into this competition. They are on the committees which create the specifications, advertising, and public relations. They take part in seminars and special educational efforts. They draw on
their contacts and customers to bring business to their exchange. Above all, they are relied upon to make a market. They, as no one else, can insure that there will be someone in the pit to make a bid and an offer following the opening of the contract for trading.

Membership motivation—the expenditure of time, energy, and money toward a new contract—can only be characterized as “patriotism.” That they belong to the same institution, that their livelihood depends on the success of that institution, and that they “battle” for business with other exchanges, all motivate members to act on behalf of their exchange. Exchanges rely heavily on this form of “patriotism,” first in the creation of new markets, and later in the maintenance of the markets’ viability. Since automation will, by definition, eliminate the pit broker and trader on the floor of the exchange, it will preclude the need for exchanges in their present form. Thus, the effect of patriotism by members of a given institution will also disappear, and with it, the liquidity which such “patriotic” responses presently generate.

There is yet another type of liquidity which is exclusively a product of the floor, or rather of the pits. Although it is minimally significant to market liquidity, it is important to understand. This liquidity is the product of pit psychology. For example, pit trader A, a large trader who trades solely for his own account, is about to enter the pit. Pit trader A is known to have “bought the market” earlier that day or the previous day. The market has fallen during the last thirty minutes. As pit trader A enters the pit, but before he has indicated any bid or offer, he is seen by pit traders B, C, D, and E who also trade for their own accounts. Pit trader B, a fairly large local trader, is short the market. His split second reaction is that A will no doubt continue buying the market and perhaps cause a rally. Thus, he immediately buys to offset some of his shorts in an attempt to secure some of his profit. Pit trader C, a fairly large local trader, who is long the market and is presently with losses and nervous about his position, reacts entirely differ-

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21. One who has “bought the market” generally has an established long position in the contract. That is, he has bought one or more futures contracts, thus establishing a market position, and has not yet liquidated the position through an offsetting sale.

22. One who is “short the market” has sold one or more futures contracts and has not yet liquidated the position through an offsetting purchase. See generally J. BAER & O. SAXON, COMMODITY EXCHANGES AND FUTURES TRADING 77-85 (1949).

23. One who is “long the market” has bought one or more futures contracts and has not yet liquidated the position through an offsetting sale. See generally id. at 205.
ently. He feels that trader A is about to sell and liquidate his entire long position causing the market to fall further. Thus C, to minimize his losses, immediately begins to sell the available market bids. Pit trader D, a small local "scalper," 24 believes that A will not sell out his position, but rather that he will buy more. Therefore, D tries to buy one or two contracts for his own account, so that he can "scalp" them a few seconds later at the higher price he expects will soon develop. Pit trader E, a "spreader" 25 between two or more different contract months, has just taken a short position in the contract month where A is about to enter the pit. E had intended to stay in an "unhooked" position for thirty seconds or so before completing his spread by buying the other contract month. Upon seeing A, however, he decides quickly to "hook up" his spreads in the other contract month so that he does not unnecessarily expose himself, since he is unsure of what A will do.

Actually, it may turn out that A entered the pit, looked around, and left without trading; or he may have done what some of the traders expected. However, it really does not matter what A did. All the bids, offers, and transactions in reaction to A's entering the pit accounted for additional market liquidity. In fact, they created new market positions which, in turn, would have to be offset, probably that day, thereby creating further market liquidity.

The reasons for the trades are unimportant to this discussion. It is important that there was a visual and psychological interaction which cannot be duplicated by computer. Without the pit psychology, this form of liquidity is lost.

**SPREADERS AND SCALPERS**

Thus far, this article has discussed liquidity and its importance to futures markets, indicating that the floor acts as a special stimulus for market opinions and action. But as important as such stimuli are, they are merely the climate and setting for effective floor liquidity. The principal cause of floor liquidity is the locals' trading methods—in other words, the methods utilized by local "spreaders" and "scalpers." 26

24. See text at pp. 162-164 infra.
25. See text at pp. 161-162 infra.
26. Most local traders can be divided into three categories: "position players," "spreaders," and "scalpers." Since position players theoretically take a position in the market (often in different markets simultaneously) and intend to stay with it for several days or weeks, they are very similar to the majority of "off the floor" traders. Thus, it matters little whether they make their transaction "on" or "off" the floor. An
The spreader’s method of trading is to play the differential between two or more contract months in a given commodity. In other words, he buys October hogs and sells December hogs, or vice versa. He does not concern himself with whether the price of hogs goes up or down. Any profit he makes will be based on the narrowing or widening of the differential between the two contract months.

Many “off the floor” traders also “spread.” But they are distantly related to the spreader who stands continuously in a pit and buys and sells between different contract months. The professional local spreader is an artist. His aptitude, agility, and ability to detect the slightest market shift is extraordinary. He performs his transactions in a constant fashion, going from buyer of one month to seller of another and immediately back again. In fact, many spreaders perform this activity between three or four contract months. The object is always to pick up even the smallest increment of profit in the shift of the differential. The spreader is alert to a new offer or bid in one given month which could be spread profitably into another month. He is quick to react to any sudden downdraft or updraft in the market so that he can “unwind” one side of his spread for that small moment of market movement and “hook it up” again as soon as the price movement has stopped.

The value of such spreaders to the market is inestimable. They are not only a primary source of bids and offers in nearby contract months, but they are primary creators of liquidity in forward contract months. A hedger who wants to sell a large quantity in a contract month six or nine months forward, where the trading is still fairly sparse, could not possibly do so in the absence of the spreader without materially affecting the price. In fact, he probably could not carry out his transaction at all without the spreader. In the inactive contract months, the spreader bids to the hedger because he will be able to spread into an active month at what he believes to be a profitable differential. The spreader is thus most important in insuring that the differential stays “in line” between various contract months. Every viable futures market depends heavily on its spreaders.

automated system would not appreciably change their method. On the other hand, the method of the “spreader” or “scalper” is strictly limited to the floor. But see M. Mendelson, supra note 7, at 11: “To the degree that speculators’ [i.e., local traders’] gains are fair, there is nothing about computer assisted trading that will diminish them and discourage the speculator.”

27. The differential is the difference between the price of one contract month of a commodity and the price of a different contract month of the same commodity.
It is unlikely that such spreading can be done on a computer. Professional local spreaders rely on their ability to bid quickly to any new offer and to offer quickly to any new bidder; they depend on hearing the existing or new bid or offer in the next contract month. Their method relies on physical agility and aptness of mind and voice to buy and sell at the right price. They remove their bid or offer as soon as they lose contact with a counterpart bid or offer in the other contract month; they depend on their ability to "scratch" or liquidate at a small loss one side of their spread when they cannot successfully hook up the other side. They could not possibly function as they do by placing a bid or offer into a "book" on a computer terminal. They would thereby assume greater risk than their method permits. If their bid was hit on the computer in the October option, they could not know with sufficient certainty that they could successfully sell the bid in the December option to establish a profitable differential or to have a sufficient chance to "scratch" the October transaction. If they had to rely on a computer unit where they could not know with sufficient certainty that an offer or bid would be available when needed, they could not do business, nor could they continuously go back and forth as they do. On the computer, they would be "scalping" or speculating and would need a much greater degree of profit to justify the risk on each transaction than is offered by "spreading" in the classical sense described. In other words, the local professional spreader would be forced to change his method and adopt the spreading technique presently used by those who spread from "off" the floor. Their significant contribution to liquidity would be greatly diminished.

The "scalper" is as important as the spreader. Unlike market makers in securities markets, scalpers are under no obligation to make a market in futures; yet that is exactly what they do. Their motivation is profit. The classic definition of a scalper is a trader who always bids the market and simultaneously offers. He operates

28. One commentator has argued that spreading by computer is feasible: Some critics are questioning the speed of trading with a computer, especially when one is trying to develop a spread. Let me remind you that currently firms try to position options and the underlying stock simultaneously but on two different markets. The difficulties have not stopped them. Computerizing trading cannot help but speed up this dual positioning. M. Mendelson, supra note 7, at 12.

29. To "scratch" is to offset the transaction in the same contract month at the same price as instituted.

30. See text accompanying note 45 infra.
like a spreader, but only in one contract month at a time. His method of trading is an attempt to make a small increment of profit on each transaction by buying and selling continuously. He attempts always to limit his risk, since his profit is based on volume, rather than on large profits per trade.

There are many types of scalpers. Some operate along classical lines by buying and selling between the smallest increment the contract market provides. Others attempt to profit by buying and selling between large daily market gyrations. Most scalpers fall somewhere between these two methods or combine the two. In every case, however, the scalper attempts to flow with the immediate market movement: selling first as the market is falling, buying first when the market is rising. Also in every case, the scalper liquidates his position as soon as the minor market movement has ended or as soon as he finds that his purchase or sale is in danger of turning into a loss. Thus, a scalper will institute and liquidate a small position many times during one day. Scalpers seldom leave the pit during trading.

It is unlikely that scalpers could function similarly with a computer. Like the spreader, the scalper depends on his own agility to be one of the first bidders or offerers when a new order enters the pit. He attempts to initiate his purchase while there are still other bidders at the same price. Thus, he can immediately become an offerer, so that if he is unsuccessful in his attempt to sell at a profit, he still has a chance to sell to the remaining bidders and wind up this particular round turn without a loss. In a selling situation, the reverse would be true. But a scalper could hardly function in this manner on a computer, for it places a bid or offer in order of receipt.31

It would be of little value to a scalper to place his bid in rotation with other bidders, for once his bid was sold he would be among the last to place his offer. To illustrate this point, assume that the price of December gold at a given moment is $147.10. The smallest increment allowed is $0.10 per contract. Thus, our scalper bids $147.10 while he offers at $147.20. If he successfully purchases

31. Any conceivable computer system would operate on an "open book" basis, in which offers to buy or sell would be sequenced in chronological order of their entry into the system. Orders to buy or sell at a given price would be placed in a queue, formed for that price, in the order received by the computer system. When the market reached that price, orders would be executed on a first come-first serve basis as long as there were buyers for all the sell orders or sellers for all the buy orders.
first, he remains an offerer at $147.20 while other bidders are still bidding $147.10. If he is successful in selling at $147.20, he starts the operation again. Similarly, if he originally sold at $147.20, he would remain a bidder at $147.10 while others were still offering at $147.20. In either case, he was protected because he had a chance of “scratching” the transaction if difficulty arose. But such a method is a creature of the auction process in which bidders and offerers compete for attention. It depends on agility, voice, and presence of mind. The method cannot be utilized on a computer.

Local spreaders and scalpers are the backbone of futures market liquidity. Without their contribution, a futures market would lose a large portion of its bids and offers. If the futures trade execution process were automated, this loss would certainly occur. Protagonists of automation have scoffed at such dire predictions. They have insisted that the “new” world will see the coming of a generation of computer “whiz kids” who will have their own new method of trading which will more than compensate for the loss of liquidity by the old methods.

The evidence runs quite to the contrary. Today, there are thousands of account executives and traders who sit in offices by a keyboard, CRT, or quote board and watch the changing futures quotations. Their trading techniques are similar to the type of trading expected from operators within an automated CRT system in the “new” world. This similarity enables us to assess whether liquidity generated by such trading could ever adequately replace the form and measure of liquidity generated by “locals.” Experience teaches that it does not and could not. The “off the floor” bids and offers arise from reasons, techniques, and trading philosophies which differ dramatically from the trading plans or patterns of spreaders and scalpers on the floor. Because the methods and stimuli differ, the type of trading and market approach also differs. Thus, each method produces a substantially different set of bids, offers, and transactions; in other words, each provides a different form and measure of liquidity. Examination of new or dormant contracts further substantiates this view. Regardless of the “off the floor” orders which often come to these markets, the markets remain relatively inactive unless and until locals also participate. Only after there is a healthy mix of “on” and “off” the floor orders do the price gaps between sales diminish and does market thickness develop. Unquestionably, for markets to flourish, they need a large measure of transactions generated by participants “off the floor”; however, they equally need the continuous flow of bids and
offers that are created by locals. Neither type of liquidity replaces the other, nor can a futures market stay viable without both.

**UNIQUE CHARACTERISTICS OF FUTURES**

The advocates of an automated system have applied to futures their experiences in and studies of securities markets. They have assumed that the essential characteristics of these markets are identical and that, therefore, the same type of transaction process is applicable to both. There are as many similarities between the New York Stock Exchange and the CBOT as there are between the actual transaction processes of each market. But there are important differences. These differences cast doubt on whether an automated execution system, which may work in the stock market, can work in the futures market as well.

One such difference is market breadth. In 1976, not a robust year for the stock market, the combined total of all stocks traded was 7,035,661,000 shares, not including warrants and options, an average of 27,919,290 shares per day. However, 1976 was a record year for futures volume: 36,876,787 contracts were traded, a daily average of 146,336 contracts. Irrespective of the formula used to compare these statistics, the breadth of futures markets is significantly smaller than that of the stock market.

Futures contracts have limited life, while stocks last indefinitely. A futures buyer must liquidate his position in a relatively short time. If he does not, he does not merely receive some shares of stock which he can keep or dispose of at will; rather, he receives a physical product which often must be disposed of quickly, since it might be perishable, and which is difficult and expensive to own due to storage and interest charges. A short seller of stock can maintain his position as long as his money lasts. A short seller in futures ought to offset his position prior to contract maturity; otherwise, he must deliver the physical contract. Thus, deliveries are usually left to the commercial producers and users and form only a small part of the total futures volume. Most contracts are offset prior to delivery.

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32. One commentator has stated: "Perhaps there is a difference [between the securities business and] the futures business which is substantive. I must state to you that I doubt it." J. Peake, supra note 7, at 8.

33. Annual analyses prepared by the New York Stock Exchange Public Relations Department and Futures Industry Association Statistical Department.

34. Most futures contracts expire within 18 months of their inception; however, the heaviest volume occurs in contracts with only two or three months of life remaining.
Shares of stock in a corporation maintain an unchanging and generally known supply level. Futures markets involve commodities which are of limited, and often uncertain, levels of supply. Thus, futures are subject to special regulations to prevent unwarranted control by one or more individuals. In fact, it is a violation of federal law to own or control more than the available supply of a given product or to hold positions in excess of prescribed limits in a given commodity.\(^3\) No such limitation applies to securities.

In futures, there is a "short"\(^3\) for every "long."\(^3\) Thus, an "open commitment"\(^3\) in a futures contract of 20,000 means that there are 20,000 open "short" positions and 20,000 open "long" positions. This is so regardless of the number of "hedge" positions in the market. In securities, the number of "short" positions generally form a very small part of total outstanding shares. Obviously, the "short" position is used to a much greater extent in futures than in stocks. Consequently, on any day when a certain stock goes up in price, the majority of the "position" investors are "winners." Theoretically, if there were no shorts, they could all be "winners." In contrast, on a day in which a futures contract goes up in price, 50% of the positions are "losers." Thus, for every "winner" there is a "loser."\(^3\)

As a result of innumerable factors, the price of a commodity is subject to rapid and dramatic change. A commodity at a high price and in short supply in one season can be overabundant and at a low price the very next season. Dramatic shifts in production, imports, exports, or consumption, are very common in commodities and will occur in relatively short periods. Thus, futures price trends are often brief, and large price gyrations are the rule rather

\(^3\) A "long" has bought a futures contract and has not yet liquidated the position through an offsetting sale. See id., reprinted in [1974] U.S. Code Cong. & Ad. News 5843, 5893.
\(^3\) "Open interest or commitment" is the accumulated total of all outstanding long or short contracts that have not been liquidated by an offsetting futures trade.
\(^3\) These short positions in the contract which are "hedges" will not be "losers" in that it does not matter to them whether the price rises or falls. When the "hedges" are removed and their products sold into the cash market, their profit will be about the same as when they first instituted their futures "hedge" position. However, during the course of their short "hedge" position, they lose on their futures position, whenever the market goes up.
CRITIQUE OF AUTOMATION

than the exception. It is quite the contrary in stock markets. General business trends are of long duration and a majority of stocks will usually follow such trends. A bull or bear market in stocks may very well last several years. During such definitive trends, stocks may sometimes move against the trend, but not comparably to the contratrend price swings which normally occur in futures markets.  

Futures are highly leveraged; stocks are not. The “margin” for a position in a futures contract is usually 1% to 3% of the value of the contract; in stocks, the margin is generally between 80% and 90% of actual cost. This dramatic difference has many significant implications. First, stocks are actually or virtually paid for on purchase. When futures are bought or sold, the customer does not generally intend to become the owner or seller of the actual product and thus only advances a sum of money as security in the event that the next immediate price swing in the commodity is adverse to his position. Consequently, all futures markets in the United States have daily price limits. Such limits allow the member firm time to call for additional “margin” from customers as necessary. The stock market has no such price limits.

As a direct consequence of the high leverage feature of futures, exchanges use a “mark to the market” money settlement unique to futures. In futures, every open position must pay for any loss in cash on the basis of the “settlement” price of that contract. Similarly, all open positions which have increased in value at the “settlement” are paid their profit. Thus, all positions are paid for in cash “to the market” at the opening of the next business day.

Moreover, “blue chips,” as well as other well-known stocks, will maintain a given trend for many years; it is unusual for these stocks to encounter so dramatic a change in their earnings as to cause their trend to reverse rapidly.

“Margin” is a misnomer in commodities. “Margin” in futures is a security deposit designed to protect against adverse price movement. The amount of futures “margin” is not based on the value of the contract, but rather on the amount which can be lost in a day or two by the customer, in the event he is immediately faced with severe adverse price movement.

A price limit is established by the contract specifications or by order of the Board of Directors. It determines how far above or below the previous day’s “settlement” the price of a given futures contract may rise or fall during the next business session (except sometimes during the expiring month of a futures contract or on the last day of trading). If a contract price reaches this limit, the price is said to be “limit bid” or “limit offered.”

The “settlement” price of a futures contract is the price, or average of prices, of the transactions which occurred in the last few seconds of trading on each business day.
In other words, futures markets operate on a no debt basis which, in this day and age, is unique in the business world. For historical reasons, trading procedures on the floor of securities markets rely on specialists or market makers who are obligated to maintain an orderly and liquid market on a "specialist book." Futures transactions do not follow the same procedure. Each of the forty or fifty individuals in a pit, trading a given commodity, both buys and sells with any of the other individuals. Thus, a "book" system, which parallels the procedures in securities markets, would impose a radically different method of trading on futures markets.

These and other characteristics of futures markets distinguish these markets substantially from the stock market. These characteristics give rise to many problems for futures which require different solutions. Such differences as overall breadth, limited life, limited and unknown levels of supply, equal numbers of "shorts" and "longs," dramatic and sudden shifts in value, high leverage, "no debt" settlement structure, and a "nonspecialist" system result in significant differences in the method and type of transactions. The false assumption by advocates of automation that the two markets are substantially similar has led to the erroneous conclusion that the same transaction system can apply to both. Thus, they have proposed the identical automated transaction system for futures as is presently proposed for the securities industry.

ORDERS

Special types of orders prevail in commodities markets because of these markets' unique characteristics. Such orders as "market," "discretionary," "stop," and "MIT" orders are tailored.

44. The clearinghouse of the exchange acts as the mechanism for receipt and payment of funds each business day. See generally J. Baer & O. Saxon, Commodity Exchanges and Futures Trading 33 (1949).
45. A "specialist book" is a record of buy and sell orders kept by the specialist and sequenced according to price and time of receipt.
46. The Chairman of the New York Stock Exchange has indicated that his exchange seeks major changes in the performance of its specialists by stimulating competition and by establishing a new category of competitive traders. Address by William M. Batten, Chairman, New York Stock Exchange, before the American Bar Association (Aug. 9, 1977).
47. A "market order" is an order to buy or sell at the best available price. A "stop order" becomes a market order if and when the price reaches a prescribed point. An "MIT order," like a stop order, becomes a market order if and when the price reaches a prescribed point; it differs from a stop order in that a "buy-MIT" is
to the immediate action and reaction nature of commodity markets. As a group, these orders can be classified as “nonresting.” They are, in effect, orders which will be executed at the market price, rather than at a specified price; in contrast, a “price limit” order is a “resting” type which can be executed only at a given price when and if the market reaches that price. For instance, the “stop” order is almost exclusively used in futures. It was not invented by the “crowd” on the exchange; it was probably invented by a brokerage firm to enable a customer to limit his loss. Thus, “stop” orders are especially necessary in futures markets. Not only are the markets volatile, but the “margin” on deposit with the member firm is the limit of the customer’s security deposit. The “stop” order attempts to protect the customer from a greater loss than that which he is prepared to take or that which his security deposit can command. Although such orders do not always fulfill their function, they are the best available tool. Similarly, many futures market users have adopted the discretionary order as a market tool. The customer thereby gives the broker some discretion so that (1) the broker need not show his full hand, lest the market be taken from him; (2) the broker can stagger his executions so that the impact of the whole order does not unduly affect market price; (3) the broker can use his judgment and experience in best executing the order.

“Nonresting” orders are mandatory tools for customers in futures and are probably used as often as “price limit” orders. Nonresting orders depend measurably on the thickness of the market for their execution. In other words, good execution of a nonresting order depends on the number of resting orders in the market and the continuing inflow of new orders to the market. If, for instance, the number of resting orders in a given market is small, or has diminished, then the effective execution of a nonresting order becomes difficult. In such markets, customers are reluctant to place their customary “market” or “stop” orders, since they cannot with sufficient certainty know the price range in which such orders are likely to be executed.

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48. A “price limit order” is an order to buy or sell at a specific price.

49. Today, “stop” orders are also popular as a tool with which to institute new positions.
orders will be executed. As a result, markets with insufficient resting orders lose their viability and are shunned by futures traders. It is fair to assume that irrespective of the transaction process employed, futures markets today demand the use of nonresting orders by customers. Consequently, it is essential to determine whether the use of nonresting orders will be materially jeopardized in an automated system. This article concludes that they will be jeopardized.

A large market user, whether a hedger, a speculator, or a firm acting on behalf of many accounts, knows that even in the most liquid market, he must place his orders so that his full intentions, or the full scope of his intended market position, do not become universally known. If they do, it is fairly certain that the market will be "taken away" from him and he will be unable to fill his order or assume or offset a large position at the desired price level. The present system recognizes this problem and is, therefore, geared to accommodate the necessity for nondisclosure. Presently, a large user may place a multitude of price limit orders with his broker at different price levels with no one else aware of the full extent of his intentions. These resting orders await the market, and each will be disclosed separately when the broker bids or offers the individual order at the designated price. In this manner, no one can be certain whether the broker has more to buy or sell at another price until the market reaches that price. Similarly, a large user can parcel out orders to different brokers for execution at different price levels.

It would be foolish to assume that the large hedger or speculator would be willing to place large resting price limit orders on the "open book" in an automated system.\(^5\) In other words, to believe that a large user will place orders of significant size at different levels of the market, thereby advising everyone of his full intentions, is to ignore the inherent characteristics of futures markets. Because of the limited levels of supply, the limited life of futures, and the limited breadth of participation, an order of any special magnitude becomes immediately visible and suspect as a possibly significant market factor. Frequently, such disclosure would have an immediate and volatile impact on the market. The market would consequently become distorted. It would then be

\(^5\) An "open book" system would show on the CRT, in the aggregate, the quantity of bids and offers in a given futures contract available above and below the market.
unlikely that the user would achieve execution at his intended prices, if at all. In fact, it is possible that such an "open book" system could become subject to fictitious bids or offers, above or below the market, for the purpose of adversely affecting the market.

Large commercials or speculators would decide that it is imprudent to show their hand on the "open book." Small speculators and small commercial users would not place their bids and offers when they know that the professionals and large commercials will not. The number of resting orders would therefore diminish substantially. Consequently, the proposed automated "open book" execution system for futures would not work as supposed. Futures customers would hold back their orders rather than divulge them on the "book." The system would become an "empty book."51 The ultimate result could be disastrous for these markets: Execution of nonresting orders would become increasingly difficult and unmanageable; large price gaps might develop; larger and more erratic price swings might occur; liquidity would diminish; and the market would become thinner. Thus, the whole system might be severely damaged.

FURTHER CONSIDERATIONS

Finally, many unanswered technical questions remain. Who is ready to undertake the enormous cost expenditure necessary to implement the system? At the CME alone, there are approximately 20,000 registered representatives. If each is to receive a computer terminal at a cost of approximately $3,000 per unit, it would cost $60 million for terminals alone, not to mention the cost of the other hardware and software necessary for a full computer-based system. "Computer burglary" is another concern. There are hundreds of unscrupulous ways to use a computer system in futures. Can the system be safeguarded?52 Unintentional errors are still another concern. In the pit, if someone is offering fifty units,

51. See M. Mendelson, supra note 7, at 8.
52. The field of "computer crime" is relatively new but has awesome implications. For example, the General Accounting Office (GAO), the investigating arm of Congress, is investigating the possibility of widespread computer crime in the Social Security Administration. This GAO probe was initiated after an internal audit within HEW disclosed that the computer system's security procedures and controls were inadequate to prevent fraud and abuse. See U.S. GENERAL ACCOUNTING OFFICE, COMPUTER RELATED CRIMES IN THE FEDERAL GOVERNMENT (1976).
there is no way accidentally to purchase one hundred from him. But this could occur on a computer terminal if one were accidentally to press an extra digit on a purchase or sell order. The transaction may be consummated within a split second. But, who owns the extra purchases or sales? Who pays for them? In short, the protagonists of automation have failed to consider all the complex problems involved in automating the transaction process.

CONCLUSION

Futures markets have willingly incorporated modern computer technology to the extent feasible. They will continue to adopt new technology as it becomes available whenever it enhances the market system. Futures markets, however, possess characteristics which distinguish them from securities markets. The special nature of futures does not lend itself to an "open book" execution process. Special orders and specialists are required to execute transactions. Liquidity is of primary importance to commodity futures. The sources of liquidity in futures depend heavily on the exchange floor, its traders, and brokers. Thus, an automated transaction system would be detrimental to futures markets.

53. Transaction errors, of course, occur in the present system, but they are not of this type; it is reasonable to assume that human errors will occur in any system, but those are quite different from the mechanical errors possible on a CRT.