Money, in essence, is a type of information. And in the place where we are headed (what magazines like to call the global village), the equation flips, and information sometimes behaves like money. This little-perceived relationship is one aspect of a global Financial and Communications Complex that has been knitting itself together so rapidly that nobody understands how it works.

There are some clues we should probably pay attention to. Fashion — rapid breathless cycles of fashion — rather than being a symptom of decadence seems to be a communication mechanism in this new ecology. The meaning of debt is unclear. The only voices I've heard that have enlightened this cloud of unknowing have come from this interview with Stewart Brand, Peter Schwartz, and Jay Ogilvy. Peter Schwartz is formerly head of Business Environment, part of the Strategic Planning Department at Royal Dutch Shell Group in London. Jay Ogilvy is Director of Research at SRI International, where he worked on formulating the VALS marketing research tool. Stewart Brand was in London consulting for Shell and organizing his new book, The Media Lab, for which this interview was done. It was taped in April, 1986 at the Charles Hotel, London, in one hour.

STEWART BRAND: The topic is communication and technology. What are they doing and what are the consequences? Peter, you mentioned to me four things that are generating a new game around the world.

PETER SCHWARTZ: Yes. These four things are finance, recorded entertainment, computing, and telecommunications. They are intersecting. Our technology has progressed to a point where the driving force of our wealth, that is our wealth-creation process, increasingly has to do with information. Not too long ago the manufacture of things like textiles and steel and automobiles were the driving structures out of which industrialism emerged. The winners in that game profited from mass production, economics of scale and low-cost resources. Now, the value added in transforming material is related to our capacity to understand and use information in various ways. If that's the case, what we want to know is, how are the rules of this new game going to be written?

The principal technologies involved are telecommunications and computing. And the two great systems that will use them predominantly are finance and recorded entertainment. By recorded entertainment I mean television, movies, music, and so on, on a worldwide scale. I single out these two systems because, in both cases, the markets and products are becoming increasingly global and accelerated by rapidly advancing technology. This game feeds on itself. Toward the end of the '70s, foreign exchange transactions hit an exponential curve at $3 trillion. By 1984, I think it was $30 trillion. The newest figures show $65 trillion — another doubling since last year, and twenty times the annual U.S. Gross National Product. I'm sure this growth is not permanent, but it is several times the world GNP.

This acceleration began with the 1973 oil price crisis and the breakdown of the Breton Woods exchange rate agreement, leading to a more volatile dollar. Enormous amounts of money flowed from oil importers to oil exporters and back out again into the international financial system.

If the dollar only moves a tenth of a penny over three weeks, that is no game to play. But if it moves three or four cents in a day and you've got a billion bucks here and five billion bucks there, you can make serious money in a series of incremental moves. So we decide to play. However, we must have an adequate computer system to keep track of where our money is. The medium of communication for all this electronic money is essentially a computer.
in one country talking to a computer in another country, pouring out vast volumes of data very, very rapidly. It's a 24-hour-a-day, worldwide, communication game, and information technology is what makes it possible.

For example, let's say we decide to play the interest rate arbitrage game. We have an enormous amount of cash, and we can put it anywhere we want. We allow our cash to be used to cover the differential between money that Citibank of Tokyo wants to lend to Citibank of Paris, and that difference is maybe a tenth of one percent on one billion dollars in a day. Our profit is quite trivial, but there's virtually no risk. Then we can put it over here, and then in the morning move it over there. In the afternoon we move it again, and go around the world 24 hours a day, making a few tens of millions in the absolutely risk-free game of allowing people to use our money to handle short-term differences measured in hours and sometimes even minutes. It may just be the difference of 14.27 percent interest versus 14.28 percent interest.

The physical activity of the world is not driving the value of currencies any longer. It's all this money sloshing around the world — a classic case of the tail wagging the dog. In fact, the dog has really become quite trivial. The actual money needed for physical trade is now a minute part of the dominant movement of money in the world. In this case the movement of money itself has become the game, and that shift is consequential in several ways. First, it's an extremely difficult and unstable system to manage. The fluidity and scales are so large that the U.S., the biggest economy in the world, has a GNP only 5 percent of that figure. Second, the scope for any individual country to manage its own economic affairs is so much less because these financial exchange flows are so much greater than industrial trade flows. And third, we don't understand it. At Royal Dutch Shell we've just done an analysis of the new kinds of financial instruments, and what is absolutely clear to me is that it is a system out of control. Nobody really understands it. People innovate new mechanisms — a new way of financing or selling a particular kind of security or a different way of coaggregating money and reselling it. The mechanisms are commercially viable, but nobody knows what the consequences are. And historically, the catalyst which has precipitated a depression has been the collapse of the meaning of money. That's what happened last time — money lost its meaning. When these mechanisms go completely out of control, there is enormous danger.
Take, for example, the whole Latin American debt crisis. One reason it occurred was the significant interbank lending which was in effect involuntary. Mechanisms had been set up for moving money from here to there, and no one questioned them. Over the course of two or three months, a lot of short-term money — a few tens of billions dollars — suddenly flowed into Brazil. Their debt went from about $60 billion to $90 billion in six months and they didn't even know it. Nobody knew it. It just went whoosh, and suddenly they were in hock. The interest rates had gone up on short-term debt, and they were paying all this short-term money and didn't even know it. No individual bank, no one could observe it. When international bankers stopped to take a look, they said, "My God, look at all this money in Brazil!" It wasn't that someone said, "I want to go out and borrow a bunch of money." It was just one bank lending to another bank to cover short-term money — a few tens of billions dollars. Mechanisms had been set up for moving money from here to there, and no one questioned them.

"A big issue will be to what degree should there be independence and coordination. It may be different for the dominant countries. The non-dominant countries may be much freer to have a higher or lower inflation rate, whereas the Big Three may have very little freedom. They may have to be tightly coupled."

I think this will occur in a five-to-ten-year time frame. We're already beginning to see a movement in that direction. The U.S. has just shifted its position drastically. Until recently it voiced absolute opposition to any increased role for the international institutions, or for any structure of exchange rates and financial regimes at all. Period. Free markets ruled entirely, and the international institutions were considered a bunch of commies run by the European socialists. We were not interested in participating. But now we can see how our domestic economy is profoundly affected by the consequences of being in a game and not taking a conscious role. So we've decided it's important that the game be structured appropriately, and now we will play to help structure the game. That was the shift from Don Regan to Jim Baker at Treasury.

"It hasn't gone that far, but that's the reality. First of all, if we don't play there is no game. If we do play, we are still the biggest gorilla on the block by a long way. Eighty percent of the world's financial transactions are still dollar-based. Our lever on the system is so large, even if we don't want to exercise it, that they can't play without us. And even if we wanted to be generous, we couldn't be generous with the power. There isn't any choice. The U.S. is the key player, and the game requires our participation."

"A shift from, "We don't want to play because it's a fucked game," to, "We want to play and we want to dominate.""

"So how about electronic entertainment — television, movies, music, radio?"

"Here the forces are somewhat different, but interact. They have to do basically with three things. One, is market demographics. The biggest market for recorded entertainment is young people — a huge fraction of the market. The numbers worldwide are increasing at a staggering rate. Look at Mexico, where 50 percent of the population is under 15. Two, the technology of both recording and distribution is changing — everything from direct-broadcast satellite to compact disc-video. The world market is now accessible in a way it wasn't ten years ago. Third, what you now have is not only a worldwide market, but a worldwide series of sources. In terms of total volume of cash and total films made, the largest film industry in the world is India. By far. The second largest is Hong Kong. The United States is third.

You can go into a video shop in Lagos, Nigeria, and see walls of films, 90 percent of which you've never seen in any video store in the United States.
First of all they're not in English; second, they're rotten films; third, most of them are adventure, comedy, love stories, dumb sorts of things. A lot of them are horror or Indian westerns. Indians love westerns. Hundreds and hundreds of Indian cowboy movies, with Indian Indians playing American Indians and Indian Indians playing American cowboys. All speaking in Hindi with English subtitles. It's really quite funny. And quite profitable.

There's a vast, extremely lucrative entertainment business going on that we don't even see. I've tried to get some idea of the volume, but have not been able to find any global numbers. The U.S. projects a $25 billion gross for the next five years for the total electronic entertainment industry. And the technology driving this industry is the same increasingly sophisticated computing and telecommunications technology that is pushing finance. These two industries, finance and electronic entertainment, the greatest users of these technologies, are establishing the rules of the game.

The linking infrastructure is going to be a function of what finance wants on the one hand, and what the electronic entertainment media want on the other. Everything else will be piggybacked on that. The rules for satellite allocation or for broadcasting bandwidth allocation or for how one makes money or for how finance is regulated, will be focused around those two industries. We saw a situation in the late sixties when oil became the dominant medium of international transfer of energy, and oil set the international energy price. The gas business, the coal business, the nuclear business all have to conform to what the oil industry in effect does or does not do, intentionally or unintentionally. Today the game is computers and telecommunications, and the rules will be structured around finance and electronic entertainment, the two dominant players. Other people who want to play this game will have to follow their rules.

SB: So they are both in the bit biz. You have some interesting indeterminacies with these two things going on. If their demands are independent and they're using the same apparatus, that makes something already unpredictable doubly unpredictable.

PS: Exactly. But it also says something else. In the United States we've spent a lot of time talking about the role of information and computing in education. But by far the dominant curriculum in education today does not take place in the eight o'clock-to-three o'clock time slot. It's in the four o'clock-to-midnight shift when the kids watch television. Actually teaching time isn't eight to three, it's probably about four hours, if that. But at home they've got seven hours of much higher-impact communications bombarding them, completely overwhelming anything they get in the classroom. As in finance, the second-order (or unintended) consequence is that as the game evolves and grows, it becomes the dominant shaping influence on the players. Electronic entertainment will be the dominant educational medium that will shape global consciousness. And the language will be overwhelmingly English. The British Film Board says that something like 60 percent of all films
worldwide are in English. English-language films can be sold almost anywhere.

SB: The language of science is the language of entertainment.

JAMES OGILVY: Sure, you can see it in rock 'n' roll.

PS: In music, it's overwhelmingly the case. Go hear rock bands in Eastern Europe and they sing in English. They may not understand a word, but they sing perfect English. The biggest rock band in Hungary is called "Locomotive GT." And they are flawless English speakers because if they want to get any kind of market outside of Hungary they have to sing in English.

This English language advantage could be the salvation of the British. It's interesting that the English government has not yet picked up on it. All the big British movies you've seen recently were made with American money. "Gandhi" was American money; so was "Chariots of Fire." But the British see this as trivial. They're interested in saving their automobile industry, not in feeding their entertainment industry. It's amazing, but you cannot get money for films in Britain, and Britain hasn't got much else. Here's the world hungry for it! God, if Britain really decided to put some money behind their films!

And they have an incredible talent pool, I mean incredible. You know where the best special effects facilities in the world are? Britain. You know where "Star Wars" studio work was done? Pinewood Studios outside of London. Spielberg was going to do Peter Pan. He changed the setting to Youngstown, Ohio, yet they planned to shoot it at Elstree Studios outside of London. So they took a London story, moved it to the United States, and then were going to shoot it in England. Isn't that bizarre?

Thirty-five percent of U.S. video revenue from films is now international. That does not include piracy, which no doubt will be controlled as the technology moves to compact discs. I think video tape may be a 20-year medium, like reel-to-reel technology moves to compact discs. You use it for a while until something better comes along. Something like the compact disc may be the ultimate data storage medium.

SB: Does all this shifting stabilize at some point?

PS: I think so. Once the demographic pattern stabilizes, it won't be in itself a major driving force. If you look at the underlying birth rates, you see drastic declines with the exception of Africa. You've still got the momentum of the current young having their own children but subsequent to that, probably around the turn of the century, it begins to slow down. Also, at that same time, just like at the turn of the last century, the game rules will get pretty well set. The next generation of recording and presentation technology will be relatively stable for a period. That is unless there's another radical breakthrough.

By then we will have had the major advances that microelectronics and digitalization will infuse into the system. But it would be difficult to implement another technological leap on the same scale within the next two or three decades. Microelectronics today is the result of several prior decades of development, and another decade of diffusion, as people said, "Ah, what can you do with this?" and began to develop applications, languages, and so on. And it's now accelerating. So we're talking about a 30- or 40-year lead time in that type of penetration and restructuring process. What it says to me is that once this system comes into play, you won't want to tear it down. The advantages to be gained in restructuring would have to be enormous. So I believe the structure will be relatively stable for at least several decades thereafter, and then the changes are likely to be incremental until there's a radical change in technology again.

SB: You're saying this is basically a global phenomenon, where everyone thinks of themselves in terms of this kind of system?

PS: Absolutely. People now have access to the world in new ways, i.e. they can get and communicate information and play in games that are global in character. But I don't think it's homogenizing in the sense of everybody becoming the same, as some predicted. Of course people are more susceptible to the common winds of taste and fashion, especially the young. A perfect example of this phenomenon is Benetton, the Italian clothing chain. Benetton operates as if there is a kind of uniform, a sort of color of the week. And because of the electronic transfer of information, that color sweeps the world very quickly. And Benetton responds to and shapes that market.

JO: There are Benetton shops all over the world now and they all look alike.

PS: Staggeringly successful, with relatively high quality, medium priced, rapid turnover inventory; walk into any Benetton shop, and what you'll see is the same basic design. But the color will change every week. Their analysis will give information on the type, price, and color of every Benetton item sold worldwide in what must be five or six thousand shops, so they know what is really selling, all over the world, every day. They dye 15 percent of their colors each day on the basis of the data they get that day.

SB: It sounds like there's world fashion operating on a very tight loop. There's also world news operating on a very tight loop.

PS: Well, now we get into one of the most interesting public policy issues, and that is the control of that flow of information. The question is, will there be technical mechanisms by which governments can prevent information from flowing...
across their borders? Clearly governments outside of the United States, with almost no exceptions, reserve unto themselves the right to determine what their citizens will see. The Official Secrets Act in Britain has no U.S. equivalent. That issue is one of the thorniest in this whole game.

SB: Is information control shifting at all? Do other countries see the U.S. as just continually crazy or as having some corrections built in?

PS: No, I think most of the world still believes it is appropriate for the government to control what its people will know. It's really quite amazing to me, having grown up in the United States.

SB: When they come to the U.S., are they blown away by the stuff that's printed?

PS: No, because remember the quality of news in the United States is not particularly good. And it depends where you've come from. If you come from Britain and read an American newspaper or see American television you say, "What crap."

There's much better news in Britain than here, despite the fact that it is managed. It may be a different story if you've come from Botswana. But in Britain you could not have the equivalent of the Watergate leak. The newspapers would not be permitted to publish the story. Couldn't do it. Criticism is permissible, but information, on the other hand, is tightly controlled.

SB: How much does news piggyback on electronic entertainment?

PS: In England, totally. Elsewhere, it does to the extent that it uses the same medium. It doesn't to the extent that the dominant media are state controlled. Television, for example, is almost everywhere a state enterprise. But it is beginning to be increasingly deregulated. Italy now has some non-state stations; Holland has one, France has two, so it's begun to happen.

SB: Are they rewarded for that? Does it work somehow?

PS: Well, it's created a great debate. Again, remember nearly everywhere we're dealing with regimes that are "dirigiste" — a term not well known in the United States. It's a French word that means "state-directed." It isn't socialism, it isn't fascism, it's essentially the idea that part of the central role of the state is to direct society. As opposed to the U.S. philosophy of taking care of just a few things and letting individuals take care of themselves. Most every other country in the world is in some sense dirigiste. We are anti-dirigiste, fundamentally, in our cultural roots. So the debate is this: "If we permit private media, and it competes successfully with our state media, are we degrading the quality? Even if people like it, will they be receiving poorer information, less culture, less things they ought to have?"

So, in Britain the debate right now is: Is independent television (ITV) pulling down the BBC, the
flagship of high-quality news? And everybody is saying, "Oh, BBC news has deteriorated to compete with ITV news, and, gee, maybe we should cut ITV news and not permit them to do certain things so we can preserve the BBC." That's the character of the debate. Success does not guarantee further growth. And that's true in France, in Italy, in Holland.

JO: The U.S. can't win for losing, because on the one hand we are the number one players in the game and everybody wants our electronic entertainment. On the other hand, the more we export, the more we're accused of cultural imperialism. There's no winning that.

PS: As a multinational business, for example, Royal Dutch Shell is not permitted to ship computer data in or out of Brazil.

SB: You print it on paper and carry it in? How is it done?

PS: There's a variety of ways to do it, but we cannot establish a communication link between our computer, say, in Britain with a computer in Brazil. We're not permitted because Brazil wants to control what we send down that line.

SB: How do the Soviets handle stuff like that?

PS: They don't.

SB: There's no transnational data flow in and out of the Soviet Union?

PS: That's right. I wouldn't be surprised if some people figure out how to get around the controls, but have you ever tried to telephone the Soviet Union?

SB: But it can be done. I hear that personal computers in the Soviet Union don't have printers. Do they have telephone modems?

JO: Computer modems are arriving.

PS: But here's an example in Europe. Suppose I want to travel with a special board for driving a videographics projector for a Hewlett-Packard PC. I only have one of them and they're a real pain to get. If I want to take it from Britain to Holland for the day and bring it back that night, I have to get an export license and a re-import license just to carry it with me on the plane over and back. They're so afraid of the leak.

SB: Like dope.

PS: Only much worse. Someone could carry marijuana more easily than they could carry computers. And the fines are worse than for the drugs. There's a 75-pound fine for bringing in marijuana, and there's a 100,000-pound fine for bringing in illegal computing equipment.

SB: So what's the underground economy in this now?

PS: I've heard there's a subculture of people who will move cans of data tapes in their trucks across the Brazilian border. How large this is I couldn't guess, but I'm sure illegal telephone lines and illegal transfer of data are increasing.

SB: Enough to be game-changing?

PS: Don't know enough to really say.

SB: Typically, outlawry changes games.

PS: I think it's too new to really say. What is interesting is this: if we take my premise that these two industries, finance and electronic entertainment, interacting with the evolving telecommunications and computing technology, will write the rules for the economic and political system of the next century, then what values are embedded in that system? Today no one is thinking about the meaning of the rules being developed in an informal, unpredictable, evolutionary way around the short-term exigencies of those industries. Ultimately they will, quite by chance, evolve into something, and that something will become the organizing paradigm of the next century. That paradigm, inasmuch as we've ambled from the realm of the material to the informational, will become a kind of global consciousness. It is the system within which we all begin to think about ourselves collectively.

SB: "Values" means what? Global conscience?

PS: The intentional choices people would express if they had it.

SB: What were the values of the last system?

JO: An example of the kind of thing you might be getting at might come under the rubric of "form follows function" — Peter Drucker's argument about how the form of the modern corporation follows the function of the reproduction of standardized, replaceable parts in manufacturing. That's what you're talking about.

PS: That's precisely what I mean.

JO: So you get the bureaucratic corporations where all the lathe operators have to do the same thing, and managers tell the same thing to their vice presidents. But what if the function is no longer chung-chung-chung standardization producing the same-same-same, but you move into entertainment, financial transactions, more and greater varieties of information?

The definition of information is a difference that makes a difference. So if the function is production of information, then you're not doing the same-same-same any more. You're now turning out a different different difference because if it's not different, it's not information.

PS: I'll give you a concrete example: financial services. How do banks compete? Not by interest rates. The difference comes in the differential services they offer. The way they get that differential service in theory is how they manipulate and manage their own information and/or the information they get. The perfect example was how Merrill Lynch created a market: the "cash
The wealth of moving money around surpasses the wealth of making money. This new game is fixing the shape of communications.

Boy George
The English language is suddenly a fabulous asset. The British should forget about manufacturing cars and promote their film and music industry.

management account.” The cash management account was a difference that made a difference. That principle became an intrinsic (though invented) value in today’s financial system. “Efficiency,” “economies of scale” — these were values embedded within the industrial system. So the new values will become implicit within the organizing structure, and people will be forced to adapt to them.

SB: What's the transition from the one overall operating system to the other overall operating system?

JO: Punctuated equilibrium.

PS: That's what I was going to say, a series of lurches. You can see a good example in the oil industry with the shift of power from the people who find, produce and refine oil to the traders. The people who find, produce and refine oil are basically an industrial model, and the values that have governed them are essentially industrial values, things like economies of scale, for example. In trading, everything is information flows, speed of reaction, differences that make a difference. “I know something you don't know.” And increasingly the successful players in the oil business are the successful traders. We see this driving force in a number of industries. General Motors’ acquisition of Hughes Aerospace and EDS, a computer service company, is another example. GM realized the game was going to be a function of using information to improve the nature of the car, how you manufactured the car, how you sold the car, how you financed the car. So the driving force is shifting from the designer to the person who structures the information environment. That was a conscious strategic choice at GM.

SB: What will the life of the employee be like in the industrial side versus the trading side of a business?

PS: Well, it’s quite interesting, because this shifts the roles and the dominant power structure from the engineers to the traders. Where once the engineer was the hero that drove the company, now he is a functionary necessary to produce oil with which the trader can make some money.

SB: Like the farmer now.

PS: Yes, exactly. And the trader is the commodity broker. Farmers don't make much money, but the commodity brokers sure do.

SB: Farmers pretty much stay in one place. Commodity brokers slither around. They change companies, they change kinds of work. In the publishing business we have contracts because that's the only thing that remains the same during the life of the book. —
PS: As a trader, you move a lot, because what you look for is information. You spend a few days at the OPEC meeting in Geneva to pick up what you can. The money is so big, and a successful trader can get such a huge premium, that people are constantly offering them vast amounts of money to move. It happens all the time. Whereas a petroleum engineer's pretty much a petroleum engineer.

SB: What does all this do to politics?

PS: I think several things. We've touched on two of them already. One is the ability of the political system to control the information that the people have.

SB: Is that more control or less?

PS: I think inescapably less. The controllers can push against the river, but an incredibly powerful current is coming at them. They can slow it, channel it a bit, but not completely. The kids are going to listen to rock 'n' roll, they're going to listen to British rock bands in America, and people are going to watch "Dallas" in England. It's happening. A second reason is world finance. It diminishes the power of domestic policies enormously, and changes the character of a politician. It's quite interesting. The one thing upon which Bill Bradley, a liberal democrat, and Jack Kemp, an extremely conservative Republican, were able to agree was the creation of a congressional forum on new mechanisms for exchange rate management. They each realize that their party's political strategy was dependent upon this same international economic issue, which in turn was being driven by this financial structure. Somebody like Jack Kemp, who would have chosen to ignore the international arena, can't do that any more. So the political ideology has begun to shift.

SB: What's good advice to a young person in a transition like this?

PS: I can't give you any profound answer other than the one that has always been the case, which is make sure you know how to learn.

SB: That's pretty good. Is that true of corporations as well?

PS: Oh, absolutely. One of the clear implications of this is a further acceleration of the rate of change in less predictable directions.

SB: "Management in the Age of Discontinuity," said Drucker. How long is this Age of Discontinuity?

PS: Probably about another decade or so. I think the world economy goes through these transitions, from periods of relative stability to relative turbulence to relative stability again. We're in one of these transitions. There's probably a relatively stable era of several decades ahead, where the basic pattern is set. Because you want to extract the value out of the capital that you invested, you don't change much. You have to get such a large increment of improvement to overcome the sub-costs, that you don't change the system.

SB: So we're going to live with the decisions that are made now for 40 years.

PS: About a half-century altogether. That's why this game is so interesting right now. The rules are just being written, and not in a conscious way.

SB: Which I assume is just as well. But I'm not sure of that.

PS: Well, at least I'd want to think about what the consequences of the outcomes of the behavior we're pursuing are. In other words, I'm not sure I want somebody like me or anybody else to have the power to actually write the rules. I'm not going to trust anybody with that. But I'd sure like to think through the implications. For example, we're choosing between fiber optics and Direct Broadcast Satellite for our communications channels. What does that imply? We have to think through in some reasonable way. International regulatory choices are going to be made. What kind of exchange rate mechanism should be established? That will have real world consequences. Thinking these questions through and reflecting them in the political process is what I would really like to do rather than see somebody actually write the rules. The most important thing is to bring this onto the table as an agenda item. "Here is a place of enormous leverage. Think about it. What does it mean?"

Almost everyone in a large company spends most of their time talking to each other, either in writing or in face-to-face, one-to-one or collective meetings, or talking on the telephone. So, how people get information to each other is a critical issue, and business is 100 percent people. Nothing else. People attract capital, people invent things, people sell things, people trade things. So if you influence how those people interact, you influence the basic character of your business. Considering that Shell has 160,000 people in 120 countries, it means that not everybody talks directly to everybody else — it's not a little shop. So media clearly come into play. How well we do that, and how the structure of the medium affects us, have a profound influence on the success or failure of our business.

The second-level issue is that Shell is profoundly affected by the structure, behavior, and dynamics of the world economy. We are the system, we are not separate from it. We are so big that you can't distinguish us from the thing itself in any meaningful way. For example, as I've mentioned earlier, exchange rates movements have a huge effect on Shell. We have questions: is it really going to be true that the quality of information flows will be so high that people work at home? Won't they travel very much? That affects transport fuel. Is that real? I personally don't think so, but I'd sure want to know if I'm wrong.
The influence of how the media co-evolve with the structure of society is an important issue for us. Also, because we are closely linked to the rate of economic growth, if the world economy grows rapidly, we do well; if it doesn't, we don't. I believe the systems discussed will be a sufficiently large wealth generator that they will compensate for the slow growth of the heavy industries. They will be an important impetus to world growth.

SB: How much is that a self-enhancing process, wealth building on wealth?

PS: Very much so. There's the value-added in information. Most people thought about it as just moving stuff around, as opposed to adding value, but it's clearly adding value.

SB: The commodity which is not a commodity.

PS: The economics of this become quite interesting. Nobody knows. One of the great current puzzles in economics is, how do you handle information? I don't have an answer to this. It's a bitch.

SB: The way I keep stating it is: "Information wants to be free," because it's so easy to transmit; "information wants to be expensive," because it's so valuable.

JO: What gets me is how utterly inappropriate our basic economic categories are. Look at the difference between how you price a ton of steel and how you price information. For one thing, we need to recast the concept of property, because in Marx's terms property is by definition inalienably set. I sell you the cow. You got the cow. I don't have the cow any more. I sell you information. You got the information. I still have the information. That's one anomaly. A second anomaly is the notion of depreciation, the very notion of inventory. Intrinsic in information is the "difference that makes a difference" to a receiver. So the condition of the receiver is an important part of whether a given signal is or is not information. Is it news or isn't it news? That depends on the receiver and the receiver's ability to understand it. That's not true of a ton of steel. It's not true of a ton of wheat.

SB: Depreciation of news is instant.

PS: But "Gone with the Wind" is worth much more today than when it was made.

JO: Capital makes sense when it's fixed capital, when it's steel or when it's a plant. Information as capital?

SB: Radio stations are considered a swell investment by some of the venture capitalists because they have fabulous cash flow and hardly any capital requirements.

PS: That's right, a good example.

SB: Yet, advertising companies aren't putting any money into places like MIT's Media Lab because they don't have any capital.

PS: People are an advertising company's only resource. Their whole capital base walks out the door every day at five o'clock.

JO: There's a Nobel Prize waiting for the person who figures out the economics of information.