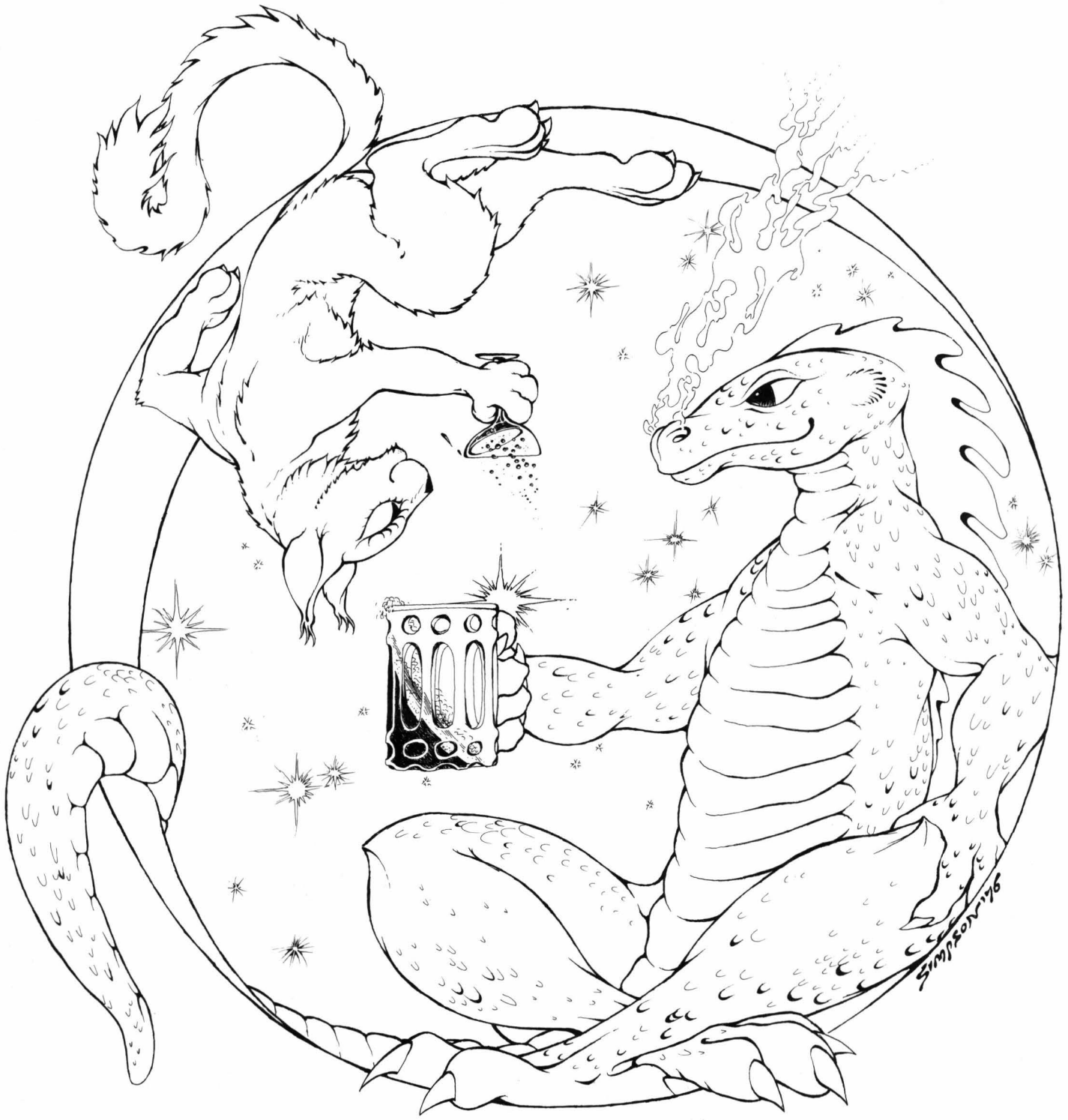
The Noreascon Proceedings

The Twenty-Ninth World Science Fiction Convention

Boston, Massachusetts **September 3-6, 1971**



The Noreascon Proceedings

The Twenty-Ninth World Science Fiction Convention
Boston, Massachusetts
September 3 - 6, 1971

The NESFA Press

Leslie Turek
Editor and Production Manager

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The Noreascon Program Book

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1975 A Time When, by Anne McCaffrey
1976 Homebrew, by Poul Anderson

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Errata

We would like to invite the readers of this book to notify us of any corrections, additions, references, etc., that they may be aware of. For example, if you asked one of the questions which was inaudible on the tapes, please tell us who you are and what you said. (If you can still remember!) We hope to compile this information into a supplement which will be distributed to purchasers of this volume.

Assistance

The following people gave the editor substantial help: D. Christine Benders, Jill Eastlake, Jim Hudson, Fred Isaacs, Tony Lewis, Sue Lewis, and, of course, the Noreascon Committee.

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Preface

by Noreascon Chairman Tony Lewis

To those of you who were not Noreascon members - our greetings; to Noreascon members - welcome back! Our goal at Noreascon was to give you the best Worldcon we possibly could, although whether we accomplished that is your decision. Now that you hold in your hands The Noreascon Proceedings, you can look back at that time in September of 1971 and remember just what kind of a convention you had.

That weekend was the culmination of more than four years of work on the part of the committee and friends. In 1967 we decided to try to bring the next eastern Worldcon to Boston; we had a fine city, a new and excellent hotel, and a large committee eager to go. For two years we talked to people and listened to them; we went to conventions and threw parties; we noted what went right and what went wrong; we logged ideas and thought about them. Finally, at St. Louiscon in 1969, fandom awarded us the mandate and responsibility to put on the 29th World Science Fiction Convention - Noreascon. The name was one of many that we considered, and we chose it to show that our active group was not just from Boston, but was from the entire Northeast (and, in fact, the entire world).

Like all con committees, our first reaction after winning the bid was shock as we realized that we really had to put on a Worldcon. The next two years passed all too swiftly as we negotiated with the hotel, arranged the program, planned films, and put the art show, hucksters room, etc, etc, and so forth in order. The Hugo nominations, ballots, and Hugos themselves were prepared. Finally, everything focussed down to one weekend and then, it began: Noreascon.

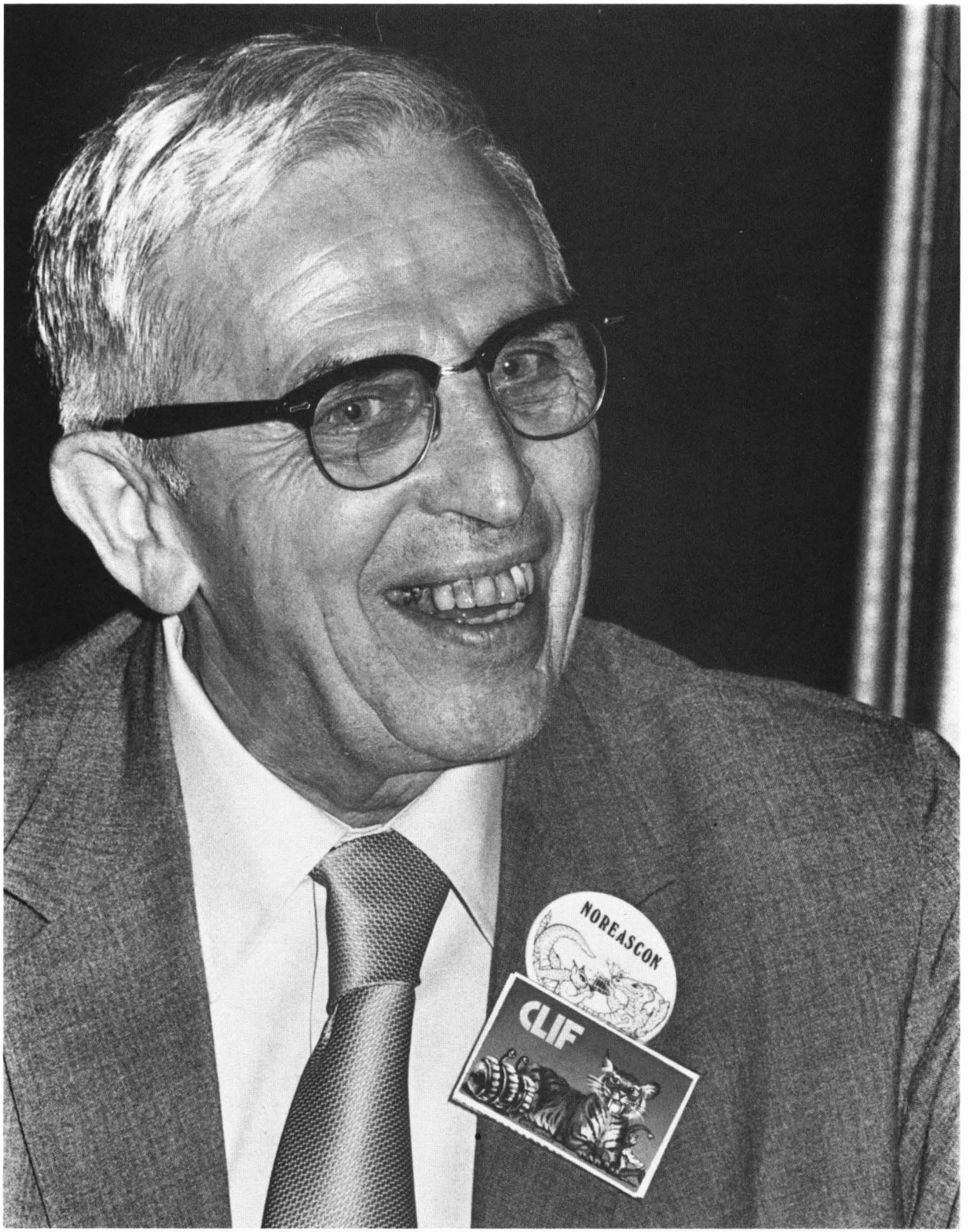
After we recovered from the convention, we wanted to create a permanent reminder of the things that happened during that weekend. Traditionally (in fandom a tradition is anything that happens more than once) Worldcon committees have printed proceedings, and we chose to continue that tradition with this volume. We also started a tradition of our own, with the Noreascon record, which includes all the banquet speeches and the award presentations.

Since most of the material in the Proceedings is transcripts of the program, we should mention that we tried to give a cohesiveness to the program, and make it more than just a series of unrelated items. We decided to focus on science fiction as a literature of the future and of alternatives. This theme was divided into three major program areas. The first dealt with the interaction between humanity and its environment, always remembering that humanity forms a significant part of its environment. This area was called Terraforming the Earth. "Terraforming" is the process by which a planet is made a fit place for humanity to live; we felt it was long past time for terraforming to be applied to the Earth itself, both in SF and in fact.

The second area was concerned with the interaction between humanity and intelligence(s): human, alien, synthetic, artificial. The Good Doctor, Isaac Asimov, suggested calling this area Man=Made Man, hoping people would see the multiple meanings possible in the choice of typography. How can we learn to live with other intelligences since we are not doing a very good job of living with ourselves? What are the ethical implications of being able to create intelligence and/or modify ourselves or other life? Will we even be able to understand the intelligences we create? These were a few of the topics touched upon.

Finally, we considered the role of science fiction in these questions and processes, along with a look at the increasing interest of academe in our field, in Science Fiction: The Writing on the Wall - Prophecy or Graffiti? Does science fiction have artistic merit or social importance above its entertainment value? Take a look at some of the program items in this area and see what the participants had to say.

Here, then, is The Noreascon Proceedings; we hope you will enjoy it. It cannot document everything, of course, but we do hope that it can serve to remind you just what it was that Noreascon meant to you.



Guest of Honor Clifford D. Simak

Introductory Session

Comments by Stew Brownstein, Tony Lewis, Harry Warner, Jr, Gordon Dickson, and Mario Bosnyak

STEW BROWNSTEIN:

Okay, the 29th World Science Fiction Convention - Noreascon - is open. My name is Stewart Brownstein, basically director of running the show, and I'd like to introduce Tony Lewis, the Chairman, who does nothing, obviously.

TONY LEWIS:

It seems a bit superfluous to say the Convention is open now officially for those people who were here last night... and Wednesday, and Tuesday, and Monday. [Laughter.] However, I would like to introduce the notables we have up here and then they each are going to say a few words to you. You may wonder where Cliff Simak is. At this present time, he's in a holding pattern over Logan Airport, but his plane is due to land in a few moments and he will be raced over here by taxicab and possibly he will be here in time to say a few words (we hope). But he will be here for the Convention and he is on a number of program items, so even if he doesn't make it to this Introductory Session (which we'll probably stall a little bit), you will be seeing him on at least two other program items.

Now let me introduce the various people here. I will start from my left. Over at the end of the table is our Fan Guest of Honor, a man who has for many years been a great contributor to fanzine fandom, the champion letter-writing fan of them all, among his many other accomplishments, Harry Warner, Jr. [Applause.]

HARRY WARNER, JR.:

They promised me that they would have a keyboard on this thing [indicating microphone], carriage return, platen, everything. All I'd have to do is go like that [typing motions] and my voice would come out. They never gave me one, so I'll revert to normal now.

TONY LEWIS:

To my immediate left is Gordy Dickson, who is the present past-president of the Science Fiction Writers of America, and Gordy wants to say a few things about one of the specialized functions of the SFWA.

GORDON DICKSON:

Yes, and my voice is almost gone from sitting up late and singing songs. However... The Science Fiction Writers of America discovered about a year or so ago that they'd been getting requests for speakers, and Annie McCaffrey was the first person to feel these things, and she actually directed a few people on to speaking engagements. But she found out that you needed a pattern to these things and you needed a lot of other machinery that went along with it. I looked into it and I discovered that the outfits that handle speakers take 30-50% plus expenses, which set my ears on end - you know, the idea of them getting this much money.

So we end up starting our own speakers bureau, but for technical and tax reasons it is not connected with SFWA; it's an entirely separate organization. It's called Science Fiction Writers Speakers Bureau (SFWSB). Now the point is: these things are available in the press room [indicating SFWSB brochures]. What we ask you to do, if you take one or more, is to register and give us some notion of how the doggone things can be useful, because the idea is that they are to be used to promote the speakers themselves. Hopefully, if we get this going we'll have a situation in which we will get our authors around the country, at least pay their expenses, and instead of having them isolated off in one corner and you see them once every ten years, you'll be able to get them in, to talk to your local college or university or any kind of organization which will sponsor them. So this is it basically; there is also a copy of the press release which you can read. Do take the doggone things, do register, and do something with them - hopefully, push them on your local college or university or anybody else who's interested. If there's a course on science fiction nearby, try it on them, and so on and so forth.

TONY LEWIS:

You have already met my eminent colleague on my right, Mr. Brownstein. On the far right is this year's Vincetore del TAFF, Mario Boris Ivanovich Bosnyak. Mario?

MARIO BOSNYAK:

It's very strange for me to be here. I have a million things to say and I don't have the time and I wouldn't be able to say them so that you can understand them. If you believe that in '67 I didn't know anything about fandom - I didn't know about the holy words of 'gafia' and 'fijagh' and 'fiawol' and whatever it is - and in '68 I started in fandom and I made quite a shot. I would never have believed to be again here in America. I'd been here two years ago and it was a terror for me because I was here with the background of Heicon [the 28th World Science Fiction Convention, held in Heidelberg, Germany, 1970] and every word I said, every gesture I made, was practically under control. Now I feel relaxed and I am really happy.

I must thank everybody here for having made this possible. I know, and I must be sincere, that Peter Weston, Terry Jeeves, or Per Insulander would have been a much better TAFF candidate than I am, but, well, vox populi vox dei, I am here, so you have just to take me.

I think it was Edgar Pangborn who said in "The Music Master of Babylon" [Galaxy Science Fiction, November 1954], "I have briefly known a curious intoxication called faith." And this is what happens to me. Everybody knows me; everybody says "Mario!" and I start looking on the badges, "Who is this? Have I met him in St. Louis?" [the 27th World Science Fiction Convention, 1969] "Did I meet him in Heicon?" Then I start greeting people, "Oh, I've seen you at Heicon." "No, it was St. Louis." Very confusing!

Fandom. They say fandom is just a goddam hobby, and they also say fandom is a state of mind, or a way of life. For me, I would like to say: fandom is a reason of life. And if I have not done much until now to earn my honor of TAFF, I promise I will do it in the future.

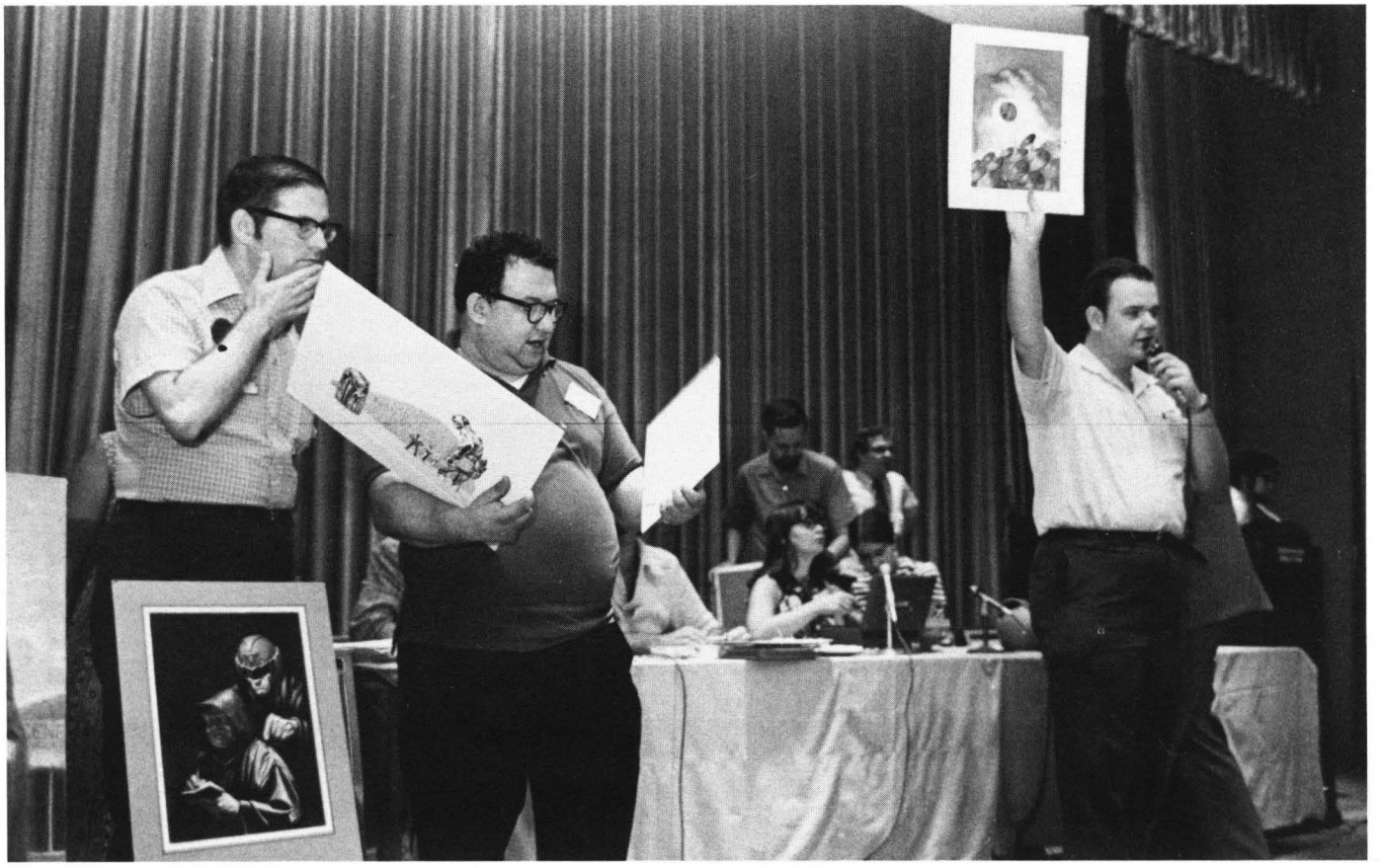
Andy Porter wrote one time to Jean Muggoch, to England, that "the most amazing thing about fandom seems to be that, in these rather troubled times, it works on an international level without a thousand rules and regulations that governments use in dealing with one another" and I think this is true. I have never seen such a simple way to get together as in fandom and I appreciate it very much.

Most of you know I am Italian. Some of you believe I am German because I live in Germany. I don't care at all for nationality. I like to call myself a European bastard because I was born Italian, but my parents were Yugoslavian and my grandparents were Greek and Turks and so on and so on. I have to bring you greetings from European fandom, especially from the German fandom that really exists, and from the Italian. I am here also as a sort of ambassador for Trieste in '72. [The First European Science Fiction Convention, Trieste, Italy, July 1972.] I think I'll have a few words about Trieste in another occasion. I bring you greetings from Tom Schluck, who was the first continental European TAFF winner [1966 to Tricon, 24th World Science Fiction Convention, Cleveland] and, well, I think I'll make it short. I thank everybody of you, and I especially would like to thank Charlie and Dena Brown for their wonderful hospitality. You know, they picked me up at the airport and with an artist as a driver and gave me weeks of hospitality. (By the way, you should subscribe to Locus.) There is another person here, Dave Kyle. Dave and Ruth Kyle gave me another week that I will never forget in my life, no matter what happens. Thanks to you, everybody of you, and I think that's enough.
[Applause.]

TONY LEWIS:

Interspersed in the audience, perhaps even sitting next to you, are notables, both professional and fan, and we're going to sneakily point them out. There's one person who would be sitting here except that he's out working on registration, and that is Hal Clement. [Applause.] I'd like the people I call on to stand so that you can see what they look like, and you can then race out to the bookstore and buy copies of their books and get them autographed, right?

(Photo by Jay Kay Klein)



Auctioneers Fred Patten, Ed Wood, and Jack Chalker
(Photo by Jay Kay Klein)

STEW BROWNSTEIN:

I'd like to have Ben Bova (who doesn't think he's a notable) stand up.[Applause after each introduction.] I'd like R. A. Lafferty. Now a gentleman for whom a special fund was raised to get him over here to the United States, Bob Shaw. And the people who helped organize the fund: Joyce and Arnie Katz. I'd like the previous TAFF winner, Elliot Shorter, to stand up. John Brunner from England. I'd like Danny De Laet from Belgium, a fan, to stand up; he's in the back. And Georges Coune to stand up, please; he's also from Belgium. Mike Glicksohn on the Toronto Committee. Poul Anderson. Alex and Phyllis Eisenstein from Chicago. John Millard, Chairman of the Toronto Committee.

TONY LEWIS:

You'll be sorry, John.

STEW BROWNSTEIN:

I'd like Eddie Jones, also a previous TAFF winner, to stand up. Jim Gunn, president of the SFWA. Now there are an awful lot of people who would be down here but they're actually doing work on the convention - people up in the Art Show room that should be introduced. And now I'd like Don Wollheim, editor of Ace Books. There are lots of people out here who should be introduced to each other. Have fun, enjoy the convention, and unfortunately, the FAA is against us and they're keeping the plane up there - we all know that.

TONY LEWIS:

Mario wants the pretty girls to stand up.

STEW BROWNSTEIN:

No pretty girls? Astrid, why don't you stand up?

TONY LEWIS:

That's Astrid Anderson, one of Poul Anderson's greatest creations.

The remainder of the program for today: we're going to have a film, "Talking to Dolphins", which was produced by Listening, Inc., a dolphin research, oceanographic research firm. We have a number of people who are cutting out now. I will explain about this - why they're leaving.

STEW BROWNSTEIN:

Bob Silverberg wasn't introduced and he's walking out now. [Applause.] I didn't see him.

Run out and buy some of his books and make him happy.

TONY LEWIS:

The Boston Public Library has a display on science fiction which will be running through the 12th of October. The Library is open today and also on Saturday, if people would like to go over and see it. Those of you who are staying on in the Boston area after Labor Day or who happen to live here are invited by the Library to go over there and take a look. They've set up a press conference at the Library for some of the science fiction writers; they should be back in about an hour or so.

After the film, we have scheduled a panel - SF Critics and Reviewers - and following that we will have an auction. We have a number of very nice pieces of artwork including the original of the cover to the program book. After that, we have a panel on the implications of genetic engineering, and then you can all go and eat supper. Starting at 8:00, here, there will be the main film program which Bill Desmond has put together and there's a handout at the freebie table in the Constitution Foyer which gives the film schedule. Also at 8:00, and running on until the wee hours of the morning, will be a get-acquainted party at poolside. Take the elevator up to the 5th floor and you can't miss it from there.

Also, we had originally scheduled "The Urban Universe" for today, but one of the principal speakers who is going to be on that, Mr. Brunner, is not here yet. Unfortunately, we had originally scheduled "The Implications of Genetic Engineering" to be held on Monday. However, Wednesday night we got a call from Dr. Lettvin that he had to leave for Paris Saturday night, and therefore it would be very difficult for him to appear on the program Monday. So it was necessary to displace Mr. Brunner's panel to Monday so that Dr. Lettvin could appear on our panel [today].

So we seem to be running a bit ahead of schedule, because we had expected that Cliff would be here by now, but his plane is late. [Person in audience raises hand.] (Yes, you may leave the room, Mike.)

QUESTION: [Inaudible.]

TONY LEWIS:

A very good idea. We will bring down some of the art and have it on display down here before the auction, but not too long before the auction because it would detract from the panel and we would have a security problem on it.

Well, since we have a bit of time, if there are any questions about the convention, or any of the program, or anything that you're confused about or want to have more information about, we'd be glad to answer it now if we can. If you want to go in swimming, it would, perhaps, be wise to wear a swimsuit - it's not required.
[Applause.]

QUESTION: [About masquerade pre-judging.]

STEW BROWNSTEIN:

Pre: before; to judge: to judge. [Applause.] Yes, it's to smooth the running of the masquerade, which has been in many cases a very long, drawn-out procedure in past conventions.

QUESTION: [About Thursday film.]

TONY LEWIS:

If we could find Chris Steinbrunner we would have a better idea of whether or not it would be. Chris was scheduled to be up here Thursday afternoon with his film. Chris was not up here Thursday afternoon; neither was his film, and therefore an alternate program, which again was put together by the very capable and competent Bill Desmond, was shown in its stead.

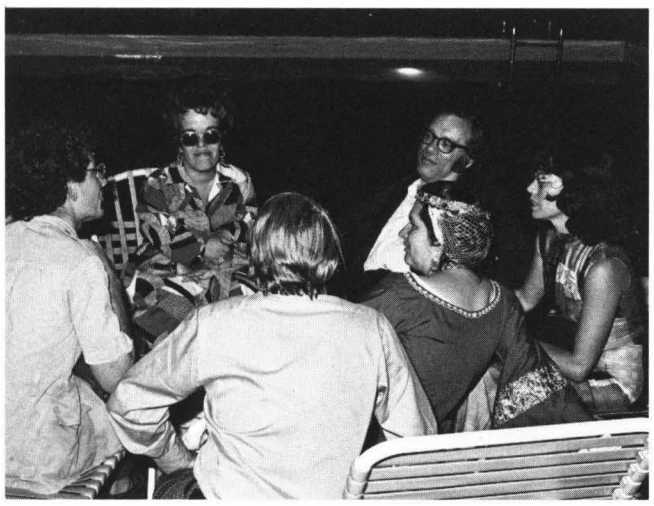
STEW BROWNSTEIN:

And I would like just to thank the person who brought it down, our dear friend from the Canadian Armed Forces, Mr. Mansfield, for his Avenger films. He carries them around with him wherever he goes.

AMY BROWNSTEIN:

[From the audience.] When are we eating supper?

Russell Seitz, Judy-Lynn Benjamin, Isaac Asimov, Barbara Silverberg, Karen Anderson, and Lester del Rey (clockwise from left) at the Poolside Party (Photo by James R. Saklad)



STEW BROWNSTEIN:

We're not eating supper till 8:00.

QUESTION: [Inaudible.]

STEW BROWNSTEIN:

Yes, please come in costume if you have one, even if you're not competing for prizes - it will liven up the affair. If you don't have a costume, yes, of course you are admitted to watch and take pictures and shout your encouragements and boo and hiss and whatever you want.

Since we are running ahead of schedule, which is frightening, Tony suggests that we adjourn for an hour so that we can be late.

TONY LEWIS:

No, not an hour - a half-hour! Not that late! No, actually, we had expected Cliff to be in - apparently the plane has been delayed. So we have this period that Cliff was going to speak in, so I suggest that we adjourn for one half-hour and reassemble here for the showing of the movie at 1:00.

Terraforming the Earth

Resolved: There Are No Viable Alternative Futures

Debate with Ben Bova & Lester del Rey vs Joe Hensley & Robert Silverberg, moderated by George Scithers

STEW BROWNSTEIN:

The next item on the program is a debate: Resolved: There are no viable alternative futures. This is a formal debate moderated by the gentleman with his back towards the audience. Now I'll introduce the people on the panel: the gentleman without a microphone - and never in need of one - Lester del Rey; the gentleman sitting next to Lester, Ben Bova; Bob Silverberg; and Joe Hensley at the end, also the honorable trustee of the Emergency Fund, Honest Joe. . .

JOE HENSLEY:

I brought it all in quarters.

STEW BROWNSTEIN:

. . . and moderating this thing, who will probably get cut up into ribbons, George Scithers.

GEORGE SCITHERS:

A touch of class to this vulgar brawl which is about to start. We have a formal, somewhat abbreviated debate: Resolved: That there are no viable alternative futures. The affirmative position - and careful now, since the proposition is stated in the negative - the affirmative position, Bova and del Rey, will argue that there are no viable futures. The negative, who are countering this negative position and therefore arguing that there are not any no viable alternatives, [Laughter.] are Joe Hensley and Bob Silverberg. The order of the speakers: Ben Bova will present the affirmative position, Joe Hensley will present the original negative position, Bob Silverberg then will refute the affirmative position speaking on behalf of the negative, and finally Lester del Rey will refute everybody. Technically, however, he is refuting the negative position and stating again the affirmative position.

At the end of the debate I would like the audience to vote. Let me make it clear this is a formal debate. What I want the audience to do is to vote on the question, not whether they have been convinced, not whether they think there are or are not any viable alternatives, but which of the debating teams did a better job of trying to convince you, which is not the same thing as actually convincing you. Is this clear? What I want at the end of the debate is a vote by the audience to see which of the two teams did a better job in debating. When we are through with that, then there will be a short session in which the audience can be shot at by the panel when they make the mistake of asking a question that the panel is ready to shoot back at them on. Or, in more formal terms, we will open the floor for questions after the vote on which of the two sides did a better technical job of debating.

We're giving 7 minutes to each of the original speakers and 10 minutes to each of the follow-on speakers. An exception to the usual rule of debate - the rebuttal speakers are permitted in this case to introduce some new material of their own. The original speakers may not rebut each other. The first speaker, then, with 7 minutes of time, is Mr. Ben Bova. [Applause.]

BEN BOVA:

I'm not really sure how I got roped into this and I'm not exactly sure which side I'm on. As long as it's Lester's, though, and I don't have to argue against him, I'm happy. The idea that there are no viable alternative futures... If you look at the universe in the largest scale, of course, you see that sooner or later it will all wind down and come to an end. So that's one point in favor of the proposition.

But bringing things a little closer to home, if you take a look at the world as it exists today and look at the directions in which we're heading, I think you will have to agree that there is no viable alternative future. Much of mankind's existence on earth has been directed by very simple motives, such as a desire not to die, greed, and the enormous psychological inertia in the human animal that has directed us into the position in which we now find

ourselves. We are in a situation today on this planet where we have already gone too far. We have overpopulated this planet and we are not taking the steps, nor can we take the steps, to reduce the population to a point where we can live with the available natural resources. We have, in a century, gutted most of the petrochemical resources that it took forty and fifty million years to create. We're living on our capital so fast that it is inevitable that we will go bankrupt within the next fifty years.

The only possible salvation in this situation, the only possible way to present an alternative future - a viable one - might be technology, but technology has become so far removed from the needs of society that it is difficult for any thinking person to see a salvation in that direction. We have a situation in this country, for example, where we can generate more electrical power than the rest of the world put together and we are urged by our electrical power generation companies to go out and buy more air conditioners and more coffee pots and what-have-you to use more and more power. At the same time, we are already consuming so much electrical power that we have blackouts and brownouts. We have air pollution problems and water pollution problems coming from the power generation plants. We are building, or have built, a spiral from which there doesn't seem to be any possible escape.

Look at what's happening in our cities - major cities like New York and smaller cities like Chester, Pennsylvania. They are undergoing a kind of gravitational collapse - the kind of thing that happens to a star when it digs a black hole for itself. New York City is, by any reasonable medical standards, unfit for human habitation. If you make measurements of the levels of noxious gasses in the atmosphere you will find that they exceed most of the standards put out by the National Institutes of Health. If you pay any attention to standards that have been issued for mental health, you'll find that New York is far below par. If you've tried to ride in a taxi cab in New York in the past two years, or ten years, you find that you're in a miniature armored car which isolates you from the driver, who will do what he wants with his cab whether you like it or not, in most instances, and then demand a ransom to let you out. These are all symptoms of what is really a one-way chute. Cities like New York, societies like ours, have built a system from which there is virtually no escape. It may be no accident that we have inaugurated a space program, because perhaps the only way out is to start again somewhere else. But even there we are cutting the space program down to the point where it won't be useful in time.

There are just so many different gloomy attitudes and situations. You can see this happening in your newspaper every day. I think it's no accident that the Camelot legend - the legend of King Arthur, the lonely few facing the onslaught of the barbarians and trying to preserve a civilization that is really dead - has become very popular in our times, because we may be the last survivors of a Golden Age. If this planet survives - the planet itself will physically survive, but if our society survives, if our culture survives - I would be very surprised. I think we have so many different ways of destroying ourselves - with bombs or with babies or with pollution - that it is almost impossible to see any escape.

How am I doing on time? Am I gloomy enough?...One minute to go. How can I convince you in one minute? The fact that you're all here at a convention of science fiction where we tend to look toward the future and, by and large, tend to try to find hope in the future, is in itself a good sign, but how many of us are there? There are two thousand at this convention, perhaps, in a population of two hundred million. I just don't think there are enough people in this society who have the will or even the knowledge to pull us out of this one-way slide, and I just cannot see any viable alternative future, no matter which way you look. [Applause.]

GEORGE SCITHERS:

Our next speaker is Joe Hensley, who will take the reverse position for 7 minutes.

JOE HENSLEY:

Thank you.

I want you to know that, having been in politics for a number of years, I didn't get my name Honest Joe Hensley easily and I buy votes. [Laughter.] What Tony Lewis actually told me I was to be here for was to give information on a new sex book to Dr. Asimov, but that hasn't worked out. And then I thought I was going to have to bring a habeus corpus proceeding to get Harlan out of jail, but that hasn't worked out either. So when I got up on the stage here, I asked Lester del Rey if he'd like to run off to a federal court with me and that may work out sometime during the day here.

Now the fact that we are all here shows that there are at least some possibilities left for us. You see, our fears are the reason for the many, many articles and books, the flood of which is enough to choke us, and this in itself is reason enough to believe that we <u>will</u> find an alternative future for ourselves. Whether or not this particular system that we now live in stays with us, I have no idea. I rather doubt that it will because it sputters and it begins to stop. For example, I know

that it is possible in our particular society for a man to wind up in a situation where he is unable to free himself where he has done nothing wrong, and the society is also unable to do something to a person who has done something wrong because of people who do the same thing that I do - practice law.

But if you look around, you do see things. For example, I was in Milford yesterday and the people that I was talking to there said the last several years we've had no birds around Milford because they had sprayed the area with some kind of an insecticide. It killed the insects and it also killed the birds. But this year they didn't spray it. This year there are fish in the river again; this year there are birds in the sky and the insects are back. (Perhaps they'll be bright enough this time not to use that particular type of insecticide.)

But we live in this situation that gives us the ability to make change - any kind of change. What happens is that we are reluctant to make the change, the mass of the people are reluctant to go along with change. They are reluctant to adopt any rules as far as birth control is concerned. In other words, it's okay for me to drop my waste in the water, but you don't do it.

What we actually need instead of the gloom is hard rules that stop the problem. Now whether we will get those kind of rules in the particular culture that we live in now is doubtful, but the culture will then change. In other words, you will wind up in a situation where we will not live under the form of government that we now live under; some other form of government will exist. Our government has changed an immense amount in the past few years. It's probably gone from one percent dead left to one percent dead right. But the problem is to change the people - to change the people's way of thinking - and this is what we are all involved in attempting to do, particularly those of us who write science fiction or any other type of fiction. Now I think that, because of the fact that we are aware of the problem, perhaps we may be able to build up an awareness in others.

But you see what you get into is "Let's give up, let's quit, let's stop, let's say that there is no place to go," and so we wander down the road and this

Ben Bova, Lester del Rey, moderator George Scithers, and Joe Hensley
(Photo by James R. Saklad)

infects the other people that we come in contact with. For example, I see it very much in the youth, the very young people of today, who seem to feel as if there is just nothing, no place to go and nothing to do. But look back at the Middle Ages, the stink holes that were cities then. Sure, the problem was confined to a particular area and you had plagues, you had sickness, you had a life situation where your expected life span would be perhaps thirty years. But nevertheless, as long as we try, as long as we work, as long as we attempt to make the changes, then perhaps what we need do is to change the cultural situation that we're in. In other words I'm saying up the revolution and down with a system that practices apathy. And I guess that's basically it. Thank you. [Applause.]
[Pause.]

GEORGE SCITHERS:

The speakers have given their opinion that they are ready. Let us resume. Mr. Silverberg? [Applause.]

ROBERT SILVERBERG:

Mr. Chairman, my distinguished opponents, I wish to take issue with the dark and gloomy predictions of Mr. Bova. I wish, in fact, to refute nearly every point of that pessimistic screed. Beginning with Bova's initial argument, the argument from entropy, the argument that says that since the universe is destined to run down in the long run and all molecules will spread out equally and heat will smear around impartially and vaguely fuzzily, since confusion is going to overtake us all, why should we fight, why should we resist? Well, now, no. First of all, entropy is a problem for two billion years in the future or five billion, or fifty billion. The universe will run down; it will all stop. We won't be here - in the very long run the human species will have evolved or disappeared. Fine, that's a reductio ad absurdum that The Good Bova is trying to pull on us. The fact is that in the short run humanity is defined by its resistance to entropy. We are the organizing creatures. We are the creatures who refuse to accept chaos. We are the ones who build, and the fact that our remote descendants or the creatures that replace those descendants on this planet will ultimately have to contend with heat death is of no concern to us. We face the problems as we come to them and it has been our record for the past, not an entirely happy record, that we overcome these problems.

Dr. Bova spoke also of inertia as the great stumbling block that prevents us from overcoming our problems. Well, now, inertia can be dealt with through the application of thrust. The Saturn V rocket that put those men on the moon for that buggy ride had a considerable inertia problem. It was met; it was met very well - that rocket went to the moon, those men went to Hadley base. There's a great deal of inertia out there beyond that door. You people, of course, are enlightened; there are the others. [Laughter and applause.] They can be dealt with just as the lower half of that Saturn V was dealt with - we can give them a hot foot.

The problems that face us are tremendous problems but they are not necessarily irreversible. Some of them are; we will never get the Dodo back, we will never get the Great Auk back. There are extinct species. We will never get back the coal that will be gone in another three hundred years because we can't wait three hundred million for the next carboniferous age. We won't get back the natural gas that will be gone in your lifetime, but we have come up with new sources of power whenever they were needed. The coal and natural gas which we have now consumed were both unknown a hundred years ago. (Well coal, of course, has a slightly greater pedigree. But when Marco Polo saw those burning stones in China in the 13th century it was something quite wonderful.) But we've gone through coal, we've used it up, we've found something else. This is not a coal-burning plant that we're lit by now. (Well, I guess it might be, in Boston.) [Laughter.] We have other sources of power; we will find more. Fusion power is still conceivable, I think, still within the realm of accomplishment.

The important thing is that nothing is ever used up so long as the human mind is there to find a replacement for it - that is the one irreplaceable commodity. Ben said "Technology has become so far removed from society, the machine is running away". Well, that's a passive kind of construction. "Technology has become so far removed" - it's not strictly passive but it's not a strong verbal structure. Man is active, man is an agent, man is a doer. He makes an awful mess sometimes, but he does things. If we change the grammar a bit I think we can change our destiny. If we stand here saying we are caught in the machine, we have been carried away by the machine - no! We built the machine, we can pull the plug, we can redesign the machine. We know where that machine came from; it didn't drop down upon us as a curse.

Ben spoke of the gravitational collapse of Chester, Pennsylvania, as though some natural phenomenon had come upon that grimy little city and was shrinking it towards it irreducible minimum. Well, of course, a gravitational collapse is governed by the Laws of Physics. We are governed by more subjective laws - laws of our own making, so far. And so long as we haven't yet reached the biochemical level of disaster when it does become irreversible, so long as we haven't come to the plankton death of the ocean, so long as the air, though it may be foul smelling, still makes

the lungs do their thing, so long as there is a chance to work within what is left of the environment we started with, we can still change things. We are not bound by the same laws that will suck a white dwarf together. This is not an astrophysical event going on in our society today - it's a cultural crisis. It's a man-made event and it can be unmade by man.

Ben wondered, in his final morbid thrust, whether we were not the last survivors of a Golden Age. Well, no. What we are, really, are the last representatives of the irresponsible society. For half a million years, now, we have wandered the earth in one physical incarnation or another getting less hairy and bigger in the brain and more dangerous and we have plundered and looted and made use of whatever we found and left our litter behind and ripped apart and uglified. We have lived on our capital all this time, and it hasn't been a Golden Age at all, because the artifacts of that age are all about us now. The junk heaps and the thruways - well, you know all of that stuff. Now the time of reckoning is here. Now the so-called Golden Age is ending - actually it's just the age of thoughtlessness - and we are perhaps not, as Ben said, the last survivors of a Golden Age, but a transitional people, a people on the cusp, a beginning generation. The forerunners of the coming Golden Age, the age of man's maturity. The age in which man learns to live with his planet instead of on his planet. The age of ecological balance, the age of galactic man, in which we move forward repairing our errors as we make them, perhaps learning to anticipate some of our errors, not curling up and saying the end is nigh, but moving forward.

Thus I refute thee, gentlemen. [Applause.]

GEORGE SCITHERS:

Mr. Silverberg took a few minutes less than his alloted ten. However, Mr. del Rey has as much of his alloted ten as he desires. Lester? [Applause.]

LESTER DEL REY:

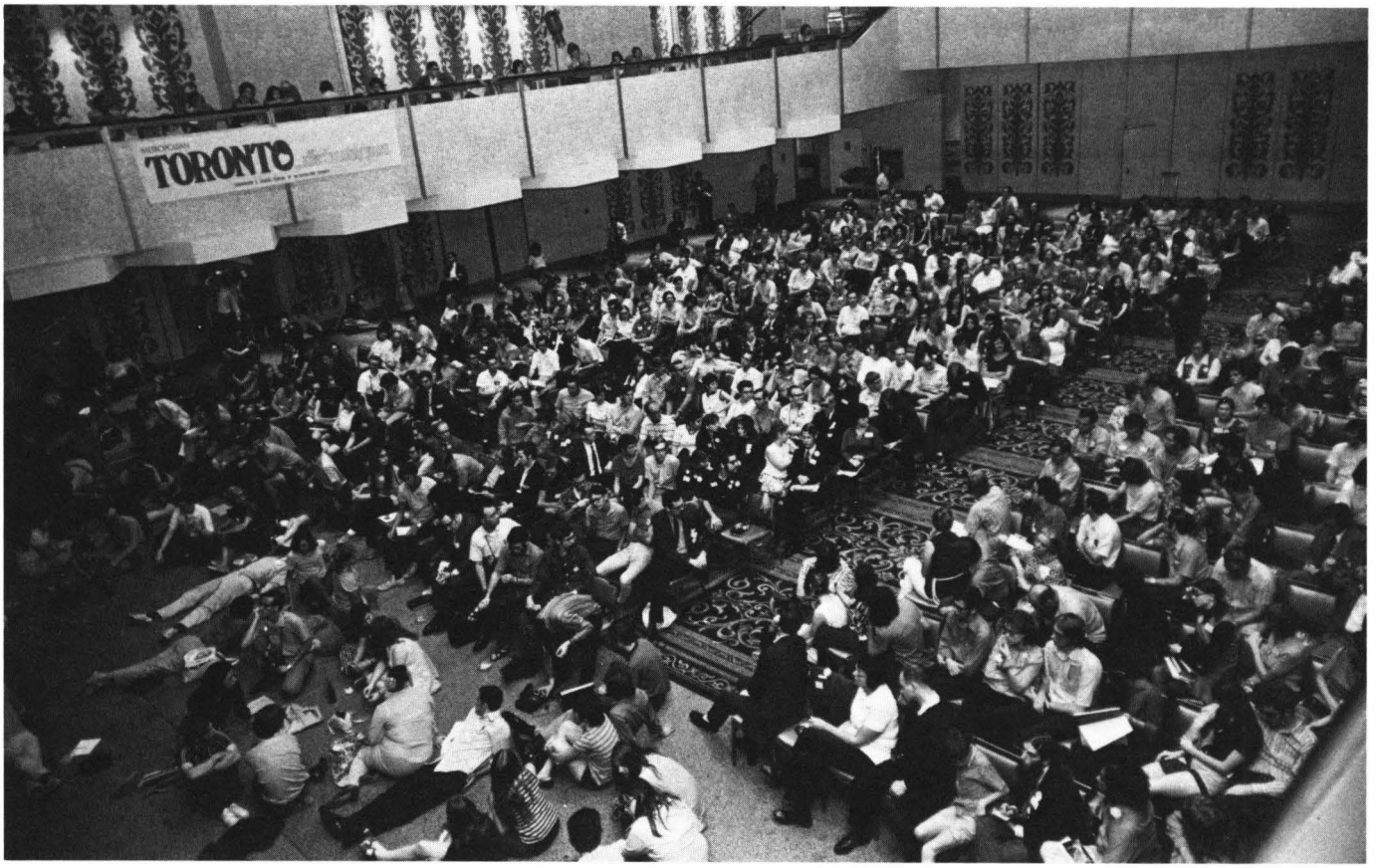
Mr. Moderator, fellow advocates, ladies and gentlemen. Now let us return from eulogistic and visionary rhetoric to the issue at hand. We will do so briefly by a few comments on what went before. Mr. Silverberg assured us that we build, we are organizers. I am very interested in looking at the large supplies of iron ore, of all the other resources of the earth that we have 'builded'. Methought they were there first and we have torn down. I am interested in seeing the large forests we have built in this country and I am very interested in watching the clean supplies of beautiful fresh air we have 'builded' for ourselves. Frankly, I thought they were here before us. He has also mentioned that nothing is ever used up - then he mentioned the Dodo, who is all used up.

He said we can pull the machine plug. Now this is one of the anti-Malthusian pieces of nonsense that's been going on for a long time. The truth of the matter is that we cannot pull it. If the government decided tomorrow that pollution is the gravest danger in the world and decided to end the manufacture and use of automobiles upon the roads, that government would be out within five minutes. It would not be permitted to make that decision - the people would mob it. If all electricity were cut off, if the plug were literally pulled, there would be riots so rapidly that there would be no government left. No government today would dare to do such a thing. We cannot pull the plug; the best we could hope to do is to ease back the rheostat very, very slowly with a great deal of time to do it in - we certainly can't pull the plug. Perhaps we're on the cusp. If so, I'd like to know which way the thing is pointing, this way in which we go up or this way in which we go down. I think it's a downhill thing.

I'd like to point out a few little facts before I get back to the really essential issue of this whole debate, which has not been mentioned. The so-called disadvantaged countries are breeding at a higher rate than we are. They are also getting hungrier than we are. We have two choices - to cut our population and improve our living standards temporarily and then be swamped by them, or to go ahead in the same mad race where we all get swamped. That is a very poor choice. We have thirty years left; in the latest estimate I saw, there will be about ten billion people on this planet, ten billion by the end of this century.

Now, we have spent fifty years improving our farming techniques to the point where our soils no longer contain the trace elements. Let us forget fuels and all the other things. Let us forget contamination. Our soils are washing into the sea. Our trace elements are gone in many cases. (Did any of you see what happened when they brought back some minerals from the moon and somebody decided to sprinkle just a little bit of that on the soil of a plant? He couldn't understand why the plant suddenly grew twice as tall as the plants that were growing on straight earth soil. The answer is very simple - because those trace elements that are necessary for healthy and viable plants were there.) We have beggared ourselves in so many ways that it is pitiful and we can't get off it, because if we start getting off it, the disadvantaged countries which want our technology will move at us just as fast as we drop our ability to protect ourselves. We have gone so far that there's no retreating.

Our only answer is in technology, and our only answer in technology is the use of technology by the people. Not just for the government, but by the



Counting the votes
(Photo by Jay Kay Klein)

people, otherwise we can't justify it. You cannot keep things secret. When we have that technology we're going to be using things up and some of them don't come back. If we had a thousand years, yes, we'd find ways of taking it out of the sea. In thirty years we probably won't.

However, I will admit that there is a viable future. There is a very, very faint chance of a viable future. That is to find ourselves other worlds to despoil around other suns, in which case we could try again. If we have 6 worlds our chances are 6^3 as great as they are here. That would be a viable future for us, because a viable future is not that whereby a man pitifully crawls across the face of the globe like another rat in a few isolated communities, but one where he goes on and out. That's what we're talking about, as science fiction people. However, you have noticed that already the Space Program is being cut back. The 1985 Mars trip, the manned Mars trip, is now talked of as being in the year 2000. By that time we'll have ten billion people. Right now we are saying we can't afford Space and rehabilitating the slums. What do you think they'll be saying when we have ten billion people on this planet? Do you think anybody would be using money for space? Of course they won't. We had our viable future in 1950. We blew it.

And now let me get to the real point which has not been discussed so far. The topic of this debate was, Resolved: There are no viable alternative futures. Had the opponents showed that there was one viable future, which they did not, they would still have lost the argument because the argument calls for alternative futures. They did not even mention this point. I rest my case. [Applause.]

GEORGE SCITHERS:

The problem now is to count you. Would everybody please stay with me for a few minutes. I'd like a volunteer from the extreme right of the room. Thank you. Would you move forward up to the corner of the stage here. I'd like a volunteer from the far side over here. Thank you very much. I'd like a volunteer from this balcony. I'd like a volunteer from this side, if I may. What I propose is this: each volunteer count from side to center. Will everyone who feels that the team of Hensley and Silverberg did a better job debating, please

stand up. Please count and hold your number. [Pause.] All of those that feel that the team of del Rey and Bova did a better job debating please stand. [Laughter.] I think I can declare then without further detail and counting that the team of del Rey and Bova did a better job of debating. [Applause.]

JOE HENSLEY:
There goes another election.

GEORGE SCITHERS:
I'd like to thank the people who counted, the people who voted, and the panel. At this point there may be some questions by those people willing enough to ask a question of a panel so sharp and debateable as this.

QUESTION: [Inaudible.]

GEORGE SCITHERS:
The question is what kind of future would be 'viable'. Whom would you like to ask the question of? ... Del Rey has made a motion.

LESTER DEL REY:
I will say that a viable future is one which has the characteristics of life, since the word viable refers to life, the characteristics of life being change, adaptation, and evolution. In other words, it would not be a static future, but it'd be one which permitted growth, development, reproduction in a sense, perhaps of going to other worlds. It would have life characteristics in the broadest sense. It is not a fixed minimum civilization where we just barely eke out a living and keep our numbers going.

QUESTION: [Inaudible.]

GEORGE SCITHERS:
The technical considerations to overcome to use the earth's thermal energy. Joe?

JOE HENSLEY:
No, I do not know. The only thing is that I have found that...Bob says that he'll try to answer your question for you.

ROBERT SILVERBERG:
The earth's thermal energy is already being quite successfully used in a small way in California. Southern California Edison Company runs a power plant off a geyser of thermal hot water. It's being done successfully in Italy, also, that is power is already being generated out of the hot water that the earth provides for us, and of course from there it's just an easy step to getting down nine or ten thousand feet to where the really hot stuff is and turning the turbines with it, right?

GEORGE SCITHERS:
I ran a calculation on that, and it's subject to calculation errors of course, but I figured that if you turned off the sun and waited long enough (and that's an awfully long time) the surface of the earth would cool down to about 33 degrees Kelvin, which implies that there isn't a hell of a lot of thermal energy, all told.

QUESTION: [Inaudible.]

GEORGE SCITHERS:
Essentially, you are quibbling with Lester's point that man does not build forests. Do you wish to answer this, Lester?

LESTER DEL REY:
No, there are things you build without the need for constructive components, the normal things. For instance, you can assume that basically animals tend to be catabolistic - they tear down, and basically plants are anabolistic - they build up. For instance, the coal things were constructed by plants out of carbon dioxide, but since that to us is a waste, we may refer to that as a process of building, rather than destroying, whereas taking the oxygen out of the air, oxygen being necessary to us, we would tend to consider a process of destruction, rather than construction. We are looking at this from a purely human point of view. From the plant's point of view, I'm sure everything would be turned upside down. I'm also sure that from the large inorganic point of view, it really doesn't make a damned bit of difference, so I'm having to take the human point of view.

QUESTION: [Inaudible.]

GEORGE SCITHERS:
The question: Is there a place for a possible future of man on the moon, in case we muck up the surface completely. Ben?

BEN BOVA:
Yes, I think with today's level of technology there's a bare chance for a small group of people to get started in a self-sufficient colony on the moon. When you get right down to it, the basic question is: Can you find or produce water on the moon? Water is the irreplaceable raw material that we need to live with, and so far the moon seems to be quite dry.

QUESTION: [Inaudible.]

LESTER DEL REY:
The same one it has. That's why it's got it. You couldn't produce it fast enough to make an appreciable difference.

BEN BOVA:

No, I don't really agree, Lester. I think you could, with an enormous expenditure of energy, produce maybe even a breathable oxygen atmosphere on the moon. It would dissipate rather quickly, but I think it's in terms of centuries rather than years.

LESTER DEL REY:

You would find that to produce one is a matter of centuries, also. When you figure out the number of cubic feet of oxygen you have to stir up from the very difficult sources, and the amount of energy required, you're going to find out that your best bet is solar energy - you won't be able to use that much waste atomic fuel there - solar energy, and the solar energy which is stripping it away will just about equal the solar energy that is putting it out.

QUESTION: [Inaudible.]

GEORGE SCITHERS:

You're saying that the panel did not treat the case of a civilization collapse and the question of whether it could restart, is that your point? Bob, could you comment?

ROBERT SILVERBERG:

Well, I think one thing that must be made clear at this point because we couldn't do it before. I don't know if I speak for the rest of my panelists, but I think I do when I say that the opinions expressed up here were not necessarily those of the author. [Laughter.]

JOE HENSLEY:

Speak for yourself, Bob.

GEORGE SCITHERS:

This is a technical debate, and we simply forced the two sides to take positions.

QUESTION: [Inaudible.]

GEORGE SCITHERS:

The complaint is that there was no hard data. Lester?

LESTER DEL REY:

Since I have never seen the destruction of a race, I am not fully conversant with data applying thereto. Therefore I had no hard data. As soon as I have it I will give it to you. [Laughter and applause.]

QUESTION: [Inaudible.]

GEORGE SCITHERS:

Now your point is that you don't think the human race as a whole is as stupid as you thought the panel thought they were. [Laughter.] Okay, Joe may want to comment on this assumption.

JOE HENSLEY:

Ah yes, I've seen the human race do a number of stupid things over the years. I have never seen the human race in this particular situation here begin to take any steps which I really thought were valid steps to start it back the other way. In other words, in the present civilization, the problem is not with whether or not people want to stop this. Everybody wants to live - you know, you get up in the morning, you say gee, you'd like to live out the day - but the problem is in getting some form of government - in a form which we don't happen to have now - to attempt to make it possible for us to continue to live. Now I'm not saying that this cannot happen, but I'm saying that it looks pretty damned hard right now, given this particular form of government that we are in and which seems unsusceptible to change.

QUESTION: [Inaudible.]

GEORGE SCITHERS:

The questioner feels that Silverberg is making an assumption of an elite running things and he feels this might not be the correct assumption. Silverberg?

ROBERT SILVERBERG:

Well, what I had in mind, of course, was a dynamic elite. [Laughter.] Jokes aside, I am, of course, advocating an elitist philosophy. Everything that has ever been done by the human race, with the possible exception of the Mongol conquest of Europe by vast hordes, has been done by an elite. (Even the Mongol hordes were led by a small family group.) In the conquest of entropy, which is the whole human story, there never has been a moment when random actions were bringing us forward; random actions bring us in random directions. We no longer have room for randomness on this planet. We cannot open up a strip mine in the middle of a wilderness conservation area, simply because one government bureau has randomly permitted the strip mining, while another government bureau has decreed the park. We're coming to a period of extreme emergency, where only through coordinated planning somewhere on this side of fascism are we going to survive at all.

JOE HENSLEY:

His next book, by the way, is from Random House.

GEORGE SCITHERS:

Lester del Rey is noted for having the last word, except for some technical instructions which will follow Lester's remarks. Lester?

LESTER DEL REY:

Well, I don't like to hear history ever used to put down the elite and I'm going to jump on it rather heavily. The difference between a dictatorship of any kind - meaning monarchy, Nazi dictatorship, or tribal chieftan - the difference between that system of government and the best democracy we've ever seen on earth, which is certainly not this one and certainly was not Greece, but take the ideal democracy and the ideal dictatorship, you'll find that the theory of the dictatorship is that it <u>is</u> the elite, and the theory of democracy is that they can <u>choose</u> the elite to run over them - they both go on for elitism. Don't ever lose the idea that the elite are <u>it</u>; they are in every form of government because there has to be somebody sitting there and doing actual directing, and even democracies demand that, and they do it on the theory that they can pick the elite. And I don't know who your history teacher is and I don't know what kind of history you have been reading, but it's utter goddamned nonsense. [Applause.]

GEORGE SCITHERS:

Ladies and gentlemen, I think we've had some fun with the panel. I hope they've enjoyed it, because I certainly have.

[Applause.]

Weather Modification

Dr. Wallace Howell

TONY LEWIS:

I'd like now to present to you Dr. Wallace Howell, currently a private consultant in rainmaking and weather modification.

DR. WALLACE HOWELL:

Thank you, Tony.

As a rainmaker, I feel a little like a science fiction character myself. It was just twenty-five years ago this month that the first experiment took place which led to the emergence of weather modification as a real possibility. This experiment consisted of filling an ordinary deep freeze box with artificial supercooled fog; the method used was to blow your breath into it and to drop into the box a little tiny bit of dry ice. Actually, what Vince Schaefer did was to take a bit of dry ice in a handkerchief in his hand and with the point of a pin scrape off just a little flake that fell in the box. What happened was that the cloud of super-cooled water droplets in the box suddenly became filled with glittering ice crystals. Where there had been, say, about three hundred droplets to the cubic centimeter in the box, there came to be two or three ice crystals, each one about a hundred times as big as the droplet. In natural clouds, then, this led to a situation where the normal stability of the cloud could be upset. Instead of staying a cloud of many small particles, each one too small to fall, it became a cloud of ice particles big enough to fall.

Well, that was twenty-five years ago last month, as I've said. Just one month ago today I attended a meeting in Rapid City, South Dakota, where the Governor of South Dakota announced appointment of a committee to represent South Dakota in meeting with representatives of Montana, Wyoming, North Dakota, and Nebraska to forge a five-state compact for modification of the weather over those five states. This gives some notion of the time scale within which this process is moving.

Now is this time scale too fast or is it too slow? There's some people that feel one way and some people that feel the other. About ten years ago, I was running a program in the upper Potomac Valley behind Washington, the Blue Ridge area, to suppress hail on behalf of the fruit growers who had a lot of apples, peaches, and cherries at risk of hail damage. The farmers in the area who were raising corn, wheat, stuff like this, got very upset about this because, as they understood it, the way that you stop hail storms was to prevent any clouds from growing, and if you could prevent the clouds from growing, then obviously you could stop the hail but you also stopped the rain, and they were very, very much concerned that they should get their portion of the rain. The result was the formation in several states - Pennsylvania, West Virginia, and Virginia - of Natural Weather Associations that are dedicated to the proposition that weather should be left as it is and that no attempt should be made to modify the weather. Representative Harley Staggers from West Virginia introduced a bill into the last Congress to implement this - to forbid weather modification over any portion of the continental United States. Now what makes this a little bit more than trivial is that Mr. Staggers is Chairman of the House Commerce Committee which controls the budget of the Weather Bureau.

So in looking at the old idea that anything that <u>can</u> be done eventually <u>will</u> be done in the field of science, we have to appreciate that perhaps the science of weather modification is a little different from others. Look at the science of medicine, for example. Maybe in the future, if I lived a hundred years from now, I would take it for granted that I would probably undergo a few organ transplants in the course of my life, and that when it came time for me to become a family man my sperm would be reviewed to see if there were any faulty genes, and any faulty genes would be taken out and replaced with available proper genes, and so forth. This function is still, even on such a level, on an individual basis; if these miracles of medicine come about, they will affect individual people or, at most perhaps some groups, but will have to be dealt with on the basis of effects that are specific to the individual concerned.

Not so with weather modifications. We cannot sequester a portion of the atmosphere to belong to one person or one group of people. Whatever we do in weather control is going to influence very large numbers of people, and how the scientific capability to modify weather makes the transition into a discipline that is actually practiced will be controlled, not by the perception of individual benefits or individual risks, but by very much larger and more diffuse mechanisms. We must look to development of the entire social structure behind the activities.

Nearly twenty years ago I was running a weather modification program in Peru. The west coast of Peru, as you may know, is almost entirely a desert, but the soil is extremely rich. Where rivers come down from the Andes sugar is grown under irrigation - it is among the most concentrated sugar-producing areas in the world. And my company went to work for a concern that owns a very large sugar-producing area there, and we went back in the high Andes and set up cloud seeding equipment - generators and so forth - to stimulate rain back in the high mountains so that the water would come down the rivers and irrigate the sugar crops.

One of our experiments there - I have to concede that it was experimental, and that I moonlighted quite a bit on the commercial work - was to see what we could do to influence the clouds by controlling space charge, electrical space charge, that went into the clouds, because there was reason to think that this electrical space charge had a great deal to do with the way droplets collide with each other and grow to raindrop size. What we did was to string some twenty miles of very fine wire around a couple of the mountain peaks and charge this to twenty thousand volts, producing space charge around the wire which was then carried by the convective wind currents up into the clouds.

We encountered a good deal of local antagonism in this project from the local rainmaker, the witch-doctor or brujo who organized his friends to remove large stretches of this fine wire, and I think that for a while we were supplying a majority of the guitar strings in northern Peru. Later on, our meterologist there, a young Swiss by the name of Schnell, visited the brujo, and being quite a diplomat he found ways to make friends with him. And when the brujo's wife fell ill the brujo tried all his remedies and he couldn't quite manage to cure her. Albert brought the wife back to the hacienda and dosed her with penicillin (turned out she had double pneumonia) and after a while she was back on her feet. From that time forward we lost no more wire. So the project went forward with excellent cooperation, but it took something entirely removed from the scientific basis of rainmaking to bring about this cooperation.

And so it occurs to me that the way in which rainmaking is perceived by the general public that is going to be subjected to it and that is going to, in a very diffuse way, determine the rules under which it is done, is probably going to do these things without much reference to the scientific value or the actual capabilities of rainmaking. What I'd like to do is to get an exchange of thought going here. I don't think that the scientists in the field are very expert in the way people view weather modification. And I'm quite sure, from my contacts with the brujo and with the Natural Weather Association, that the people who were subjected to rainmaking don't know very much about the scientific basis.

Let's get some dialogue going.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

Doria was the last hurricane. The ground rules for seeding hurricanes have been for some years that any hurricane that is subjected to seeding experimentation shall be at least - I think it's four hundred miles - from land and shall not be predicted to pass over land within three or four days (I don't know the latest version of the rules) after the seeding experiments. Doria blew up very suddenly; it generated itself in an area very close to the coast, so I'm quite sure that that hurricane was not seeded.

QUESTION: [About stability of weather patterns.]

DR. WALLACE HOWELL:

The whole driving mechanism behind the weather has to do with the transfer of the excess of heat that the earth receives in the zone near the equator to the polar regions from which this excess escapes as radiation directly into space. This transfer is, on the whole, a turbulent process. It partakes of the same kinds of uncertainty as all the familiar examples of turbulence. It follows characteristic patterns. You can look at the turbulence of the smoke coming out of a smokestack and you can recognize perfectly characteristic patterns of the way the smoke loops and whorls on days of strong convection and the way it tends to make a smooth plume on still days, but you cannot predict the exact manner in which a particular loop or whorl of turbulence is going to behave. We are very much in the same situation when we talk about weather controls. What we are doing is more like nudging the odds in favor of one pattern of behavior as against another, and we can make no claim. I see no basis, even in the future, for being able to program the weather in great detail so that one state gets its rainfall on the weekends and another state gets it on weekdays or anything like that.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

One way of putting the problem - I think it was Dr. Langmuir who put it this way: The weather doesn't know what it's going to do next, to a certain degree. There is an approach to science that says that if we know all the physical laws that govern the situation, and if we know precisely the present state of the universe, then we can predict every possible future state. This might be put in the form of saying that there are a certain number of variables that influence the weather. So we will consider an n-dimensional space containing all these variables and we will make measurements necessary to define the present situation in terms of the position of a point in this n-dimensional space. And then if we are correct that we know all the laws absolutely, we can predict how the point will move in space, and if it should move in a closed loop, then it will continue around that loop forever.

But we come to some logical questions here. Suppose you come back to this same point in n-dimensional space, but the point is travelling along a different vector as it passes through that point from what it did the first time. Then do you have complete determinism in the weather or not? That's perhaps a little farther afield in theory, but coming back to the practical point, since the weather can be treated, at least for the time being, we can treat the weather as if it didn't know what it was going to do next. This makes any efforts that we put into it rather rapidly convergent as far as their predictable effects go. Whatever we do to the weather today will be overshadowed rather soon by what the weather does to itself tomorrow.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

The question here was, Can we modify weather over a large area by bringing water into the Salt Lake Basin, which is, of course, a basin of interior drainage? To answer the question with another question: Where would you get enough fresh water to fill up Utah? If you pump salt water from the ocean, very soon you're going to be adding to the salt deposits - the flats. I don't see this as even a science fiction method of modifying the weather because it can't last. You're doing something that changes the environment in an irreversible way. You'd be adding tremendous quantities to the already available quantities of salt...

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

What would be the effect if you were able to bring in the water? It would be, of course, to increase the rainfall on the Rocky Mountain Ranges, mainly to the east of the Salt Lake Basin, and probably increase the glaciers in Northern Utah.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

There are two general bases for talking about weather modification. We're really talking about two different things. One is modifying individual clouds and cloud systems so as to get them to rain more, or less, or to prevent hail. The other is modifying the general circulation of the entire planet in such a way as to change climatic patterns over very large areas, such as might be accomplished, for example, if we were to find means of melting all the ice in the Arctic Ocean and promoting evaporation of large amounts of moisture into the air in the Arctic. The predictability of the weather over the long range depends on being able not only to understand, but to control these very large influences (at least to some degree), and that's where I feel considerable doubt that it will ever come about. I don't think that that's real. We are now able to modify on a local basis and as I see it, by the time we have learned the social lessons that must be learned if we are to put our present knowledge to work effectively, the problem may have changed a good deal.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

The question is about storm control. What we can do now and what we can do in the future? I presume you're speaking of good New England variety Northeaster, or something of that sort, or are you speaking of a local thunderstorm? As for what can be done with a typical New England Northeaster... This type of storm is the working element of what I spoke of as the turbulent transport of heat from the tropical zones to the arctic zones. These storms derive their power from converting the energy of heat in the atmosphere to kinetic energy through very large-scale wave motions in the atmosphere, and these waves are unstable and break down into turbulence. What we can do is to control to some extent the particular places where more energy will be released or where less energy will be released into this growing system. And to the degree to which we can predict the details of its growth - then again I go back to the term nudging - we can nudge the behavior of the storm. We cannot prevent the formation of storms because they're essential to carrying on the basic process. We cannot even localize these storms into preferred channels because the turbulent process covers the whole of the world. But we will be able to exert certain degrees of steering influence on storms and perhaps be able to start releases of energy in a somewhat controlled way, in a

way that prevents pileups of energy to dangerous sizes.

One of the things that's underway at the present is illustrated by some work that I did in Columbia. They had the problem that every once in a while in spring time they would get a thunderstorm coming off of the Sierra Nevada that would blow down up to two or three million dollars worth of bananas and the question came up - can anything be done about this? We studied the situation and discovered that what was causing this was shower clouds blowing off of the high mountains at a time of year when the air beneath was quite dry. The rain fell into this air and chilled it; this produced a downward cascade of cold air which hit the ground with a thump and spread out into a strong set of gusts that blew down bananas.

So what we tried to do was to operate as a safety valve, to use our cloud seeding, which, as I have indicated, is capable of converting water to ice and is thereby capable of releasing the latent heat that is released when water changes to ice - eighty calories per gram. This gave us a safety valve to start convective currents and to draw off the strongest part of the heat available, allow it to dissipate itself in the higher atmosphere before the climactic cloud developments of the day. Something like this might be operated on a larger scale with storms. We may eventually be able to draw off dangerous quantities of energy before they become giant storms.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

The question is, Do the weathermakers feed their information back to the Weather Bureau in a way such that the Weather Bureau can hook this into their forecast procedures, particularly where these forecast procedures are based on computer predictions of the inputs to the system?

These computer predictions started out about thirty years ago with very simplified models of the weather, where you construct an artificial universe that is so simplified that you can specify completely all the laws that operate within this simple universe. You can then exercise this universe, allow these laws to work and see what results, go back and compare these predictions with what happens in the real world, and see if your model universe has in any useful way imitated what happens in the real universe.

The first of these experiments was concerned with a simplified universe that considered only the conservation of vorticity in the atmosphere - the same kind of thing that you see happen in the bathtub when the water drains down and makes a whirlpool over the drain. Any vorticity in the water is concentrated where it goes down the drain, and the potential vorticity is conserved in the flow as it approaches the drain. This provides an elegant and very simple model for atmospheric circulation. The computations based on this showed a degree of imitation of the real weather that was recognizable but was not useful, because a good forecaster could consistently beat the prediction of this simplified universe over a matter of as short as twenty-four to thirty-six hours. But this didn't say that the approach was wrong, it just said that it wasn't complex enough.

And through the years the effort at modelling - creating a more complex model universe - has gone forward. At the present time, a large part of that effort is concerned with the role played by the release of heat due to condensation and due to conversion of water to ice in the atmosphere - also to elaboration of the altitude or the pressure at which these changes take place. We've gone from a one-layer model to a six-layer model that considers separately what happens in each of the six layers. This has been reflected in an increase in the forecast capability of the model. Where a good forecaster used to be able to lick it consistently in twenty-four or thirty-six hours, the model now achieves imitations of the real world that are consistently good for forty-eight hours and pushing beyond that for sixty hours.

There is certainly a good deal of progress to be made in this direction. The accuracy with which the general situation is observed and these data plugged into the model still falls a good deal short of the magnitude of the weather changes that are actually being produced by weather modification activities today. So the basic answer to your question is no, the Weather Bureau is not taking into account the weather modification activities going forward today because they are of a magnitude rather lower than the magnitude or the fineness of mesh of their own observing net. They slip through the net.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

The question is, Where a storm develops slowly and massively over a period of time, would it be easier to control this than it is to control the much more rapid developments of very small storms?

The answer at the present time is clearly no. We have technologies at the present time by which we can release considerable amounts of energy in small localities when certain favorable conditions exist. For example, where we have tall cumulus clouds in the tropics that grow quite rapidly and contain very large quantities of water lifted up above the freezing level so that we have large quantities of supercooled water, we have the capability, by seeding, of releasing a large quantity of heat, very significant to the size of the storm. The latest experimental results indicate that the amount of rainfall generated in a storm of this sort locally can be influenced by a matter of a hundred percent or more - perhaps two or three hundred percent.

And the next step will be to see whether these individual cloud systems can be influenced to merge into so-called mesoscale systems which are of the order of size of a hundred kilometers or so, but still very, very small compared to large scale storms. We will probably move slowly up the scale of size until we have achieved control first at a small scale - again control is a bad word - we have achieved influence on a small scale, and, if we take the long view, we will see that influence climbing towards the bigger scale.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

The question is that we've spoken so far about rain control, but what about such very large scale things as heat waves that influence very much larger numbers of people than an individual rain storm?

The answer is that at the present time we have no technology by which we can control the circulation on a large enough scale to influence the heat waves, and even there I have to modify that statement in one degree. There was an experiment conducted in the late 1940's in the form of periodic seeding of clouds over Albuquerque, New Mexico. They ran the seeding generators three days a week and then turned them off until the next week, the notion being that there is a tendency of storms to follow roughly a three or four day cycle, and that there is a weekly cycle behind this. That is, that a three or four day cycle can compound into a cycle twice as long. And the idea behind the experiment was to see if this nudging could lock the cycle in phase, and instead of having it a quasi-weekly cycle that might one time be six days and the next seven or eight days, and then drift back to five days, so that you could never say what the phase was going to be a few weeks in advance - could this be locked into a regular weekly cycle?

The results of this - the observations made during the experiment - showed a very, very strong weekly cycle in the rainfall pattern that extended from roughly the Mississippi Valley all the way to the East Coast, with some indications of a temperature cycle going back toward the Pacific Coast. This has been a bone of contention among scientists ever since the experiment was run as to whether this was an accident - that it just happened there was a strong weekly cycle of rainfall during this time - or whether the seeding had something to do with its occurrence. It was a challenge - the findings were challenged on statistical grounds and a search was made that went back over forty years of rainfall data at the time, and a couple of instances were found during this forty-year period when a natural cycle of weekly rainfalls had occurred very similar to the one that occurred during the seeding.

And discussion of it has very largely fallen from view, but it remains, to my mind, one of the most challenging experiences in all of our attempts at weather modification to date, because if the weekly cycle really did result from the seeding, it exceeds by a thousand-fold the results of any other experiment that has ever been conducted. To my mind, the arguments that have been brought to say that it was only a natural phenomenon are enough to cast doubt on the truth of the original results, but not enough to cast doubt on the proposition it might have been. Indeed, it really might have been.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

I guess the basic question is, Aren't we being slow and too cautious in applying weather modification technologies in the face of risk?

This goes back to a very basic question of how do we make the transition from the appearance of a new technology to its application and acceptance in society, and all I can say is that we have to accept all the political mechanisms, all the legal mechanisms, that are built into the society as a safeguard. I myself would like very much to see a little more risk-taking approach, but all I can do about it is argue, I cannot...

[Comment from questioner.]

The question is, Who gets the benefits and who takes the risks? And before we can even consider that question we have to know a little more about what are the benefits and what are the risks. At the present time, these are open to all sorts of arguments. There are people who say that hurricanes are bad because they blow down houses and make waves that wash the beaches; there are others that say that hurricanes are good because they bring tens of millions of dollars worth of rainfall; and some people would rather have the hurricanes for the sake of the rainfall and the heck with the damage and others feel just the other way. There are people in Montana who say don't fiddle with our hailstorms. Hail is the best thing we have; it brings the water to the ground and it gets into the grass before it re-evaporates.

[Comment from questioner.]

My concept of your question is still how do we move from an uncertain situation where thare are unknown risks? How do we decide what is a proper course of action? My own feeling is that ignorance of risk is not a reason for clamping down on all action. We take all sorts of actions without being able to know all their consequences. But we have to be responsible for those consequences that we can foresee in a prudent manner.

One more question.

QUESTION: [Inaudible.]

DR. WALLACE HOWELL:

The present ground rules are based on the notion that what we are doing is a hundred percent experimental and therefore it must be done where it is not going to influence people on land. So the present ground rules are not for the purpose of modifying hurricanes usefully, they are for the purpose of preventing anybody from getting blamed for an unexpected result. That's what I personally disagree with.

TONY LEWIS:

I should like to thank Dr. Howell for his most interesting talk.

[Applause.]

Technology for a Livable Earth

Panel chaired by Hal Clement with Dr. Richard Rosa, Dr. Peter Glaser, and Joe Haldeman

HAL CLEMENT:

Ladies, gentlemen, fans, and whatever else may be present, we are, I think, underway on the next panel which has to do, as your program said, with technology for this livable world we're trying to get back to. The speakers are: Dr. Peter Glaser, who has worked for Arthur D. Little for some sixteen years. He's a past president of the Solar Energy Society; he's been running some of the lunar science experiments such as the heat flow probe and the laser reflector ranger arrangement - that thing that makes it no longer possible to say that the moon is about a quarter of a million miles away; you now talk about the distance from the reflector on the moon to the intersection of the axis of the telescope which is projecting the beam. Further over is Dr. Richard Rosa of Avco, and all he told me was that he has been working with MHD - magnetohydrodynamics - as far back as he can remember. I would not presume to say how far back that is; I put AD zero on my notes here, but I don't think that's quite right. Finally, on my other side, sort of breaking the scientists from the writers, is Joe Haldeman, science fiction writer, husband of Gay. Anyone who needs more details on Joe wouldn't be in this audience anyway, so we'll go on from there.

As I understand it, both our professional scientists have slides to show; they're going to have to get up and get out in front of the screen to see what's on and make sure things come in the right order, so they are going to talk individually at first. After that we'll let Joe make any remarks that have occurred to him during those talks or whatever else he wants to say. Then I will endeavor to control things, keep people from each other's throats if necessary, and when that peters out we'll entertain remarks, questions, and whatnot from the audience. So by mutual agreement, Dr. Rosa of Avco will start with magnetohydrodynamics.

DR. RICHARD ROSA:

We're talking about the electric power industry, which is appropriate because it is the primary source of our power today and power is the foundation of technological civilization. Very probably, electric power will become even more dominant than it is today because of the concerns with ecology, if for no other reason. For example, sooner or later all of our transportation will probably be electrified; our automobiles will be driven by batteries which are charged up by some central power station. This will have the virtue of concentrating this energy-producing device in one place where its ecological effects can be much better controlled than they can be today, when everybody has his own private pollution-producing machinery which he runs all over the countryside.

First a couple of words about what magnetohydrodynamics - or MHD for short - is. Astronomers looking out and exploring the universe have discovered that, in fact, most of the universe is plasma and most of it is interacting with magnetic fields. In fact, something better than 90% of the universe is in this state, so plasma physics and MHD really encompass over 90% of the known universe. We frequently use this as an argument for claiming that we should get 90% of the government's research budget, but, unfortunately, it doesn't seem to have much effect. (I think everybody understands that the job of the scientist is not really to do science - that's just a hobby. His real job is to beg for money.)

Could I have the first slide please? [Fig. 1] This little slide is intended to illustrate the basic principles of MHD energy conversion and compare it with a turbine-driven generator, the kind of machine that produces almost all of our electric power today. The important point is that the basic principles are exactly the same. One starts with a moving gas and uses that moving gas to get an electrical conductor moving through a magnetic field. By Faraday's well-known laws, this then results in the generation of a voltage and the flow of a current. Now in the case of the MHD generator, because the gas itself is an electrical conductor, we can do away with all of the mechanical linkage that you see on the left and just move the gas itself through the magnetic field.

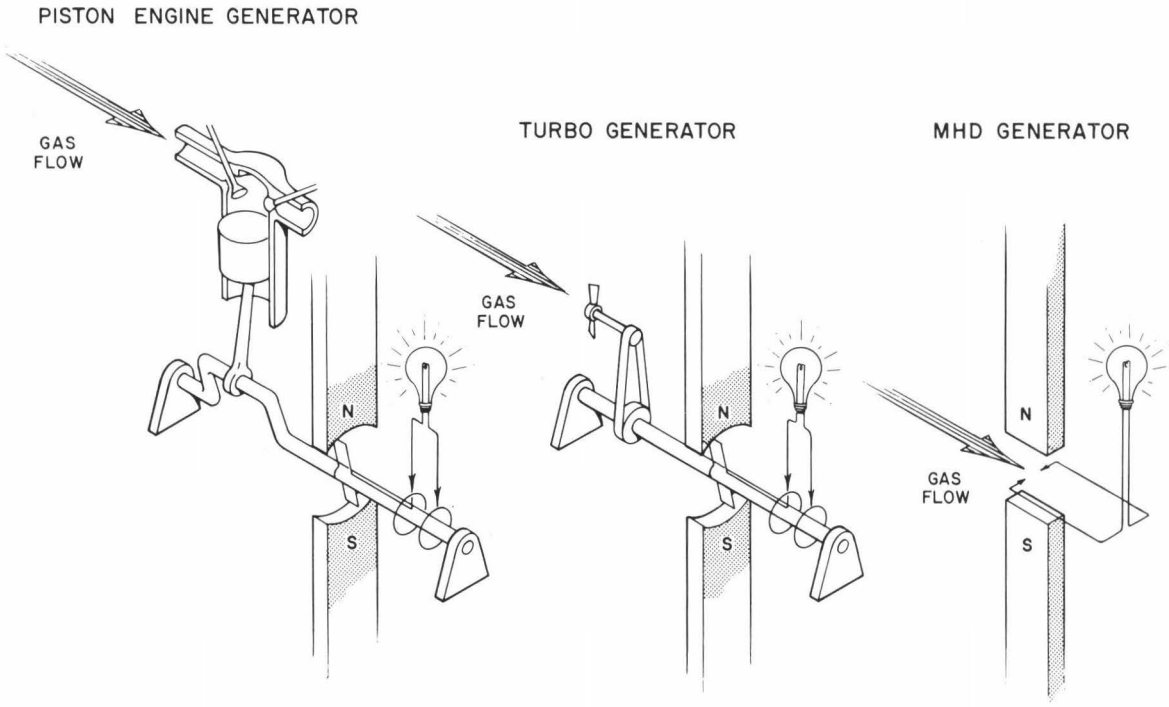
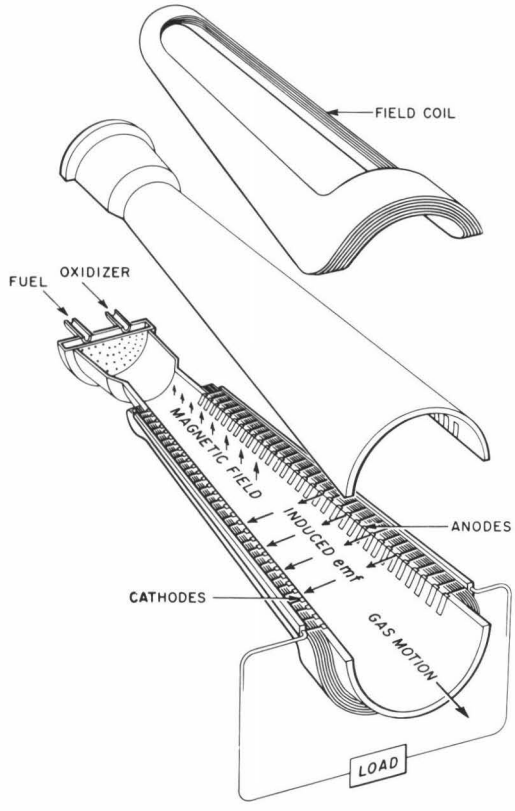


Fig. 1 Comparison of Expansion Engines (Avco-Everett)

Fig. 2 MHD Generator Schematic (Avco-Everett)



[Next slide - Fig. 2]

This shows a little bit more, a cutaway sketch of an MHD generator. It's basically just a piece of pipe with coils which produce a magnetic field across the pipe. The motion of the gas down the pipe generates a voltage picked up by the electrodes on either side. Now the advantage of this as compared with a turbo-generator is its relative simplicity and its tolerance for extremely high temperatures and pressures and erosive and corrosive atmospheres which would literally tear a turbine to bits in a matter of seconds. That is its one really outstanding feature. Now what this advantage translates into is an ability to handle very high temperature, and high temperature is the key to high efficiency and to reduced environmental effects.

[Next slide - Fig. 3]

Now if you stretch your imagination a bit, you can conceive of a power plant which consists of a nuclear reactor - as I've drawn it up there - a cavity in which nuclear fuel is introduced, burns, and produces extremely high temperatures. The gas expands through the generator, and then it must be cooled and recompressed. These are the basic components of any thermodynamic power cycle. But the trick here is that the heat source and the energy conversion device are both capable of handling exceedingly high temperatures, so that the efficiency will also be high. The result is a power plant which rejects very little heat per kilowatt of power output. And the heat which

is rejected is at so high a temperature that it could be radiated into space. You hear people talk these days about Spaceship Earth. Well, power plants designed for spaceships should reject all their heat by radiating it to space. They should not dump it in the nearest river or lake, and that is what a power plant like this would be capable of doing.

[Next slide - Fig. 4]

Another fundamental advantage of MHD is an adaptability for extremely high power levels. The sketch here is an artist's concept of what an MHD generator tacked on to a Saturn V rocket engine would look like. Such a power plant would be able to produce 10,000 megawatts of electricity. That's about 10 times the largest present-day electric power plant. Now if you took the whole Saturn V cluster and fired it through an MHD generator you'd make 50,000 megawatts, which is about one quarter of the total electrical output of all the power plants in the United States. That's really an unrivaled ability to make a lot of power in one spot.

[Next slide - Fig. 5]

So who wants it? Who needs it anyway? This cartoon was a wild idea we had about at least one thing you could do with this kind of power. If you put 10 Saturn V's in a row all firing through a magnet, and if you took the whole thing down to the Isthmus of Panama, put one electrode on one side and one electrode on

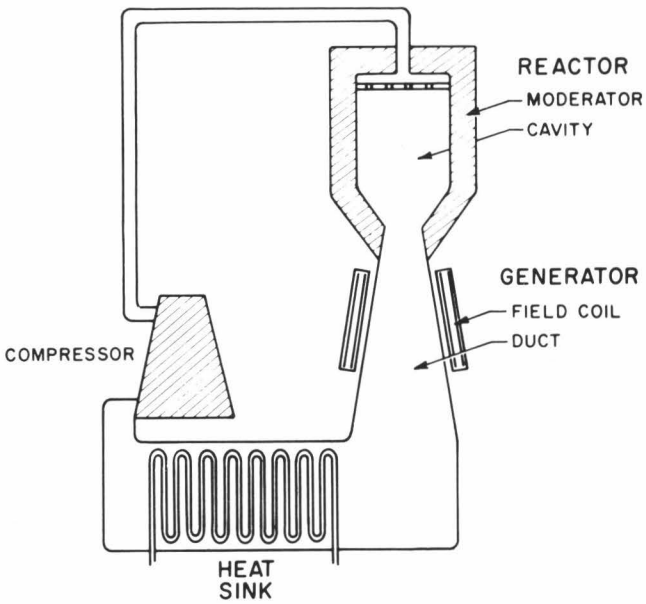


Fig. 3 Cavity Reactor Cycle
(Avco-Everett)

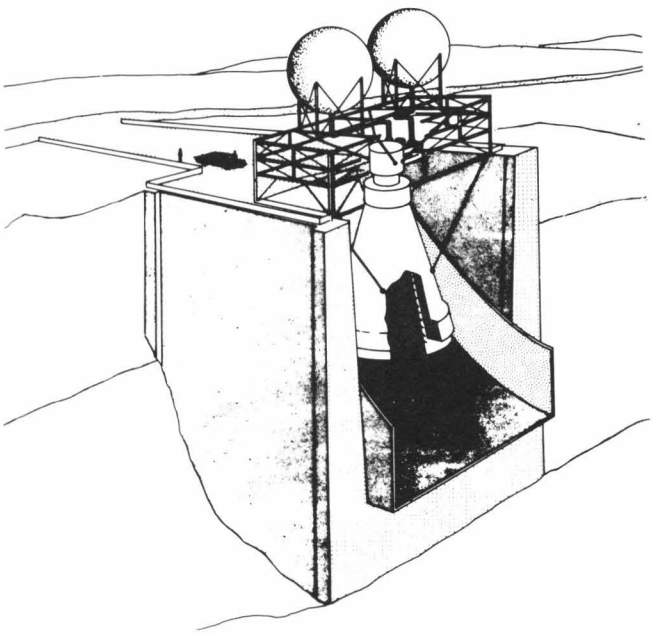
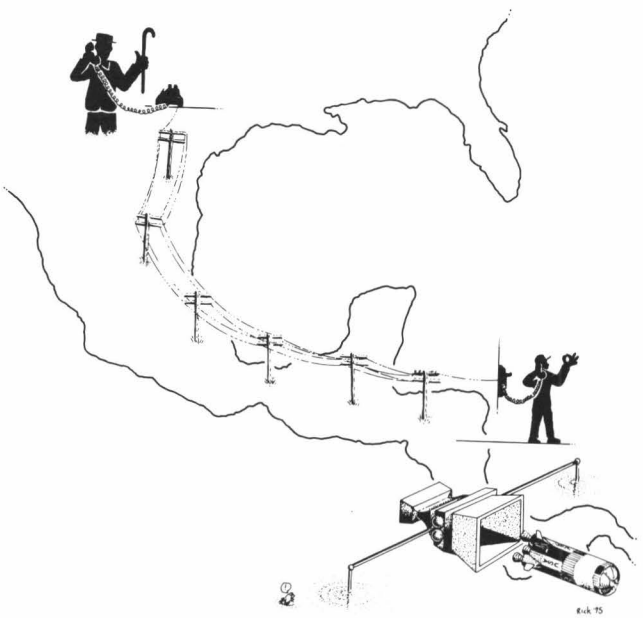


Fig. 4 Artist's Conception of a 10,000 megawatt MHD Generator Installation
(Avco-Everett)

Fig. 5 "The World's Fair Publicity Committee would like the aurora over Dallas tonight."
(Drawn by Rick Sternbach from a sketch by Dr. Rosa)



the other side and turned the thing on, then, in about a year, you would have reversed the direction of the Earth's magnetic field. [Laughter.] You could get Boy Scouts lost in the woods this way, or you could cause the Aurora Borealis to show up anyplace on Earth for fairs and exhibits and science fiction conventions. It might be quite a reasonable commercial venture.

[Next slide - Fig. 6]

Now I want to give you some idea of the state of the MHD art, something of the history of its development. It really started with Faraday back in the early 1800's when he dropped a couple of electrodes on either side of the Thames River and tried to measure the voltage due to the motion of the Thames River through the Earth's magnetic field. Well, the problem was that the Thames turned out to be a better battery than it was an MHD generator, so he never got conclusive results. After Faraday, nothing much happened for quite a while. Then about 1959 people had learned enough about what makes gasses become electrical conductors to make another try.

This is one of the first runs of the first MHD generator that worked. On the left is a panel of light bulbs that we had the generator connected to. There just happened to be a photographer standing nearby, and as this was early in the game, one never quite knew what was going to happen when the thing was turned on. But it happened to work, and as you can see, we were pretty happy about it.

[Next slide - Fig. 7]

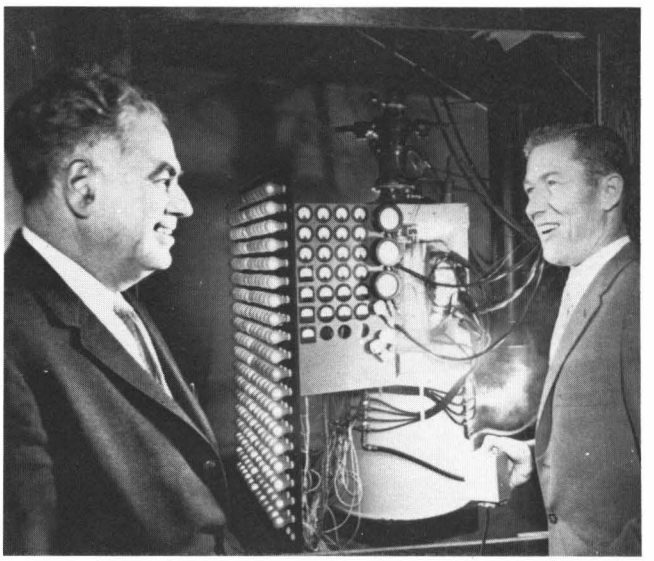
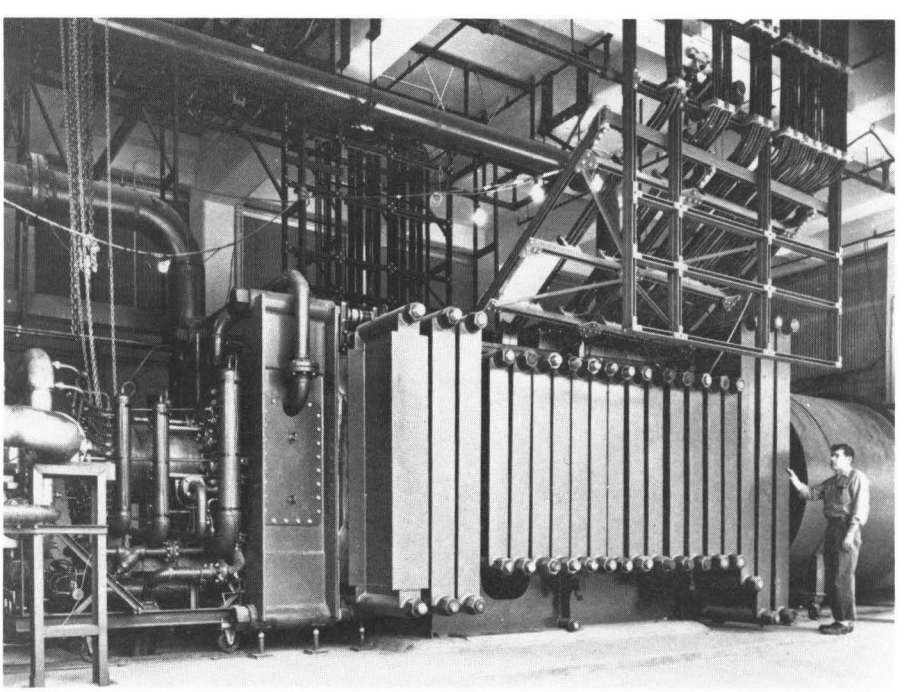


Fig. 6 Mark I
(Avco-Everett)

This is a picture of the largest MHD generator that has been built to date. The big blue thing is the generator and the small thing on the right is a man - the smallest technician we could find. [Laughter.] Nevertheless, it's a pretty big gadget. It has a mass flow rate through it roughly equal to what one of the early Atlas rocket engines had, and it produced 32 megawatts of electric power.

Fig. 7 Mark V
(Avco-Everett)



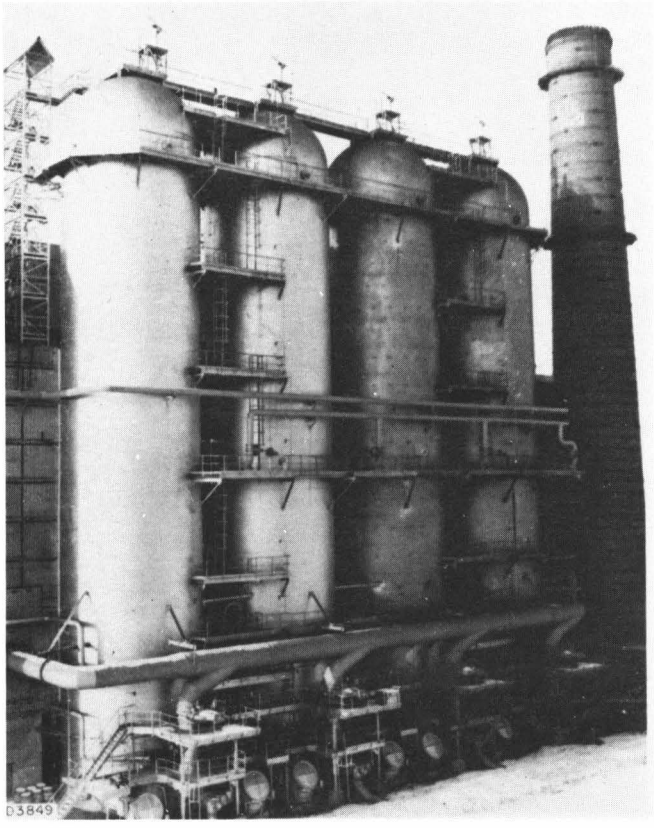


Fig. 8 U-25 Outside
(Avco-Everett)

Now, as I say, this work really seriously got underway in about 1958. About 1959 we picked up the support of a group of leading electric utility companies, and by 1965 we felt that the research had gone to the point where we were ready to take the step of building a prototype or pilot power plant. Now this was going to take quite a bit of money, so we had to do quite a bit of politicking to get it built, but it finally did get built.

[Next slide - Fig. 8]

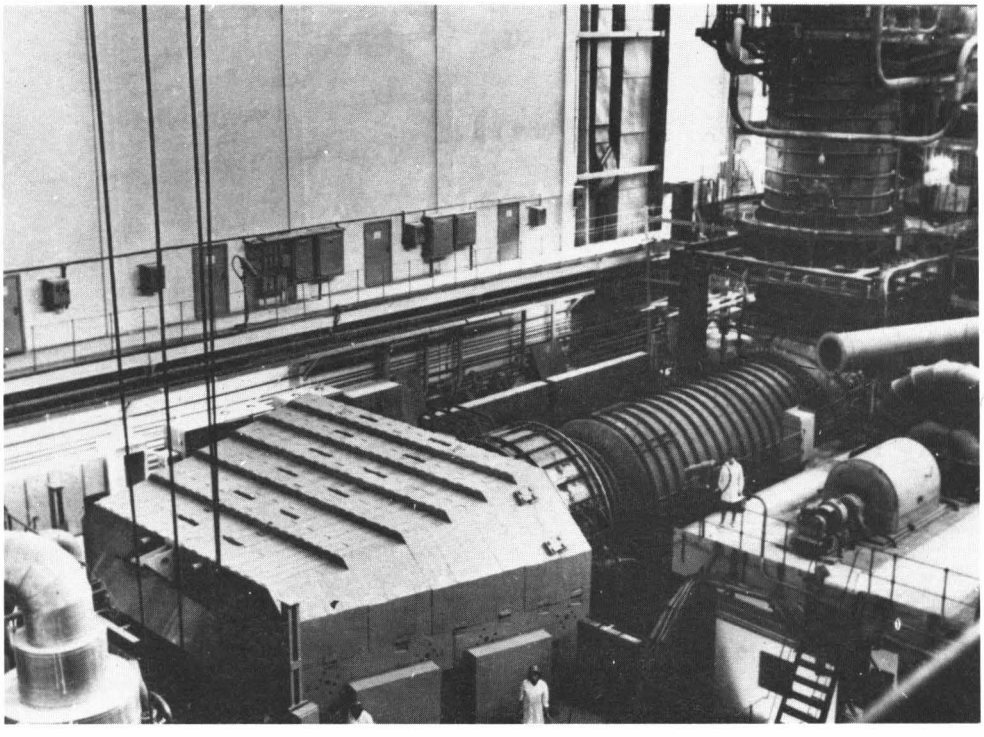
This is a picture of the outside of the MHD pilot plant.

[Next slide - Fig. 9]

Here's a picture of the inside, showing the MHD generator itself. You can get some idea of the scale of the plant if you notice the men standing on the catwalk up above the generator. Now as I said, this was not a cheap thing to build - it took a lot of politicking to raise enough money and as a result we had to accept some compromises. The principle compromise had to do with the location of the power plant. It was finally agreed to locate it about ten miles northwest of the Kremlin on the outskirts of Moscow. This has many drawbacks as far as we are concerned, as you can imagine, but we are happy to see that the thing has, in fact, been built and is just about to go into operation. The capacity of this plant is supposed to be approximately 25 megawatts. So that is where the state of the MHD art stands today. With that I'll turn the floor over to the next speaker.

[Applause.]

Fig. 9 U-25 Inside
(Avco-Everett)



HAL CLEMENT:

Thank you, Dr. Rosa. Dr. Glaser will take over with the solar energy side of it. Dr. Glaser?

DR. PETER GLASER:

We are at the beginning of new era. We have awakened to the reality that our earth is a small planet, unique, precious, and limited both in its resources and in its ability to absorb insults to the environment.

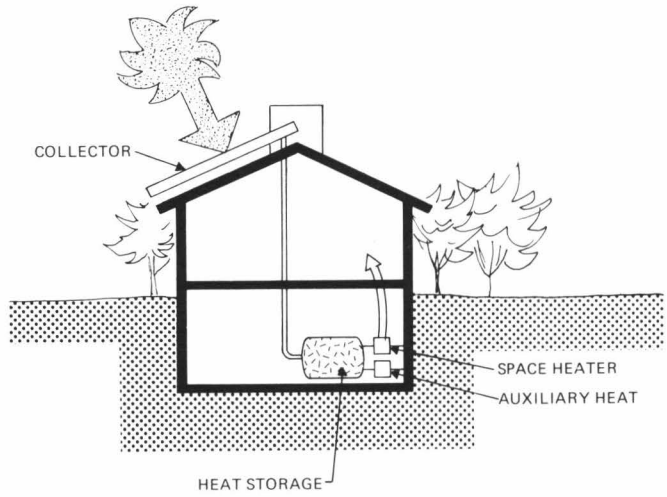
As worldwide energy consumption continues to grow, we have become concerned about the availability of our natural resources for two reasons. First, our fossil fuel reserves are not inexhaustible. Although coal may last several hundred years, oil and gas will not be available much beyond this century. Second, some of the countries that currently supply these natural resources may choose not to share them in the future.

We have also recognized that all of the methods that we have been using, or are planning to use to produce energy, have a significant impact on our environment. These methods either are not efficient or produce waste products which create pollution and disposal problems. In using nuclear power, for example, we must exercise rigid and unfailing operational control, transport waste products without accident, and bury them in a safe place for an indefinite time.

Because of these problems, increasing attention has been devoted to solar energy as a possible alternative to meet our projected energy requirements. Aside from its agricultural, botanical, and cosmetic uses, what is being done with solar energy today? One potential application is a solar cooker used in developing countries. Another is a hot water heater which costs about $10 and is capable of providing hot water for a small household. Millions of these heaters have been sold in Japan. Still another modest application of solar energy is solar distillation. On one of the islands of Greece a solar distillation plant has been built in the town square, which is the only flat terrain. The sun heats the sea water to form vapor, which condenses on glass panels to provide distilled water.

Solar energy can be used in other interesting ways to conserve energy. For example, it can be used to heat homes. In fact, a house in Lexington, Massachusetts, has been using solar energy since 1955, and it works well even in winter. Homes can also be cooled with solar energy. Those familiar with "brown-outs" know that they usually occur on the hottest day when air conditioners are needed most. Solar energy works the other way; heat-actuated refrigerators work best when the weather is hot.

Another interesting application of solar energy is the solar furnace, in which a large concentrating mirror is used to heat substances to very high temperatures. For example, a solar furnace in France consists of heliostats - that is, flat mirrors which follow the sun and reflect its radiation toward a paraboloidal mirror, where it is then concentrated on the material to be heated. This furnace is capable of melting about a ton of ceramic materials and heating them to 3000° C.



Cross-Section of a House Equipped with a Solar Climate Control System
(Arthur D. Little)

Obtaining power from the sun is not new. At the Paris Exposition of 1878, a solar-powered steam engine was a major attraction. A steam boiler heated by the sun provided the power for a printing press which printed a newspaper called The Sun. In the United States, solar steam engines of this type were operating as early as 1901. In Egypt, a steam-driven pump used to irrigate the land was generating the equivalent of 100-hp as early as 1913.

The Russians have been very active in solar energy. They have begun construction of a plant to produce 1400 kilowatts near Tashkent by arranging mirrors to follow the sun and reflect the sunlight to a boiler on top of a tower.

The United States is looking at a number of approaches to use some of its sunny desert areas, for example, for power production. One is to use solar cells to convert solar energy directly into electricity. Another is to concentrate sunlight onto selective radiation absorbers to reach high temperatures and then passing a fluid over them to generate steam and drive steam turbines.

I believe, however, that these are interim approaches, because we are still limited if we build a solar plant on earth where sunlight is not always available. There is little or no sunlight on cloudy days and none at night. Sunlight at best can give us about 1 kilowatt per square meter at or near noon. Consequently, instead of considering locations on

earth, it is much more advisable to consider locations in space where sunlight is nearly always available. A satellite solar power station is one possibility.

Silicon solar cells, such as those used on the Mars Mariner probe, have been the mainstay of all unmanned spacecraft. About 1,000 spacecraft, both U.S. and Russian, have been orbited with about 10 million solar cells used to convert sunlight directly to electricity. The Mariner spacecraft is, at the moment, about 70 million miles from earth. It has a little solar power plant on board to generate the power needed to transmit information back to earth.

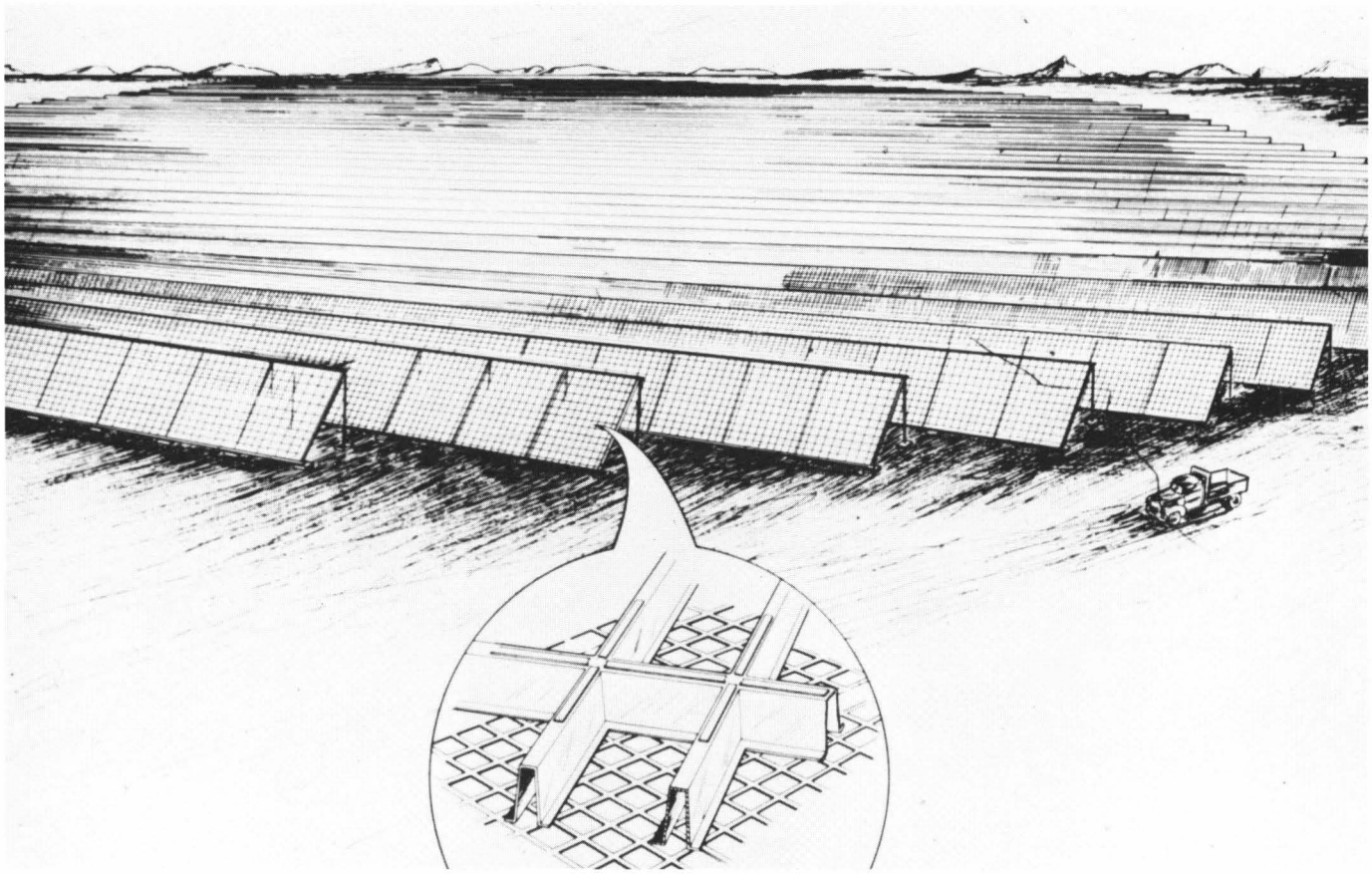
Our plans for solar power plants in space are becoming more and more ambitious. For example, a solar cell array capable of producing about 25 kilowatts is to fly in the Skylab spacecraft in about two years. The solar power plant will help the astronauts perform their various tasks in that orbiting station. We can use this technology to design an even larger satellite which would be placed in a synchronous orbit. It would be stationary with respect to any desired location on earth at a distance of 22,300 miles and would convert solar energy directly into electricity. The electricity would be used to generate microwaves, and the microwaves would be beamed back to earth where they would be converted directly into electricity in a receiving antenna.

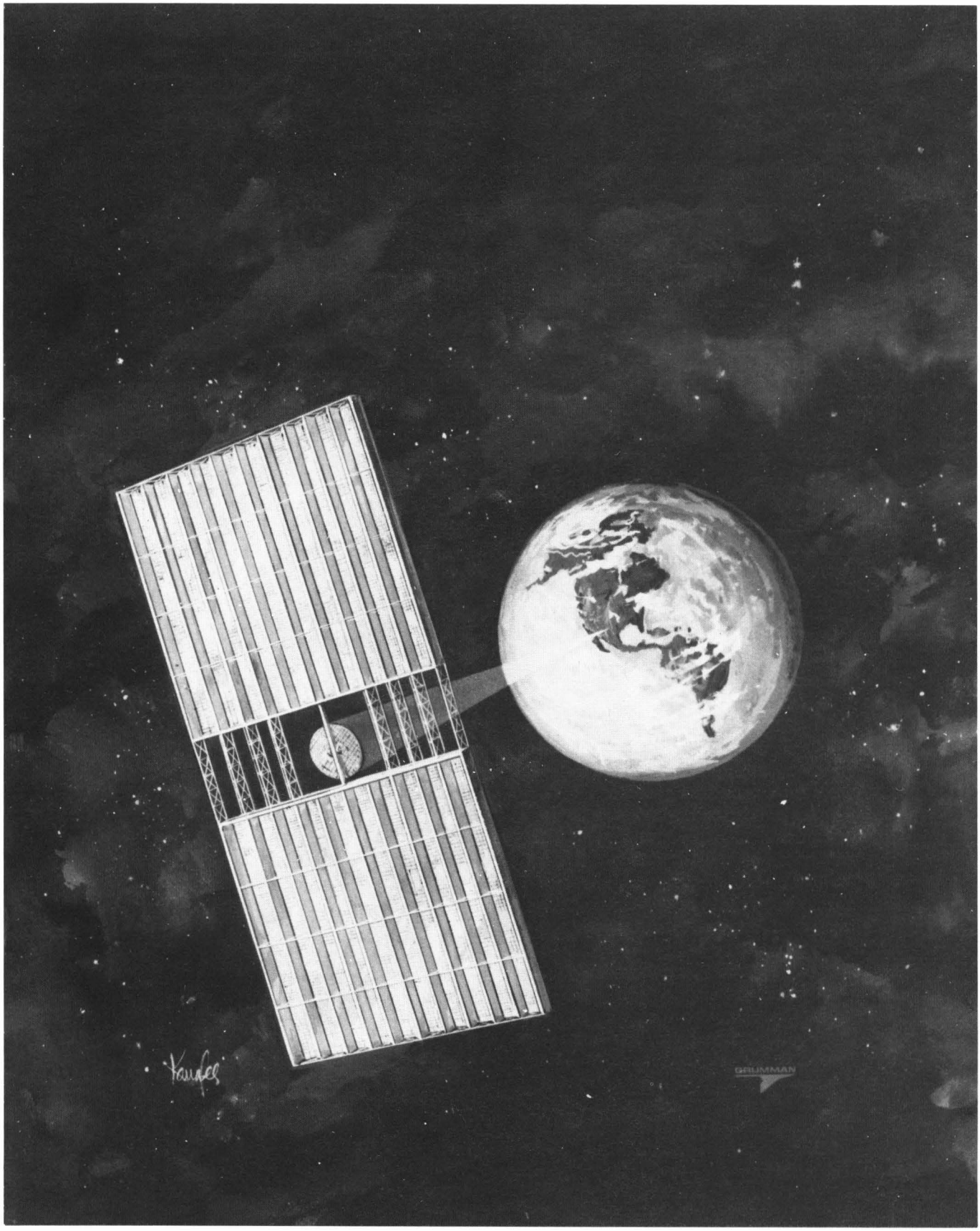
By a system of such satellites we could supply a significant portion of the world's power needs. Moreover, because of their distance from the earth, these stations will be able to produce power with no danger of polluting our environment.

To be effective, the satellite must be very large. Such a satellite is capable of providing 10,000 megawatts, or enough power to satisfy the requirements of New York City. The technology involved in the components required for this satellite has advanced to such a level that the satellite could be built in the not too distant future; a prototype could be completed in about 15 years.

We are beginning to design the space experiments to test the type of hardware that I am discussing. For example, the Application Technology Satellite, which will be launched in two years, is unmanned and has a 30-foot-diameter antenna which will beam various radio waves back to earth. Although a large paraboloidal antenna with a large microwave generator could be used, a multiplicity of small generators might be arranged in a flat phased array antenna.

Rectifying Antenna
(Arthur D. Little)





Design Concept for a Satellite Solar Power Station
(Arthur D. Little)

We can conceive of building very large transmitting antennas. Projects have already considered how to use tele-operated devices to assemble antennas about a mile in diameter. And, of course, the various space supply ships (called space shuttles) now on the drawing board will be operating by the end of this decade. Thus, the technology for placing solar power stations in orbit is really within our grasp.

The spaceships required to place portions of such a large satellite into orbit would have to be far larger than our present Saturn rockets can lift. Most likely we would use a space transportation system based on a space shuttle. Since shuttles would be piloted back to earth, we would need only enough fuel to place the satellite into earth orbit. Portions would then be assembled like a freight train, and ion engines would transport the satellite, over a period of several months, into a synchronous orbit.

To receive the microwaves on earth, we shall use an antenna consisting of a large number of diodes capable of converting microwaves directly into electricity which can then be fed into our transmission networks. Today we can convert microwaves with 75% efficiency and we project that we can reach 90% efficiency. (No thermodynamic process known to man, however, can conceivably be that efficient. The only other way of obtaining such efficiencies is to control fusion and then use a direct conversation method in the fusion reactor.) The receiving antenna would be stationary and directed towards the satellite. The land beneath the antenna could be put to productive use because the microwave beam power density is very, very low. At the edges of the antenna there is one-tenth of the energy density of solar radiation. This would meet today's U.S. limits for microwave radiation; that is, the permissable microwave radiation leakage from a microwave oven with the door closed.

In summation, I believe that we can talk about the dawn of a new solar energy era--an era in which solar energy will be used in ways that we can only barely conceive of now. Whether this infinite energy source will have a significant impact on our society and on the rest of the world depends upon our ability to exploit it. Thank you.
[Applause.]

HAL CLEMENT:

It's getting harder and harder to distinguish between photographs and science fiction art. Joe?

JOE HALDEMAN:

I'd like both of you to give me some idea of what the efficiency of your processes are, relative to ones that are used now. Not only the theoretical efficiency - as Dr. Glaser said, 75-90% - but also in terms of dollars and cents. When your processes become really efficient, how will that compare with how cheaply you can buy a kilowatt nowadays?

DR. RICHARD ROSA:

In the case of MHD, we think that MHD power plants using conventional fossil fuels like coal could achieve an efficiency of about 60% now, which is about one and a half times that of present conventional power plants. I'd like to point out that theoretically that power plant has a thermodynamic Carnot efficiency of a little better than 90%, and if you really want to spend the money you could make it approach that figure rather than the 60% which I mentioned.

JOE HALDEMAN:

And what about the relative price of MHD-generated electricity?

DR. RICHARD ROSA:

To the best of our ability to make those estimates now - and we have made some effort in this direction with the help of utility engineers - the capital cost of the plant would be about the same - perhaps a little bit less once you had some experience - than that of a conventional present-day power plant, so that the cost of electricity would then go about like the efficiency. In other words, it would drop by about 50%. It could drop by even more if environmental factors were considered.

DR. PETER GLASER:

Well, I mentioned that we have demonstrated on a reasonably large laboratory scale that we can convert microwaves to DC electricity today to 75% efficiency, and we know that we can go to 90%. As far as the cost is concerned, we have not built a large power plant of the size that you've seen. Today's costs for any power plant in space are horrendous. However, we do know that when we talk about very large plants, we can be within a factor or two of the costs of our conventional power plants. However - and this is perhaps the most important point - I believe that today's cost - that is, capital investment, really - is irrelevant in some senses. That is, we do not have an accounting system which takes into account social costs. I believe that it is hard for utilities to claim that their power plants cost, say $200 or $300 a kilowatt if they do not take into account the 80,000 miners which are killed in mining the coal or the reduced life span of the miner due to coal-dust-induced pneumoconiosis or some other diseases. Or, for that matter, if you don't take into account the 3.2 million acres which strip mining has laid bare in this country, or even the right-of-ways in which transmission lines have reduced the beauty of the landscape around us. Now, how to account for the costs is a much more difficult question. And yet I offer the suggestion that, through the type of use of solar energy as I am proposing, this factor of two can probably be shown to cover some of these social costs if the other plants had a true cost accounting picture.

JOE HALDEMAN:

That's very important. On a more practical and immediate problem: Both of you, of course, are working directly against some of the most powerful industrial concerns in the United States. In terms of being able to get appropriations for your research and in terms of being able to get them accepted by the power companies, have you had an inordinate amount of trouble with Standard Oil and people like that? Do they consider you to be adversaries yet?

DR. RICHARD ROSA:

No, they don't consider us adversaries. In fact, our support has largely come from the utility industry. But it is also a fact that it is a huge, rather old, industry, as industries go. It is pretty hard to get it to move rapidly and accept new things. Nevertheless, it does move. In fact, parts of the utility industry have moved faster in the case of MHD than the government has.

JOE HALDEMAN:

But then your interim solutions to MHD do include the combustion of fossil fuels as well as....

Dr. Peter Glaser
(Photo by Jay Kay Klein)

DR. RICHARD ROSA:

That's right, at the present time. There's no reason why you could not hook MHD generators to nuclear reactors, and I have every expectation that eventually that will happen. But at the present time there is no practical nuclear reactor that will produce the kind of temperatures which we need.

DR. PETER GLASER:

If I can give an example. On the Board of Directors of the Solar Energy Society are three chairmen of the boards of various utilities, including a bank. So that indicates that industry supports it. If you read the President's energy message to Congress of June 4th, you will find a specific passage wherein he devotes attention to solar energy for the first time, saying that this is indeed one of the directions that we as a nation should be pursuing, because we now seem to be reaching the point where technology and need may go hand in hand.

JOE HALDEMAN:

Again, Dr. Glaser, in your convincing us that the microwave beam hitting the surface of the earth isn't going to be dangerous to life, you said it's about one tenth the radiation density of solar energy. It sounds like a Rube Goldberg machine. Why don't you just use the solar energy?

DR. PETER GLASER:

Well, I thought I briefly alluded to the problem that we have. Whenever we talk about base load (that is, a very substantial portion of the total U.S. needs for power), then we need to have something which is reliable and dependable. Whatever we have on earth - let's say machinery in the desert - would suffer when we had interruptions because of clouds; we call this an availability factor. In Arizona, for example, the availability factor at the best location in December (the worst month) is about 10, if you don't have something which always follows the sun. This is one of the problems we'd have in doing it here on earth.

JOE HALDEMAN:

That's a good answer. Obviously, if we're going to get 10,000 megawatts on some kind of beam cross-section, it has to be a pretty large beam.

DR. PETER GLASER:

The receiving array on the earth would be about three miles by three miles and we would have perhaps another mile or two on each side to assure that we do not interfere with any human habitations. The beam itself can today be directed with an accuracy of a few hundred feet. Now, again, I'd like to say that if that microwave beam would, by the worst credible accident, stray and hit New York City, there would be no damage to anybody even if it would shine on New York

for a whole day. Now, obviously, we don't want to do that and we have various fail-safe devices. I don't believe that a similar maximum credible accident could be postulated for a nuclear power plant.

JOE HALDEMAN:

I saw in a recent magazine a plan for a satellite mirror that was a mylar sphere aluminized on the inside. Did you see this?

DR. PETER GLASER:

The earliest suggestion for doing things of this sort goes back to about 1923, to Oberst, who thought of orbiting mirrors to shine sunlight back to the earth on dark nights. Later on, I understand, it was considered by Germany during the last war as a possible ultimate weapon to sort of roast various cities. Geometrically, you can't arrange that (thank God for that), but, in addition, it is probably not the sort of thing you would want to do because if we upset the balance of nature at night time we would have some other problems to contend with.

JOE HALDEMAN:

I suppose that your cowfield drawing indicates that these 10,000 megawatts pouring down on the field won't have any real ecological effect.

DR. PETER GLASER:

No. After all, we don't want any of that stuff to reach the ground, so we would absorb it. 99.9% would be absorbed even before it reached the ground. Therefore we can use the land for various alternate purposes if we so desire.

JOE HALDEMAN:

Now the atmosphere is partly opaque to microwaves and that energy is going into the atmosphere.

DR. PETER GLASER:

There are two things of concern. The first is what is the interaction of the microwave in the ionosphere? For a wavelength of 10 cm - and here I apologize for being technical - we do not suffer <u>any</u> absorption in the ionosphere if we have a low power density of ten milliwatts per square centimeter. At a ten centimeter wavelength there happens to be a radio window; we can transmit through rainclouds and fog and even snow. (After all, you watch TV and radio even if there is a storm outside.) So that even in the worst rainstorm we would only lose about 2%, and that happens only 10% of the time, even in Boston.

JOE HALDEMAN:

If I had read Ben Bova's book a little more closely, I'd have remembered about that ten centimeter window.

HAL CLEMENT:

Okay, there have been two or three hands up in the audience for some time.

QUESTION: What is the efficiency of converting sunlight to microwaves?

DR. PETER GLASER:

That is primarily governed by the efficiency of the solar cell. Present solar cells have an efficiency of 11%. We have produced solar cells with a 14% efficiency. We now have a program which indicates we can get 18% efficient solar cells, and those are silicon solar cells, I might add. Now this is not the end of the game because solar cells made from organic substances have been postulated, and a number of people working on those would claim that they would have efficiencies something like 40 to 60% because they do not have an upper limit of theoretical efficiency. The microwave generator is 90% efficient and the antenna, as well, has an efficiency of about 90%. [Comment from audience.]

That is exactly the point I was trying to make. At the moment we are far away from being a Type I Civilization, so that we're not concerned with polluting our solar system.

QUESTION: [Inaudible.]

DR. PETER GLASER:

Yes. In fact, the transmission system that we would need would probably be superconducting transmission lines which have to go underground, which are being worked on right now. I only meant to illustrate the social cost aspect by saying that transmission lines going from one small plant to another small plant, and perhaps in a grid, such as we know it today, extract a positive social cost.

QUESTION: [Inaudible.]

DR. PETER GLASER:

I think this is a matter of technical trade-off and judgment. I think until we see exactly how we are going to do it, it is rather too early to say exactly which of these schemes will work. I certainly have been equally active in talking about terrestrial power generation and seeing how this can be accomplished, as well as doing it from outer space.
[Comment from audience.]

Well, the only objection I heard against this particular scheme is that it has to be a particularly large size, you know, to produce many thousand megawatts if there's wind or storm or rain or snow. Our environment tends to be rather less benign for this kind of specific application. You do need major structural components to hold the larger sizes or shapes that we desire, for instance. [Comment from audience.]

Well, again, the other objection one might place against beaming substantially concentrated solar radiation from space, if this could be achieved, is that then you do have a problem if something does go wrong. You have a beam which you cannot expose people to for fear they might suffer some damage.

HAL CLEMENT:

Excuse me, Pierre. Rather than running any one idea into the ground, let's get several started and continue them in conversations afterwards.

QUESTION: [Inaudible.]

DR. PETER GLASER:

The space shuttle that is now being designed has an estimated cost of $100 a pound to earth orbit. And that is a flight that is the DC3 of the transportation system I am proposing. I do believe that costs will be reduced beyond this point.

QUESTION: Would the microwaves interfere with communication?

DR. PETER GLASER:

It is possible to design various filters such that you have a very accurately tuned microwave system, and even the various harmonics which are generated would be such that you could still watch TV.
[Comment from audience.]

Well, that's a problem for society, I think.

QUESTION: Does not increasing the bottom temperature reduce efficiency?

Dr. Richard Rosa
(Photo by Jay Kay Klein)

DR. RICHARD ROSA:

The answer is yes, unless you can raise the top temperature of the cycle still further. It's the ratio between the top and bottom that counts.
[Comment from audience.]

Yes, but that gets back to this question of social costs.

HAL CLEMENT:

I interpreted this as part of the question about the trade-off situation. You're putting up with a high exhaust temperature so that you could get rid of it by radiation.

DR. RICHARD ROSA:

Right. If you could make your top temperature high enough, then that would be a fairly minor cost to pay.

QUESTION: [Inaudible.]

DR. PETER GLASER:

Well, at the moment it's too early to say, because MHD certainly has certain numbers and we have certain other numbers. Now the proof of the pudding lies in, really, a national energy policy, which I think is a basic...
[Comment from audience.]

Oh, I see. This has actually been tried in Project Sunflower and there are serious technical obstacles for doing this on a very large scale, because the moment you have rotating machinery, the reliability, maintenance, and so on, of a large number of such machines seems to be a problem.

DR. RICHARD ROSA:

Well, it could be an MHD plant, which would then take care of the rotating machinery. There would be a problem of getting a high enough temperature. The higher the temperature you need for a conversion device, the better your mirror has to be. But in principle it could be done.

QUESTION: [Inaudible.]

DR. PETER GLASER:

Well, again, I believe that, judging by the developments in the various utilities, we are going to have a national grid system in the time span that I've been talking about. With superconducting transmission lines, hopefully buried out of sight, we could use the land which is least valuable and which is ecologically in a benign location. I believe that such a transmission system is an absolute necessity, whether you use solar energy on a large scale, MHD, or nuclear power.

HAL CLEMENT:

I'm going to do something which I believe the moderator is not supposed to do - that is, stick a

question in myself here. Pardon me for pulling rank, if I have any. A great deal of our power is expended on transportation, much of it on vehicles - airplanes, automobiles and so on - which we're accustomed to drive around as individuals. Now are we going to have to, with either of those or with both of those techniques, depend on electrical vehicles charged from power stations based on one or the other of your techniques, or is there any way of using MHD or solar energy directly in a vehicle?

DR. PETER GLASER:

Yes, there is. And, in fact, this is where, perhaps, the use of terrestrial solar energy production will come into its own. You can use the electrical power via electrolysis to produce fuel - hydrogen and oxygen, for example. You then have the option to use that fuel in a pipeline instead of the natural gas that we transport today, and burn it, or, if you prefer, to use it in a fuel cell to produce electricity again. This is now receiving very serious consideration, particularly since we have the technology to handle very large amounts of hydrogen, either in a gaseous or liquid form - something we've learned a lot about as a result of the space program.

DR. RICHARD ROSA:

I fully expect that sooner or later all of our vehicles will become electrically powered by rechargeable batteries, or powered by a hydrogen/oxygen system such as you have described.

HAL CLEMENT:

What I was trying to lead up to, sneakily, of course, is the rumor that you had some interest in MHD aircraft of one sort or another.

DR. RICHARD ROSA:

That question is obviously a plant. [Laughs.]

Well, I've been working in this MHD area for some time, and many years ago I was assigned the job of figuring out what MHD was good for. Among other things, I concluded that it might be good for powering aircraft. Now, in particular, one of the central problems of transportation today is short-haul, intercity transportation, and people have been working hard to develop short take-off or vertical take-off aircraft for this kind of application - aircraft that could go from city center to city center, aircraft that are capable of hovering and yet at the same time also able to fly very rapidly. The helicopter, of course, can hover, but it's not very good at high speeds. People have been working for years trying to make an aircraft that would do both, but with only somewhat marginal success. We still don't see any of these things in widespread use.

I set out to see if one could use MHD for this. In principle, something which uses a magnetic field and a spinning electric arc is far more flexible than

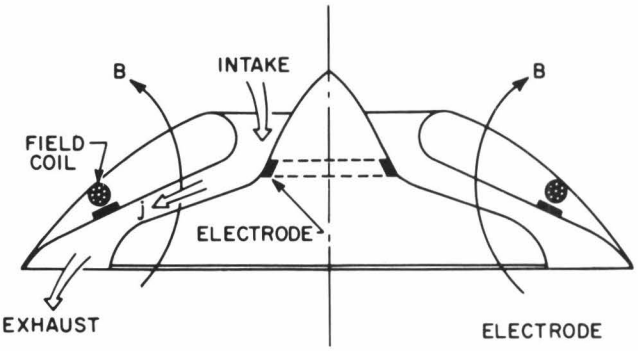


Fig. 10 MHD Lift Fan
(Avco-Everett)

something which uses propellers or rotors made out of a solid material. So I set out to build an MHD hovercraft and lo and behold, it came out looking like all the pictures we see of flying saucers. [Laughter.] Not only would this look like a flying saucer, but it would glow in the dark and it would probably cause radio interference. [Applause and laughter.] Now, it's possible to carry the argument even a bit further. If you suppose - and the astronomers tell us today there is a very reasonable possibility of other civilizations in the universe - if you suppose that we are being visited by an extraterrestrial civilization, then there are logical technical reasons for expecting them to employ electrically powered reconnaissance vehicles that use MHD effects to convert the electrical power into lift and thrust.[1]

[Next slide - Fig. 10]

What this would be is essentially the MHD version of a centrifugal pump. It would have a magnetic field coil which produces a magnetic field, as the slide shows. It would have an electric arc burning between the center electrode and the outer electrode. Now the j cross B force in this configuration causes the gas to spin, and if you have the proper aerodynamic configuration, the spin is then translated into forward motion. This is more or less the way an ordinary centrifugal pump works, except that the spin is caused by a solid rotor rather than an electric arc. It's also the principle of plasma propulsion devices which people have built in the laboratory.

HAL CLEMENT:

Gentlemen, I'm going to cut in at this point. I'm sorry. I'm nasty by nature, and furthermore, I'm convinced that the best time to stop a panel is when several questions have been unanswered, so that questions and arguments can continue on an individual basis afterwards. So with strong thanks to all parties concerned, I think this is it.

[Applause.]

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[1]This is discussed further in Analog, September 1972.

The Urban Universe

Panel with John Brunner, Katherine MacLean, Ben Bova, and Katherine Kurtz

TONY LEWIS:

Ladies and gentlemen, welcome to the antepenultimate item on our program - a panel discussion on "The Urban Universe". The panel, reading from your right (my left): Katherine MacLean, who has been recently writing science fiction stories...

KATHERINE MACLEAN:

I have not been recently writing science fiction stories! I've been writing them since 1949.

TONY LEWIS:

But I haven't finished my qualification. Can I finish the subordinate clauses? ...which are being published in Analog and are heavily weighted towards urban problems. Katherine has recently moved to Maine to get away from the cities. [Laughter.] To her right is Katherine Kurtz, whom you people probably recognize best as the author of the Deryni series in the Ballantine Adult Fantasy series. Miss Kurtz is presently designing training systems for the Los Angeles Police Department. To her right is John Brunner, who has been more and more concentrating on the problems of the present day in his recent stories. To his right is Ben Bova, who, as he says, lives in a city and writes stories. Actually, Ben works as manager of marketing for Avco-Everett.[1]

KATHERINE MACLEAN:

What's that?

BEN BOVA:

It's a research laboratory. High temperature gas physics. Hot air specialists. [Laughter.]

TONY LEWIS:

The topic of the panel is "The Urban Universe" and the panel will, each in his or her own inimitable way, deal with the problems of the urban environment, perhaps the one environment which has been uniquely structured by the human race for itself to live in, whether consciously or unconsciously. We'll now turn the audience over to the panel and the panel over to the audience because the chairman is going to go and get a drink. Thank you.

[Applause.]

KATHERINE MACLEAN:

I'd like to lead off.

JOHN BRUNNER:

May I issue a preliminary warning, Katherine? If anybody is here expecting that this panel will deliver authoritative judgements about the future structure of cities, let me disabuse him by reading something which I found the other day in the San Francisco Chronicle in Jack Rosenbaum's column:

"Reader James Fitzpatrick forwards an excerpt from an 1899 issue of the magazine, Scientific American: 'The improvement in city conditions by the general adoption of the motor car can hardly be overestimated. Streets clean, dustless, and odorless, with light rubber-tired vehicles moving swiftly and noiselessly over their smooth expanse will eliminate a greater part of the nervousness and distraction and strain of modern metropolitan life.'" [Laughter.]

Katherine?

KATHERINE MACLEAN:

Oh, boy! Some of our favorite predictors are Scientific American. Some of our best predictors. Well, you threw me off stride...

First, if anybody thinks that anybody's in charge of planning cities, let me disabuse you. I tried to study city planning last year, and I read many books and I discovered there wasn't any city planning. I discovered that all programs so far have started without any ideas whatsoever.

For example, the slum clearing program is based on the theory that you get rid of a housing short-

[1] Ben Bova became the editor of Analog in Nov., 1971.

age by tearing down the houses. A slum is a low-income place where lots of people live because there are people with low incomes and they like to pay low rents. Now, the theory that has been in operation for a long, long time in all of these books on planning is that you get rid of the slums by tearing down the buildings. Then you have fewer houses, lots of low income people with less income because they've had to spend money to move, and more crowding. This makes the remaining houses into slums very rapidly because of the wear, and produces higher rents, which makes the poor people poorer so lots of them have to go onto charity.

And also there's another little factor. Since you've got a crowded situation the persons can't move when they want to move if they don't like the place, so that the landlord doesn't repair it for twenty years and the house falls down. It should have lasted a century or so more, but it doesn't because there's crowding. And if crowding causes the houses to fall down, you get into a cycle that has not been solved, that's not even been approached.

The first thought that I mentioned - the idea that the way to get rid of a slum is to tear down the buildings - is the one they're still working on. Now that's one idea. We found that this was started by the downtown merchants who wanted rich people to live next to them, so they thought that if they tore down the homes of the poor people, the rich people would move in. What happens is, if you tear down the homes of the poor people, it costs so much to put them all on welfare or to try to build new houses for them somewhere else plus the cost of tearing down the old houses, that taxes go so high the rich people move out of town and leave these high taxes. Then there's no money being collected, and no money for the garbage collections, and garbage makes the place look bad.

I'm making an appeal, here. Apparently there's nobody but idiots in city planning. There are a lot of people in the audience who aren't idiots. Somebody should do a little city planning. I thought I'd start with a small cartoon book on the subject. You know, starting at the level where it is now.

Here's another thing. What they consider one of the finest examples of city planning (see, any one of you could do better) one of the finest examples of city planning, they always say, is the Washington, DC street plan laid out by L'Enfant. (They've never thought of anything more important than which way the streets should go.) Oh, there's so many things you could do about the way people live. Just consider. A city is a place where people live. There are mothers with children; there are old people who want to sit out in the sun or who want to see things going on; there are kids who need to see things going on to know what the world is like; there are the merchants who want to get their stuff back and forth without running over the kids; there are the people who want to live close to their work without having to travel great distances; there's the light, the space, the sun, the wind; you know, all of these things you could plan into a city. That hasn't been done. What they have thought about in city planning is: Do you have the street grid this way or do you run it diagonally? And they think L'Enfant's Washington is a "great" example of planning because it has diagonal roads.

This is so very simple. You've got a grid and you're trying to get from here to there. Well, the only way you can get from here to there when all the roads are running this way and that way is by going this way and that way, or by going this way and that way and around. That's what you do. You don't go through the middle because it's just as fast to go around the edge and do a right angle. So if you've got a grid the traffic goes around the edges.

BEN BOVA:

But there is an alternative plan, Katherine. What they did in Boston was to take all the cows from the Boston Common, fire a musket, and wherever the cows ran, they laid out a street. [Laughter and applause.]

KATHERINE MACLEAN:

Oh, that's an older way of doing it. You design the streets along the cow paths. And it's very pleasant, in its own way. It slows down the traffic.

Now the diagonal system is... Take as an example, you're trying to get from here to there in the city. And you've got the grid system, you go this way; it doesn't take you through the middle. Now you've got diagonals - a spoke system. Now if you have spokes superimposed on a grid the way Washington DC is, it doesn't matter where you want to go in the city, you're going to go on this diagonal road and through the middle, unless you want to just go a few blocks north or east. But if you're trying to get anywhere on a slight slant you'll go along one of these spokes and in through the middle. So everybody trying to get anywhere comes to the middle. And there they are, all piled up, nose to nose and horn to horn, honking. That's natural. Is there any other way it could happen? No, because traffic tries to flow by the shortest route.

I want to suggest that the kind of thing those people have been doing has been averaging; they're trying to think of an average person doing an average thing. Actually, the world is composed of people in different roles doing different things. And if you try to work it out like a chess game with each piece doing its own separate thing, you'll work out patterns that you could live by. Or you could find all the cities that people lived in for ten centuries and enjoyed, enjoyed immensely, where the things settled into very pleasant patterns just by everybody moving out of the spots they didn't like. There is some grounds for thinking, if we look at great old cities.

As it is, the way things are going, New York City in the 50's spent more money on its urban renewal than was spent in the entirety by all the other cities in the country. And immediately afterwards they had a terrible slum problem, much worse than before, plus a terrific welfare problem, they went broke and didn't have money enough to collect the garbage. Somebody should do some city planning. You people should do it.

JOHN BRUNNER:

Katherine MacLean has taken us right into the heart of the city at a dead run, as it were. Me, being the cautious transatlantic type, I feel more inclined to try and define a few parameters first of all.

What is a city? Is it a fit home for humans? If not, why not, and what, if anything, can be done about it? I was talking to Katherine [Kurtz] before this panel about what constitutes a city and I think she came up with some very good definitions. Katherine?

KATHERINE KURTZ:

We were trying to decide, to begin with, whether we have to define what a city is by size. We decided that this was not a good way to decide what a city was, because we have things that claim to be cities from very small communities to very large megalopolises. Is that the plural of megalopolis?

JOHN BRUNNER:

It'll do.

KATHERINE KURTZ:

All right. So we decided that size was not a good criterion. So then we tried to figure out what was a good way to define a city. We finally came upon the idea that perhaps we could define a city by function. For instance, take a small town, something that doesn't even claim to be a city, and you find that a town is dependent on other larger communities for many things. Usually in a town, for instance... (I'm going to orient this somewhat toward law enforcement because this is the area I'm working in.) A small town will usually not have its own law enforcement agency; it will not have a police department, as such. It'll have a local sheriff, it'll have officers of the county, or maybe even the state government if it's small enough, whereas a city has a responsibility to the people in it to provide specialized police protection. This carries over in many areas. For instance, a town generally will not have its own welfare system for its inhabitants. It will depend on state and county aid to help its people who can't help themselves. A city, on the other hand, has a responsibility as a city, as an entity, to care for its inhabitants. I forget where we went from there.

JOHN BRUNNER:

Well, I think, in fact, that that is a most important point concerning the nature of a city - it is a community which has become so complex that a central government must remove certain responsibilities from the individual citizen and administer them on his behalf, purely because the whole thing is so damned complex, owing to its size, that a single individual cannot be expected to function without anxiety and insecurity unless his needs are being centrally administered. Ben, would you agree with that point?

BEN BOVA:

To some extent. I think that cities originally grew up around marketplaces, and you'll find that the large cities of today are an economic unit as well as a social and political one.

JOHN BRUNNER:

And are they, in fact, fit places for human beings to live in? Katherine MacLean has touched on some of the problems. Ben, would you care to add to the list of things that make so many people dislike cities these days?

BEN BOVA:

I'm not sure I want to add to the list; I think that most of the people who live in cities know it pretty well. The phenomenon that I see, though, and this is harking back to something I said earlier[2] - a couple of days ago - is that many cities seem to be on a one-way slide into oblivion. You find cities like New York and Washington DC - a number of cities along the Eastern Coast here - where the people who can support the city economically - the taxpayers - are leaving the city to live in rings of suburbs around it. The city itself is virtually dying, mainly because the tax support that it needs has disappeared. The only people left as residents in the city are those who can't afford to get out. We find something like cancer where the urbanization is spreading across the landscape and, in the center, where the urban center used to be, is a virtual concentration camp of people who physically, economically, socially, intellectually, cannot get out. And they're going to be left there and forgotten.

JOHN BRUNNER:

Might I, perhaps, claim the privilege of the best friend in the Lifebuoy ad - the one with the guts to mutter the fatal "B.O." - and read a couple of paragraphs from a column in a recent Manchester Guardian in England sent in by their Washington correspondent, Adam Raphael? Describing 14th Street in Washington, he says, "Not that anyone cares to walk this street. It

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[2] "Resolved: That There Are No Viable Alternative Futures".

is an area where strangers, particularly white strangers, neither go nor are welcome. The few shops that still remain are festooned night and day with iron bars, padlocks, and steel shutters. Some have been remodeled into the windowless, high-brick-walled ghetto architecture of the 1970's known as 'Riot Renaissance'". And farther down he cites "New York's special and unique problem. In that city alone, there are now more murders each year than the combined total for Britain, The Netherlands, Ireland, Switzerland, Spain, Sweden, Norway, Denmark, and Luxembourg."

KATHERINE MACLEAN:

May I point out that this does not condemn cities as such. New York City was a wonderful place to live. There have been cities that have lasted thousands of years that were wonderful places to live. According to Jane Jacobs, and according to our own heroic barbarian fantasy people, the natural habitat of man is an alternation between city and forest, between the riotous marketplace with its wonderful mysterious buildings and singing and dancing; then going out into a relatively green and simple place and staying there for a long time; and then coming back to the marketplace in this holiday thing of trading what you manufactured.

The primitive cities were beautiful places. They had a central drama, group entertainment, all kinds of luxuries, big temples you could pray or lounge in, and they were beautiful. The individual housing was very small, but the group things were available free, were wonderful, and the background was wonderful. The air was fresh, and all these trade goods were there for entertainment - you know, parrots in baskets and all that stuff.

New York used to be like that. You'd walk down the street and there would be Chinatown or Armenia, and everybody was happy. When I was sixteen I would walk down the streets of New York at four in the morning - as a girl - anyplace. I had no fear. There was nothing to be afraid of. It was safe and it was interesting and it was colorful and the lights were on all night. And the people were not friendly - they were aloof, which gave you this wonderful feeling of walking on a beach alone. There was no criticism; they didn't notice each other. That was part of the politeness of the city. Now they're afraid of each other and they notice.

You can't say that there's something wrong with cities; you can say there's something wrong with what we have been doing recently. And one of the things we've been doing recently has been meddling, in this ridiculous fashion of meddling without thinking. And again I'll go back to my thesis. If we must meddle, a little bit of thinking - the minimum of thinking - would have helped, and might help us now; it might get us out of it. I think too many intelligent people are thinking there's somebody intelligent who is thinking and they're leaving it to the other guy and there isn't any other guy.

BEN BOVA:

I think one of the problems is that the forces that have shaped the cities, especially over the past thirty years or so, are forces that are not really paying attention to the creation of a livable environment in the city at all. They are the forces of the marketplace or of individual politicians, or of real estate developers, or of what have you. Right now, I think, one of the major forces that is shaping our cities is fear. People are running away from the core of the city. The goddamn Federal Government in Washington is moving its agencies out of the city into the suburbs, where the black people who live in Washington can no longer reach. One of the major employments for the black population of Washington used to be the non-discriminating Federal Government. Now that these agencies are out in Virginia and Maryland the people in the city can no longer work there - they can't reach them physically. And it's not only disappointing and contradictory to everything that our government is supposed to be based on, but it is building a real cataclysm in that city. The riots that have occurred in Washington are nothing compared to what is going to occur unless things change, and I don't see any forces for change that are working right now. Our Federal Government is ignoring the problem, making words about it but not doing anything.

KATHERINE KURTZ:

If I might speak about Los Angeles for a minute. Los Angeles is typical in many ways of some of the problems of the city that we've been talking about. There are also a few good things about what Los Angeles is doing, too, that I'd like to point out. Now as you know, Los Angeles is enormous. It has just sort of sprung up and grown from a bunch of much smaller communities with no discernable plan that I've been able to discover in three years of living there. The freeways are far outdated; the citizens do not seem to realize that we're going to have to have rapid transit of some sort in Los Angeles, and soon, or the city is going to die. I haven't quite been able to discover why it is that people in Los Angeles do not want to pay their tax dollars to have rapid transit. Perhaps it's from living so long so sprawled out and everyone thinking that he has to have an automobile of his own to go three blocks. Of course, there is the problem that Los Angeles is so sprawled out that right now, the way things are, you do have to have a car to go anywhere further than about three blocks.

Now, a city this size, almost by definition, is going to lead to great depersonalization. It's very difficult to be an individual in a city this enormous. Also, when you have a city this enormous it's natural

The Urban Universe panel: Ben Bova, John Brunner, Katherine Kurtz, and Katherine MacLean (Photo by Jay Kay Klein)

that you're going to have little ghetto sorts of areas where people who are somewhat alike are going to congregate, because the city itself is so depersonalized, so inhuman, that you have to find comfort somewhere.

Now back to the law enforcement angle. Trying to administer justice in a large, enormous city like Los Angeles could be a very difficult thing. It has been in the past. I think we probably have one of the largest police departments in the country. I'm certain that it's about the least corrupt, which is a good start for having a good police agency. It's definitely the best trained, and I speak from experience, from having visited many other departments and trying to find out what they do wrong so that we don't repeat their mistakes. We are developing an individualized multi-media instruction program which we hope will be the prototype for training law enforcement officers of the future. It's a very complex situation, but this is something we are working on.

Something more at home right now - what we're doing now and what we have been doing for more than two years - is something called the Basic Car plan, and this is designed to try and alleviate this great depersonalization. You know, in old communities the local policeman - the local cop on the beat - would walk around. He knew the people in the area he worked. In London, still, they try to have the bobbies live where they work; they know the people where they work and the people know them; they know they can go and talk to them. Their bobby is their friend. He's there to help them. There to protect and to serve - that's the motto of our police department and of many others.

Now in Los Angeles, because it is so sprawled out, it's impossible to have the policeman live where he works. There's no way it could possibly be done. So about two years ago we came up with what we think is a pretty good alternative, which is called the Basic Car plan. Now the area of Greater Los Angeles that is administered by our department is broken down into seventeen geographic divisions. In each of these divisions there are nine very-well-trained officers who have been especially guided and given special training in community relations and so on. And with nine policemen, this means that for every watch - there are three watches in a day, of eight hours each - for every watch you can have two of these officers in a car riding around and patrolling in that division. So this means that any time of the day or night, twenty-four hours a day, seven days a week, the people in that community know that there is a car in their area and that those men know them.

And about every month or two they have a Basic Car meeting in that geographic division. The citizens are invited; the department foots the bill for coffee and doughnuts and things. All nine Basic Car officers show up at that meeting and they talk with the people - they'll rap with anyone who shows up. They're delighted to talk and find out what's bugging the people. What are the problems? And they tell the people what problems they've been having. How can you help us? How can we help you? It's working beautifully, and, as far as I know, there's no other department doing anything like this. There are many other departments looking at this program very carefully and they're fairly impressed. And so we think that this is one way to help this particular problem in the city - of

bringing law enforcement back to the people where it belongs and having them be an integral part of it.

JOHN BRUNNER:

With the rest of the panel's permission, I think we've now stated some of the parameters of this discussion. What's necessary now is to find out what's on your mind.

QUESTION: [Inaudible.]

KATHERINE KURTZ:

I think we had sort of moved on from that first definition to one of responsibility of the community to the people and vice versa. Really, when you get down to it, a city is any community organization which decides that it is a city and decides that it has a responsibility as a city to its inhabitants.

BEN BOVA:

You can almost look on the city as the nucleus of a cell - as in a biological cell. And certainly there is an interdependency between the city and the community around it. Originally, to provide foodstuffs; today, as we see the centers of the city virtually dying away, the interdependency in a city like Boston, for example, is more and more the situation where people live outside the city, come into the city to work, and then go back at the end of the day. The Government Center in Boston is deserted at 6:00 in the evening.

KATHERINE MACLEAN:

Jane Jacobs' definition of a city is that a city is something you could live in and enjoy and use. It's a place where a great number of manufacturing and other sorts of jobs are available within walking distance, the stores are available within walking distance, and the cultural centers and the theatres are available within walking distance. You live in this pile without needing a car, with all of these good things close to you, and with low-cost housing available close in around all of these things. Young people can come in without jobs and look for jobs and find a multitude of things offered and work in the services that interact. The people that are in agriculture outside bring in their stuff and sell it, buy some of the nice things in the marketplace that the place affords, go to some of the cultural things and the entertainment and go out again. But there's not this tremendous shuttling of people living outside and working inside, or of the people living inside and the factories moving outside, so that they have to commute to work in this tremendous manufacturing shuttle and tangle.

It's just the walking distance thing. I lived in New York when I was sixteen to twenty-five, and that's what it was - everybody walked. Everything was in walking distance. There were two thousand jobs open and, any Monday morning, if you wanted to look for a job there was this five pounds of newspaper. If they handle the cities wrong they force the factories out to the suburbs and then they don't provide any cheap housing for the workers to follow them out to the suburbs. You know, things like that. It is possible to consider a city as a place to really enjoy yourself and to make everything very convenient if you just try to think of what you want to do, how you want to live.

They've been driving the factories out of the way; they've been zoning all of the stores away from the houses and the factories away from the houses, so there's no way to get there without a car and the cars, of course, are poisoning us and using too much cost and using up too much air. And yet the zoning was unnecessary. That was all meddling. If you leave things alone totally in a state of chaos, things reach a state of disheveled comfort. This is because people put things and go where they're comfortable. When you start playing around with planning, then you get these shock waves of separate by-products and side effects, other things happening for which you have to plan other things. And in each of these cases things like our planning have produced other terrible consequences which, again, we have to plan to get rid of.

JOHN BRUNNER:

A less spectacular example of urban misplanning which I can call to mind is Rio de Janeiro, where many of the slums are in the form of what they call favella - very tall apartment blocks with no proper drainage, no running water, no elevators, no nothing. And yet, when the government built a low cost housing development out of the city and tried to rehouse the favella dwellers, they overlooked one very important point: getting to work could cost these people something like a quarter of their weekly income. So they stayed put.

QUESTION: [Inaudible.]

KATHERINE MACLEAN:

That's why they live there. They used to have an alternative - they could move out. They can't now because the place is taken up with tractors and twenty square miles of wheat with no houses to go to. But they lived in the cities because they enjoyed the cities. They've been there for thousands of years.

BEN BOVA:

A city can certainly be a marvelous place to live in. And I'm not sure why Kate did move to Maine, but I still live in Chelsea, which is kind of city, and there is a huge difference between what we think we can build and what we have actually allowed to develop. There's also, I think,a great difference between American cities and European...

JOHN BRUNNER:

Hear, hear!

BEN BOVA:

... and I think possibly there are very different forces that have shaped the two.

QUESTION: [Inaudible.]

KATHERINE MACLEAN:

Well, that's proportional, too. You might say, what is the optimum size of a factory nowadays? They've gotten a lot bigger, yes, and make more noise. But it's also proportional to the amount of fumes and noise that the factories are emitting, which is something we're fighting right now. Certainly when I talked about walking everywhere in New York I was exaggerating. A good half of the time I took the subway. But nobody thought of driving. Subway systems are, I think,a better alternative than trying to walk now.

QUESTION: [Inaudible.]

BEN BOVA:

Washington is a large city with lots of area that could be developed for federal office buildings and for better rapid transit. There is absolutely no reason that I can see to move those buildings out to the suburbs, except that it makes more money for more people out in the suburbs. The only factor that has been ignored is the ghetto population of Washington itself.

QUESTION: [Inaudible.]

KATHERINE KURTZ:

The department is aware of its problems regarding firearms training. We have a federal program going now to develop a firearms training program... [Comment from audience.] That's very unrealistic. It's totally unrealistic.

BEN BOVA:

Do you live in Boston, sir? [Comment from audience.] I see. Well, stick around for another week.

KATHERINE KURTZ:

Have you ever gone to a Basic Car meeting? Know any policemen personally? [Comment from audience.] Do you know any policemen personally? Answer my question, please. [Comment from audience.] Have you ever met one socially? Have you ever talked to him about his job? Have you ever considered what a policeman has to do?

BEN BOVA:

Have you ever been shot at? [Laughter.] It makes a difference!

JOHN BRUNNER:

May I cut in here and say that as a visitor from overseas I am appalled at the universal American assumption that it is sometimes necessary for a policeman to kill. [Applause.] Just before I came away from London, planning my contribution to this discussion, I rang the Home Office. I said, "Please tell me how many people have been killed by the British Police in the course of their duties over some quotable period, like my lifetime, or the past fifty years, or whatever comes handy." And they said, "Fine. We'll check our records and call you back." That was about 4:00 in the afternoon. About eleven the following morning the phone rang again and there was the Home Office on the line saying, "Sorry to have been so long before calling you back, Mr. Brunner. We've checked our records and we can't find a single one. Of course, we don't have records for Scotland." [Laughter.]

And in fact there has been one in Scotland within about the past three years - a rooftop sniper in the Gorbals District in Glasgow, which is just about the toughest district of the toughest city in Britain. When I first went to call on Peter Hamilton at the Nebula Science Fiction office, which is in Glasgow, he greeted

Katherine Kurtz
(Photo by James R. Saklad)

me on my arrival by telling me that I had just walked through the bicycle chain and razor slashing district. And I've been manhandled by the Gorbals police during a sitdown demonstration at the Holy Loch and I can vouch for the fact that they are not particularly gentle. But when this guy got up on the rooftop with a sawn-off shotgun and a rifle and shot seventeen people, one of whom subsequently died in the hospital, they whistled up their marksmen and they fired two shots and the second one got him.

If you want to find somebody else who's been killed by the British forces of law enforcement, you have to go back to the Sidney Street Siege of 1911, and then it wasn't the police; it was the army. I am appalled and dismayed every time I come back to this country to discover all over again that it is taken for granted that policemen kill.

BEN BOVA:

They can get killed, too.

KATHERINE KURTZ:

Yes, policemen do get killed. You have to remember, too, that the way this country was started, guns have always been a part of our culture, both in the hands of civilians and of police. And so it's never been possible, and I doubt that it ever will be possible, to have a police force which does not carry weapons. Also, shooting policy in any department is very carefully defined. No policeman wants to kill someone. He's a sensitive man. He doesn't like to kill any more than anyone else does. Any thinking human being is repelled by the thought of killing another human being, I think, or else he doesn't quite... [Comment from audience.] No, no... [Comment from audience.] Well, I can't speak for the Chicago police. I don't consider them in the same class, really.

BEN BOVA:

This may not be fair, John, but it was to protect us from your peace-loving British that we decided to keep firearms around. [Laughter and applause.]

JOHN BRUNNER:

If I may say so, I have noticed the National Rifle Association does not quote the first part of the bit which says that "the right of the people to keep and bear arms shall not be infringed." It says, if I remember rightly the beginning, "Since a well-regulated militia..." I don't see that.

QUESTION: [Inaudible.]

BEN BOVA:

I don't think anyone will argue that there is a war going on. I think what Katherine is talking about is an attempt on the part of the police structure in Los Angeles. [Comment from audience.] I totally agree. Nobody is going to argue against that point.

KATHERINE MACLEAN:

This is a very hot topic. I have a lot to say about it; everybody has a lot to say about it. Actually, I think there are some forces working up a war between the police and the civilian population. I think it's calculated. But I don't think that we can get anywhere multiplying cases about this. There'll be cases, you know, of provocation on both sides that everybody can bring up, and cases of some evidence that the whole thing is calculated to bring on a war, but it is not a topic on how we can plan the future. These are science fiction people and their kind of thinking directs the future. This is the present we're talking about and it's tough.

JOHN BRUNNER:

I find it very indicative that so much of the discussion so far has been taken up with the question of law enforcement because underlying this is the essential problem that the city is becoming an indigestible lump in the gullet of society. It is becoming a problem which people are having to attempt to control forcibly from the outside. The city no longer appears to be a viable social organism; it seems to be - to draw an analogy from the human body - it seems to be a wild cell, proliferating, and the healthy tissues around are not equipped to digest, contain, and control it.

QUESTION: [Inaudible.]

BEN BOVA:

There's a question in my mind as to whether we want cities at all. I think with modern communications and transportation, it may be possible or, perhaps, even desirable to spread the population out much more thinly. Possibly you won't need the large concentrations of people that we have now in things we call cities.

QUESTION: [Inaudible.]

JOHN BRUNNER:

I wonder if, as a citizen of one of the oldest cities in the world, I might pick out one very important aspect of that vast contribution: the question of making the individual feel secure. In many European cities, by American standards, living standards are very poor. That is to say, there is a great deal of crowding; the streets are very narrow; you can't get down the sidewalk because it's crammed with parked cars. And yet there is a sense of security in many European cities which I find lacking in American cities. May I perhaps illustrate a possible reason why this may be so?

The first time I ever went to Sparta was back in 1960. My wife and I were visiting the great-name places in Greece. We had been in Athens, Corinth, Thebes. We arrived in Sparta, which is very much

like an American Mid-Western town. It's situated in the middle of a flat plain; it has one broad main street running from side to side with little stub streets running off it. We drove from one side of the city to the other and came back, and I turned around and looked at Marjorie and said, "I don't like this place." She said, "Nor do I. Let's get the hell out of here." It was exactly as though somebody had put an iron band around my head.

We drove eleven kilometers out to a place called Mistras, which is a fantastic empty city - they call it the Sleeping City. It's built on a well-wooded hill with lots of water. There's a Frankish castle at the top. The next step down is the former palace of the Emperor of The Morca. They show you in the deserted cathedral the stone on which the last Emperor of Byzantium was crowned in absentia. We felt instantly at home. And I have elaborated a theory concerning this.

I have a suspicion that over the course of uncountable generations human beings have developed a subconscious preference for places which imply security. One fears to go into a dark deserted room; one fears to be out alone at night in a place where there are shadows where somebody might hide and assault you. Many American cities, it seems to me, have the sort of oppressiveness which must, in the wild state, have been terrifying. To mitigate against this kind of feeling in a city, you must be conscious at all times of the services being rendered to you by the community around you. If you have a city in which there is, shall we say, good health care, good housing conditions, good refuse collection, good schools - if, in fact, you have good services being provided to the community - your optimum size question is not nearly as important as John Fleury was arguing. Nor, almost literally, is any kind of material provision. If a city makes its people feel secure and confident to the point where they relax and enjoy living there, without anxiety, then that city is going to function. If your city is a place where people are constantly worried, then that city is going to fall apart. Consider what happened in Rio, for example, when inflation was running at three to four hundred per cent per year, as it was a few years ago. What happened? Up went the murder rate. I think this is a point which has been insufficiently studied, to my knowledge. Forgive me for going on so long about it, but I think it's quite an important viewpoint.

QUESTION: [Inaudible.]

BEN BOVA:

I think what's happening, particularly in the megalopolis, is that the isolated cities are impinging on each other physically. You can go virtually from Boston down to Norfolk, Virginia, without leaving the city. They do impinge on each other, and I think you're touching on a very difficult but necessary problem - the idea that the city politically and economically does not have control of its entire destiny. The suburban communities and state governments have an enormous influence on the viability of the city itself, and as yet we have evolved no way of utilizing all the resources that we can bring to bear. The resources that are available are fragmented. Authority and responsibility are fragmented, and this is one reason why the cities are getting into really deep trouble.

QUESTION: [Inaudible.]

KATHERINE MACLEAN:

We've presented a lot of problems. Now I want to wind up my part of it because I have something else going over there and also I want to inform the members of the panel that ABC or some such broadcasting company wants to put us on the air, or on television, over at the press room.

Now, I think the question is still open. With all-weather suits and sleeping bags and foam rubber pads and learning forest ecology so that there are enough apples and pears and walnuts and squirrels and things like that we could eat out in the forest. We might all wind up living in a forest and sleeping under the trees if we could control the population. You know, with things becoming more durable if we take the wear factor out of the manufacturer's mind. And on the other hand, we might all wind up living in these fairy-castle cities with the bridges leaping from spire to spire and trees growing in circles around the balconies. It's pretty open what's going to happen. It's just that it does require a little thinking or we'll destroy ourselves with these half thought-out things that are happening right now. And that's all I have to say. I'm going to abandon the panel.

JOHN BRUNNER:

Someone's switched off his tape recorder.

QUESTION: [Inaudible.]

BEN BOVA:

One of the problems with the large cities is that when population density passes a critical limit, you relate less with people rather than more. You build a shell about yourself.

JOHN BRUNNER:

I see that we have run well over our time. I think possibly the logical thing to do is to ask the surviving members of the panel for a closing contribution each and wind it up. Kathy?

KATHERINE KURTZ:

Well, I'm speechless.

BEN BOVA:

I just wanted to make one comment about the automobile. It is a very seductive and useful device, despite its many shortcomings. It is no real plot by the "bad guys" that automobiles are so numerous and are proliferating so much. There has never been so convenient and useful a mode of transportation. The problems that it creates are problems that are solvable, but we need to devote the energy to solving them. I frankly don't think that any mass transport system is ever going to compete with the individual automobile or some other individual device that you can pick up where you want it and drive where you want to go. Now how you live with that is another problem.

JOHN BRUNNER:

Might I make as my closing contribution the following remark? Away back at the beginning we suggested that one of the characteristics of the city is that it is built to a scale too great for the individual within it to cope with all his own problems while living there, so that some of them have to be centrally taken care of. I would suggest equally that planning a city is too great for the scale of present-day human beings, whether in concert or individually. What is most desperately needed is a clear understanding of precisely what factors enter into those cities which function well and those which function badly. To how great an extent is it the economics, to how great an extent is it the traditions, to how great an extent is it the social code of the people in the country as a whole, that dictate success or failure for their cities? If we could achieve an exact analysis of these contributory factors, we would no longer be going around inventing hasty ad hoc solutions which in their turn immediately generate further problems. We would come to some understanding of what the city is: an organism serving us, rather than dominating us.

Thank you very much for listening.

[Applause.]

Man=Made Man

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The Robot's Place in Society

Dialog between Isaac Asimov and Clifford Simak

TONY LEWIS:

The next item on our program is a dialogue, "The Robot's Place in Society". Could the two participants, Dr. Isaac Asimov and Mr. Clifford Simak, our Guest of Honor, please come up here?

[Applause.]

ISAAC ASIMOV:

Clifford Simak will be up here in a moment. He's an old, old man and he's being helped up.

TONY LEWIS:

As a preliminary to this discussion, we're going to have a wrestling match here on the stage. [Laughter as Isaac assists Cliff to the podium.] I think that there is no need to introduce either of these gentlemen to you; they are completely well-known to everyone in the field, and so I'm just going to say "Ready. Go!"

(Photo by Jay Kay Klein)

ISAAC ASIMOV:

I've asked Cliff's permission to go first because I want to preface this knockout fest with a small description of the friendship that has existed between Cliff and myself almost entirely without personal contact. [Laughter.] (Well, sometimes I had to hold his hands to keep it from becoming personal contact.) It dates back to 1938, at which time Cliff had been an established science fiction writer for nearly a decade - heaven help me - and I was a fan who had never published a story, writing letters to editors. As a matter of fact, at that time I didn't know that one of the favorite old time stories that I had read as a kid in junior high school, "World of the Red Sun", had been written by Cliff. I didn't find that out until after we had become friends, so friendship had nothing to do with it.

At any rate, I wrote a letter. In those days when I was eighteen I wrote letters to magazines telling them exactly what was wrong with all the stories and how many stars they were worth. This one was 5 stars, this one was 2 stars - I don't know why the editor had to do any work at all, all he had to do was to ask me! [Laughter.] Since then I've learned a lot more and I don't write letters anymore. But anyway, I had read "Rule 18" by Clifford Simak and I was hard on it and said unkind things. Had the situation been reversed - then or now - I would certainly not have taken to that criticism kindly, and if I had answered at all I'd have written a very insulting and hurt letter. (I still do that, nowadays, invariably making it worse, you understand.)

At any rate, I got a letter from Cliff, back in 1938, saying he had read with interest my views of "Rule 18". Could I go into a little more detail on what was wrong with it so that perhaps he might be able to improve later stories? There was no sign of sarcasm. There wasn't any. The guy meant it. Well, I had to go back and re-read "Rule 18" so that I could tell him exactly what was wrong with it. And I discovered what was wrong with it. He had no filling between the scenes. There was no place where he said, "Meanwhile, in another part of the forest..."

Clifford Simak, Isaac Asimov, and Chairman Tony Lewis
(Photo by Jay Kay Klein)

There was no place where he said, "After having gone to sleep, wakened, and had breakfast, John then..." In other words, it just went from one scene to another, getting a sense of pace, cutting out the dull stuff, and I said, "Oh! I understand the story now". I wrote back, I said there's nothing wrong with it, and proved it by adopting that for all future stories that I wrote, stealing unashamedly. [Laughter and applause.]

Now I frequently read science fiction writers who, in answer to the question, "Who do you consider a formative influence in your literary career?", invariably say Proust, Kafka, Dunsany, Doestoevsky, Shakespeare, and Homer, and I know that's a lie. [Laughter.] When they ask me who were the formative influences in my career, I name the guys I actually read and enjoyed when I started writing - Cliff Simak, Nat Schachner, John Campbell, and like that there. They are my Prousts and Dostoevskys, and I always name Cliff first, for this very reason.

We began our correspondence when I wrote back and said "Mr. Simak" - I called him Mr. Simak because that's what I always called him, the name is really Simak - I said, "Mr. Simak, I was wrong, the story is good, I apologize." We have kept up this correspondence for about 33 years now. This is the third time we have met and each time we do meet it's as though we never didn't meet, if you know what I mean. I'm delighted to be on the same platform with my very old, very good friend, Cliff Simak. [Applause.]

And now as far as robots are concerned, I'm going to let Cliff have the first word for a variety of reasons. He's older, better looking, and handsomer than I am.

CLIFFORD SIMAK:

Thank you, Isaac.

Isaac didn't quite tell you the whole story. After many years of writing and never having met one another we found ourselves simultaneously in New York, and somehow or other we made a date for lunch. I think that both of us were wondering what would happen if we didn't like the other man. I know I was; I'm sure Isaac was. We met, and it was as if we had known one another all our lives - it was almost as if we were brothers. That's the closeness that you can get between two men who write science fiction. I suppose that I might say that I am pleased to be here with Isaac today because it's the first time I've ever been with him on any presentation and I consider it a very deep honor.

There are many ways we could go in talking about robots in society. We could talk about the actual robotic society that we do have, about the computer-

ized society in which we live and how it may be making us a computerized flock of sheep. We can talk about what computerization and robotic adaptation could do to the world in the future. But I think that what we want to talk about, at least to start with, and maybe without any variance during the program, is the use of the robot in science fiction.

No one is more qualified to talk about this than Isaac. He is not the first man, certainly, to write about the robots. There were people who had written about the robots before he wrote about them, but he set down the three robotic rules which put some order into the fictional use of robots. I sometimes have a feeling that these Robotic "Rules of Order" may have proved somewhat restrictive to other writers, that they start writing about robots and they say, "Oh, good God! I can't do that because I'm violating one of the Three Rules that Isaac Asimov laid down." [Laughter.] I also understand that Isaac had a gripe not too long ago when HAL, the 2001 robot, didn't proceed according to his rules of order. Is that true, Isaac?

ISAAC ASIMOV:

Yes indeed, and I rushed back during intermission waving my fist in the air and shouting at Carl Sagan, a real live astronomer, "They're breaking First Law, they're breaking First Law!" And he said, "Well then, why don't you call down the lightnings, Isaac". [Laughter and applause.] Somehow I sensed sarcasm.

CLIFFORD SIMAK:

You mean you couldn't call down the lightning?

ISAAC ASIMOV:

Worse than that. I think he knew I couldn't. [Laughter.]

CLIFFORD SIMAK:

I will make a few more observations, then I'll turn it over to the man who really knows about robots. In science fiction, many writers use robots as machines, which is entirely legitimate. They are machines; they can be used as machines. In other cases, other writers, myself included, have used robots not as machines, but as surrogates of people, or perhaps even as actual people, perhaps as the kind of people that people should be. We not only portray them as trustworthy servants of mankind, but we show them carrying on the ideals of mankind when mankind for some reason or other may be incapable of carrying on those ideals, or may, as a matter of fact, not even be present. My memory is not as sharp as it should be, but if I recall correctly, Lester del Rey was one of the first men to do this. I think that he has played a great part in the development of robots as a science fiction device. Now, Isaac, I've said about all that I can say at the moment. Do you want to take the ball?

ISAAC ASIMOV:

Okay, I'll carry it a bit and after awhile you can point out all the places I'm wrong. The idea of robots is an ancient one and it's got to be, because if nobody had ever thought of mechanical men in ancient times I doubt really if anyone would have thought of them seriously in modern times. An artificial man is not really the sort of thing you want. Our machinery is extremely specialized. If we want something that controls temperature, we invent a machine that does only that and nothing else - a kind of mechanical finger that's stuck in the water and feels the heat. If we want something that carries us at a rapid rate, we don't want a mechanical horse, we want an automobile, and so on. The ancients, the medieval people, the people before the modern age, did not really have the concept of machinery that we do. When they thought of going quickly through space, they had a horse - but with wings. A horse, but made out of wood with a magic peg in its neck. Boots which could somehow carry you seven leagues at a step. They worked with what they had. So, if you wanted to have servants who would do your work, and you couldn't have actual men, you had mechanical men. The Greeks had them, the medieval rabbis of Prague had them and called them golems, and so on.

Now we ask: Why do we really want robots except for this ancient hangover? What value is there in having a machine that looks like a man and does things merely as inefficiently as a man? Well, there are two chief answers to that. In the first place, although a human being isn't very good at doing any one particular thing, he's extremely good at being able to do a great many different things with only moderate inefficiency and this is valuable. Why is that? Well, partly it's because we've organized our entire society about man as he is. In other words, the things that we want to do very much are the things that human beings can do. We want to do things with our hands, we want to do things with our legs, we want to be able to nudge people with our elbows, and so on. This is our definition of what to do. Therefore all these things we do fairly well. Nobody places much value on the ability of a human being to swim two miles underwater, because no human being can do that. We have no tests for that; we have no athletic contests in that direction.

Well then, if we have a robot built like a man he will also be able to do the very same things we can do, hopefully no more inefficiently. So while you may have a machine that can only card file very well, or a machine that can only guard a door very well, or a machine that can only control temperature very well, you might want a machine that specializes in versatility. And to have a machine that specializes in versatility you can do nothing better than to imitate the human form, because we have built our entire society about it. We have chairs into which we can sit because we naturally bend in such a way that we can sit in a chair. Not because we were clever enough to

bend that way, but because we built the chair knowing in advance that's the way we were built. Well then, we'll want robots that bend in the same way, that have the same kind of joints, the same kind of sizes, so on, so that they can fit into the world that we have built for ourselves.

Secondly, we have the emotional angle. If we want machines that simply do things, then they can be of any shape, of any size, of any kind. But surely we do want machinery that we can feel warm toward. There's many a man who has a passionate affair with his automobile. I myself have a particular fondness for my typewriter. I am often asked why I have these bruises on my lips [Laughter.] and the answer is that it comes from kissing the keys and the difficulty is that they don't kiss back. Now robots would be much easier to like in some ways, much easier to feel friendly feelings for. They can be much more easily personified and anthropomorphised into human beings. This has its difficulties; they can be more easily feared and hated too - something which I have exploited in my stories. But I do think that it would be nice if mankind had a non-human friend on earth which could offer him not only love, as dogs do, not only lordly indifference, as cats do, but comparable intelligence.

Which reminds me also that, as Cliff said, there are strong urgings towards having robots not only because they might be friendly and they might have an intelligence like ours, but because they might lack our faults. The whole point about the Three Laws of Robotics is that they are not only the rules that could be considered to govern the behavior of robots, but they are also the rules that could be considered as governing the behavior of very good human beings. It is easy to tell a stinker of a human being from a robot in the kind of robots I write about. It is very difficult to tell a good man from a robot, something I've written a story about, too.

Now I would like once again - this is ritual with me - I would like to say a word about how the Three Laws of Robotics originated. I imagine that everybody here knows, but there may be one person who doesn't and it is important for me to enlighten that one person. I am usually credited with the Three Laws of Robotics in print and one gets the idea that after a great deal of cogitation, I rose from my chair, extended both arms forward, and said, "Thus shall it be. Rule #1...", and it's not so. It's something like it. It was John Campbell who rose from his chair, extended his arms... [Laughter and applause.]

I went in with a story called "Runaround" which I believe was the first story in which the Three Laws were explicitly stated. I had written the story without mentioning the Three Laws, and naturally I did not have it as precisely organized as John liked, and he said, "Asimov", he said, "you have to remember one thing as far as robots are concerned, The first law is... the second law is... the third law is..." I said, "Gee!" - and that was my contribution. And I rewrote "Runaround" to include the Three Laws. Now ever since then I've been painstakingly telling everybody that John Campbell made up the Three Laws. John Campbell, when he was given a chance to talk, which around me was surprisingly few times, he said, well, maybe he might have said them first, but he got them out of the stories I had already written. I had them in there and I wasn't bright enough to see them. He just added that little bit of standing on the outside looking in. Randy Garrett said it was a symbiotic procedure - we both did it together. That is the complete story. I will continue telling it every time this subject comes up till the crack of doom. I will now turn it over once again to Cliff.

CLIFFORD SIMAK:

I think it's a shame he's turning it over to me because I've never heard such entertaining talk about robots. Continuing to talk about the robot as a springboard for speculation, I think that it's one of the most useful devices that we have in science fiction. We can bring forth an intelligent entity which is neither human nor alien and we can assign to that entity certain actions, ideals, and motives which would not look quite right with a human (because humans aren't that idealistic, as a rule) and probably would never occur to an alien. We can speculate what kind of world a robotic world would be; if robots had a chance to develop their own civilization, their own culture, what kind of a civilization and culture would they develop, what would they want out of life?

My love affair with robots has extended over a long time. I think that I really got hooked on robots in the City stories when I had Jenkins. In my most recently published book I use a stupid robot, and in a story that will be published the first of the year I'm again using robots who are trying to preserve a religious heritage that mankind has abandoned [A Choice of Gods]. I don't know what in the world we'd do without robots in science fiction. It gives us a chance, for one thing, to give a machine human proportions. When Isaac was talking about a man's affair with his automobile the thought crossed my mind - and I never thought that I'd say anything about this - but I've never owned a car that I didn't have a name for. We've got two cars in the garage now, and one is Annie and one is Suzie. And I have no idea why in the world a man should be insane and stupid enough to name a car, but all of our cars have had names.

ISAAC ASIMOV:

Always girls' names?

CLIFFORD SIMAK:

Always girls, on the theory that if ships are girls, automobiles should be as well.

ISAAC ASIMOV:

Actually, I think he gave them girls' names because "There's nothing queer about old Cliff." Well as a matter of fact, I once wrote a story called "Sally" about automatic automobiles - automobiles with brains, sort of - and I had - I can't call it a dirty scene - I had a very suggestive scene in it which I didn't realize was suggestive because I was so pure. [Laughter.] In the story, you see, the automobiles didn't like to have anyone driving them; they could drive automatically. It was a home for old automobiles and Sally was a convertible - all the convertibles were girls - and at one point the old caretaker was sort of tired as a result of very arduous activity - read the story, it's very exciting - and Sally slowly circles in front of him and then opens her door for him to come inside. He's embarrassed 'cause he knows Sally doesn't like doing things like that, being a very proper girl, so he turns away and she circles around again and opens her door again, and that I think is the closest I came to an explicit sex scene in any of my stories. [Laughter.]

Incidently, we ought to, I think, perhaps at this point, tie in robots in science fiction with robots in reality. I'm often asked when I think that robots such as my robots will actually become part of the living reality scene. Ever since we did drop an atom bomb, we did reach the moon, there is this feeling on the part of outsiders that everything in science fiction is going to come true and very likely sooner than later. As far as the physical actions of robots, if we omit the brain for one moment - all the movements of hands and legs and the turning of wrists if you want - they are all within the capacity of ordinary mechanics and a robot could have easily been built in the 18th century - for all I know, by Hero of Alexandria - as they can be built now. The only difficulty is in having it self-controlled, in having all the controls in the head with a sufficient delicacy, versatility, and intellect to imitate the human action well enough so that you can say that robots are more intelligent than any creature but man. For that we need something which is the equivalent of a computer and is roughly the size and mass of a human brain that can do a respectable fraction of the things that the human brain can do so that it is a respectable fraction as complex as the human brain.

We're nowhere near that. Even if we imagine building a computer that could do as many things as the human brain could, at the present moment we would have to imagine it as a rather enormous object. If we could ever make individual components as small as the human brain cell, and then interrelate those components as complexly as the human brain cells are interrelated, and even then if the components were as complex themselves as the human brain cells are, we could do it. If we could do that, then the robot exists. But when will we be able to do that? That I can't predict. It might be forever. It might be a thousand years.

I'd like to say sometimes that all we really have to do is build a robot which is designed to build a robot slightly more complex than itself. I think that this is theoretically possible, although I am not a computer man. If we have a robot which can build another robot, design another robot, slightly more complex than itself, then obviously that second robot will be designed to build, even more efficiently, a robot slightly more complex than itself, which can in turn more efficiently build another robot, and it goes quickly outward in a diverging way, climbs to the sky, and there's no limit as to what kind of a robot could then be designed entirely by robots' own actions. In fact this is, in a sense, what I had in my story called "The Last Question". But who knows when we can build the necessary computer designed to build a better computer?

For an article I once wrote for an outside magazine called Science Journal, they asked me to write on the perfect machine. I took up the possibility that robots might replace mankind. After all, if an individual robot is smarter and better than an individual human being, might not the individual robot replace the individual human being, and robots as a whole replace the human race? This is always said with a certain tremor in the voice as though some great blasphemy is being uttered, and to me it always seemed as though Zinjanthropus or some other early hominid thinks that, perhaps, if some particular branch of the hominid genus were to develop much better brains than Zinjanthropus they might replace Zinjanthropus. So we say, "Well, of course!" and rightly, because we're the ones who replaced them! Well, if robots are really better than human beings, yes, they'll replace human beings, and the robots will feel it was rightly done, and so will I. Looking about the world, I figure that the only chance we have to save the world is to quick have robots replace human beings, because at the present moment human beings are destroying the world and need replacement. With that kind thought I will go now back to Cliff, and after he says what's on his mind, I think we'll throw the whole question open to discussion, and I will not look at Lester del Rey when we throw it open. [Applause.]

CLIFFORD SIMAK:

I really don't have too much to say. I want to tell you one thing that happened this morning. I sat in with Jim Gunn to film a television sequence for his University of Kansas project and we were talking. He asked me if, in my early writing, I got much fan reaction, if I got letters, or if fans came around to see me. And I told him no, that it was a long, long time. I told him that the first indication of fan interest was Forry Ackerman writing me a letter. And I said that I probably was much more thrilled at getting Forry's letter than Forry was at getting the autograph for which he asked, and the next man who I had any contact with was Isaac. I don't think that I have anything

further to add. From the looks on some of these faces down there there are some very important and interesting questions coming up.

ISAAC ASIMOV:

Well, I think we'd better call on Lester. Otherwise he will explode and Judy-Lynn will be mad at me. Lester, go ahead.

LESTER DEL REY: [Inaudible.] [Applause.]

ISAAC ASIMOV:

Okay, very good. I know lots of you are asking how come Lester del Rey knows all this stuff and the answer is that he was in the robot game quite early. Before I had written my first robot story, he had written "Helen O'Loy", which was a kind of Asimov robot story before Asimov. Lester has frequently taken me by the hand and said emotionally, "Isaac, I'm Chris Marlowe to your Shakespeare". [Laughter.] And anyone who would believe that he would say a thing like that would believe anything.

QUESTION: [Inaudible.]

ISAAC ASIMOV:

There has been a tendency to divide the robot field in science fiction into robots proper and androids, which are made up of flesh-like materials. Have you ever written any android stories, as opposed to robots, Cliff?

CLIFFORD SIMAK:

I did, yes, but don't ask me why I did. I think in "Time and Again" I used androids because there was a necessity there of having a non-human that was entirely human in appearance and in reactions and so forth. They were the second class citizens of the world; they felt they should be first class citizens along with the humans, and that was the only time I've used an android and I used it only for that reason.

ISAAC ASIMOV:

I used androids, of course, in The Caves of Steel and The Naked Sun. R. Daneel was an android, rather than a robot. I got lots of letters expressing interest in R. Daneel, and every single one, without exception, was from a woman. [Laughter.] Now I'm not sure what this proves, and I was working my way up to a third novel in which the fact that R. Daneel was an android and not a robot was going to have a very important effect, and I have not yet had the guts to write it. [Laughter.]

CLIFFORD SIMAK:

I might add with "Time and Again", that the woman interest in the story was an android and there were two endings to that story and I don't recall which was which. In my first version the hero goes off into space; he does not take the girl along, and the last sentence was that here was an android girl crying out her heart. I think it was my book publisher who objected to that. He said, "Look, why can't he take her along? Apparently she has all the necessary equipment. She is, in fact, a human being - why can't she go along with him? Let's have a happy ending." I was not too entirely convinced that that was true, but I was new to the book field and this was a big thing - I was having a book come out - so I caved in and I wrote a happy ending for the book in which the android girl went along with the hero.

ISAAC ASIMOV:

Well, in this modern age of enlightenment, human/android marriages are perfectly alright. [Laughter.]

QUESTION: [Inaudible.]

ISAAC ASIMOV:

The question was: What did I have in mind as the perfect fusion of human and android society which I would use for my third novel? This is difficult for two reasons. In the first place, unlike Lester del Rey, I'm not sure of scarcely anything. In fact, I wish I was as sure of anything as he is of everything. [Laughter and applause.]

LESTER DEL REY:

I'll give you a short course. [Laughter and applause.]

ISAAC ASIMOV:

With Lester del Rey, it has to be a short course. [Groans.] That's alright - he's ten feet tall in every other way.

Then the other difficulty is this: If we're going to have an ideal human/android society, where will the conflict come from? So I've got to have something there which is imperfect. This, too, is what makes that darn third novel that everybody's asking me to write not so darn easy. The only person I know who can write it more easily than me is, of course, Lester, and I won't let him.

QUESTION: [Inaudible.]

ISAAC ASIMOV:

Cliff, tell him. [Laughter.]

CLIFFORD SIMAK:

If we build a robot such as Lester is talking about to send out to space, it will have to have human judgment, and to have human judgment it has to have some measure of human emotion. If we're going to develop human robots that will be useful on this earth

where the robot will be working with human beings and communicating with human beings, once again the answer is yes, we've got to supply the robot with human emotions. Otherwise we would not be able to get along with them, nor would they be able to get along with us. After all, the emotional factor is a great part of the human makeup and we do not deal well with things which do not have emotional factors. I think we get along so well with dogs because the dog has an emotional factor of some sort which comes close to the kind of emotional factors that we have.

ISAAC ASIMOV:

As a matter of fact, I was never one to attribute anything very strange, outré, and all the other fancy words you can think of, to emotions. People seem to think emotions are something radically different from reason, for instance, that emotions are immune to rational analysis, that emotions are what make us different from machinery. What we call an emotion is merely a complex of biochemical reactions within the body. There are hormones that cause this or that reaction to take place so that we are ready to run faster, ready to dig deeper into our oxygen reserves, ready to become less sensitive to pain and things like that there, and we call it a particular emotion: fear, terror, love, and so on. I think that you could build the mechanical equivalent to those things into a robot and they would react the same way we do, except perhaps they would not feel the emotion except when it's really logical to feel the emotion. They wouldn't have irrational fears, just rational ones, and so on.

QUESTION: [Inaudible.]

ISAAC ASIMOV:

I think I see what you mean. In other words, you're going to have a large immobile external brain which will be able to control the robot. Well, you know, there's two ways of looking at this. You can't say that we can't build a robot that will display human judgment and human emotion until we understand what human judgment and human emotions are. But if we reverse it, the attempt to build a machine on the basis of our, as yet, very primitive and very naive notions will itself, I think, help sharpen and subtilize - make more sophisticated - our beliefs.

[Comment from audience.]

Good, good, this is a good thing to do, if you could sit back forever and try to devise in your head some way of organizing the shape of an airplane so as to make it capable of flight. But the way it was done was not just that people thought about it in their heads the way, for instance, Leonardo Da Vinci did, but they did it the way the Wright brothers and their predecessors did. They actually tried building them, and from their failures they figured out what they ought to do to make the failure less extreme, and little by little they got the airplace, which is pretty good, even though it doesn't look much like a bird. [Laughter.]

QUESTION: [Inaudible.]

ISAAC ASIMOV:

Well, you make a very good point. As a matter of fact, you might say, for instance, that the legs are controlled by a brain up here - you don't need the brain in the legs. And yet again, on the other hand, again it is simpler if the brain of a robot is in a robot - makes it seem more like a human being, and you might have both varieties.

QUESTION: [Inaudible.]

CLIFFORD SIMAK:

This is a matter, it seems to me, of engineering - of very complicated, intricate engineering. We are not pretending to get up here and try to tell you how to build a robot. All of these things - a sense of awareness, the unconscious procedure by which a decision is made and stands as logic, and the matter of finding out what social consciousness is - are things that have to be investigated.

QUESTION: [Inaudible.]

ISAAC ASIMOV:

Well my feeling is that what we call unconscious thought processes are just the same as conscious thought processes, but we're not paying any attention to them. [Applause.] No, no, really. When I type - when I first started typing, I didn't know where the keys were and I had to look for each one. After a while I knew where all the keys were and I could type without worrying about it. Now I don't know where they are anymore. Anytime someone asks me where the letter "f" is, I have to type the word "life" in the air and try to catch my finger pushing the "f". My fingers know where they are. This is unconscious, but it's the same thing as the conscious form, only I'm not paying attention to it any more.

QUESTION: [Inaudible.]

ISAAC ASIMOV:

All I can say there is that the people who work with computers think that there's no theoretical disability in doing so; it's a matter of time and effort. Now I think there'll have to be one more question and then we'll have to let go.

CLIFFORD SIMAK:

Excuse me. Lester, can you do it in two minutes?

LESTER DEL REY: [Inaudible.]
[Intermittent applause.]

ISAAC ASIMOV:

Thank you all!

[Applause.]

Lester del Rey
(Photo by Jay Kay Klein)

Artificial Intelligence

Seymour Papert

SEYMOUR PAPERT:

As I was saying, there is chaos and confusion. Someone was supposed to have started this meeting, but they've vanished, so I'll just start it myself. That's my name if anyone's interested. That stands for Artificial Intelligence Laboratory at MIT, which is where I come from, and I want to talk to you a little about what we do in the artificial intelligence lab, or what artificial intelligence is.

Oh, there's Eastlake.[1] Hi! Should I just go on? Okay.

Well, artificial intelligence. Another name for that is robotics, and the project is to make machines that can think, that can be intelligent, that can learn, that can do approximately all those things that people generally think that machines can't do, which I think is a fair enough interpretation of what we would include inside artificial intelligence. So I'd like to give some impressions of what people in this area think they're doing, where they are, where they're going, and so on. Obviously, I can't give a whole impression so I'll have to pick out some isolated pieces, and to give some coherence to isolated pieces I'll make it a little personal and emphasize those things that have affected me in my thinking towards the subject.

I'd especially like to emphasize the dynamics of a new scientific discipline. I mean how does this happen? How does a new science come about? (And this is a new science.) How does an idea turn from fiction to science? Not very long ago, the concept of a thinking machine was certainly pure fiction; there was nothing in the world that by any stretch of a reasonable imagination could be called a thinking machine. Nowadays, there are some things that could, by a stretch of the imagination, be called thinking machines. Tomorrow there might be some who will have to stretch their imaginations to admit that you are thinking machines. [Laughter.] And that's basically the progression I'd like to talk about. And how does it happen? - especially that.

What does one have to know? Suppose that you want to set out tomorrow as a roboticist - you want to make a thinking machine. Where do you start? What do you have to learn? What's relevant? All this accumulation of human knowledge of all these millenia - which pieces of it can be used to make a thinking machine? This is a very serious question that hasn't really been given enough attention as a kind of aspect of the sociology, the dynamics, the kinetics, whatever you like, of how knowledge happens.

Now that's not just an incidental aspect of the theory of artificial intelligence, because the way this has grown, in fact, is that that's its technical content also. How does knowledge happen? What is knowledge? Well, first of all, let me say a few things about attitudes towards artificial intelligence and that also is part of the technical content. Attitudes might be important for a physicist, but it's not part of his work because it's not his molecules and things that have attitudes. The funding agencies in Washington might have attitudes about it, he might need to influence them, but it's not his subject matter. For us, it is our subject matter. Do our machines have attitudes? What do they think about themselves, what do they think about us, and especially how do our attitudes towards intelligence affect the way we try to make the machines have it or the degree to which we believe machines can have it.

Well now, an important fact about the psychosociology of this subject is that it's almost impossible to believe in it. Now, hardly anybody believes, really truly, in his heart of hearts, that a machine can be really intelligent. I'd like to start off by some anecdotes to emphasize that point because it's one of the ideas and questions I'd like you to take

[1] Noreascon Committee member Donald E. Eastlake III, who was then employed at the MIT A.I. Lab.

away with you and think about. An anecdote that impressed me very much was being on a panel, a symposium of some very pompous, august, prestigious people called together by the National Academy of Sciences, no less, to discuss the topic of information retrieval. They were sitting down there discussing what the library of the future might be like, and they're saying things like: the library of the future will be automated, it'll be computerized, and instead of going and looking through card indexes, you will go to this machine and you'll say to it, "I want the Journal of ..." "No, don't be silly!", they say. "You won't say, 'I want the Journal of the Association of Computing Machinery', you will go to it and tell it what your problem is." I've forgotten what the phrase was. It was something like: "the questions will be problem-directed and not document-directed". You will say, "I'm trying to make a mechanical such-and-such and I'm stuck." or "I'm trying to invent the Theory of Relativity and I'm stuck. I don't understand all this stuff about the velocity of light and what should I read?" And it will pop up the six most relevant papers.

So I sat there in amazement at the fact that these people could sit around imagining this highly intelligent machine, intelligent enough to know what papers are relevant to your problem, and yet somehow they imagine it to be servile enough to give you the papers and let you solve the problem. [Laughter.] Why? And really none of these people would accept this. They treated me as some sort of crank - a madman - I'm out of my head. Don't I know that it's a mechanical task to retrieve information? But people create, and knowing what papers, just getting a paper from a document, that's not a creative task.

Well, now, that point illustrates several things. One is this idea that even when people grant that machines might do things that could be called thinking, they see it nevertheless as somehow subservient to the person. They say, well, maybe it will do everything that people can do now, but that'll mean that people can be smarter yet, because people will be able to use this great machine as an aid, and think how smart you could be if you had a super-smart machine as your assistant. That is the same fallacy and the same interesting piece of psychology - the need to play it down and see it as subservient to the person.

Now I say, on the contrary, that while we may not yet know how to make machines that can be as intelligent as people - and I'll be talking about that for the rest of the time - we may or may not know (you can consider that as an open question if you like), but I think one thing that is not an open question, one thing that's a plain theorem, is that if the machines can think almost as well as people, they can think vastly better than people. And if they can think almost as well as people, they make people irrelevant intellectually - they make them irrelevant intellectually in the sense that there won't be any sense in ever going to a person and asking him to solve a problem, or write a science fiction story, or compose a piece of music, or whatever it is. It'll always pay you, if you want these things done, to go and ask the machine.

That's not to say you mightn't solve these things. You might do it for pleasure, and I do think that one thing that no machine can replace is my having my pleasure or you having your pleasure. Whether the machines feel pleasure themselves is kind of irrelevant to that. It can't feel your pleasure and maybe for your fun you'll go on solving problems. Like I may play chess, although I know perfectly well that there are people who play chess and could solve that chess problem vastly better than I can.

Nevertheless, this does raise questions about the survival of the human race, and I think much more important questions than the atom bomb, or people from outer space, or whatever it might be. On the assumption that there are these machines around which are like us in all respects except they know much more, they think like us but much faster, each one of them knows everything that everybody knows and more, what happens to us?

There are many dangers, I think, that all people recognize, and sometimes we feel a little tingle in the spine, and sometimes we have conflicts about working in the area at all. Faced with those machines there are many dangers to the race. One of them is internal from our own psyches. If you take away man's image of himself as a thinking being, what is left? Some people say nothing, and some people say a lot, and I don't know how to assess that. I think we've got no evidence on which we can rationally start discussing the question of what it would do to people to have these superior things around.

Let's think of them as really superior. Let your imaginations go. They are superior to us as we are to dogs. And supposing they are benign - and for whatever reason - because we programmed them so, or out of the goodness of their hearts, or they just don't care. They let us stay here and be pets or just run around and they feed us. Is this a status we can accept? That's one kind of danger. Another kind of danger is that they'll do us out of existence because supposing they are rational beings with a purpose in mind and we mightn't fit that purpose. They might do us out of existence for the same sort of reason we do some race of insects out of existence. These are dangers.

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

Indeed so! All these things are possible. And I suppose the real answer of those questions is: We don't know. We have no basis for speculation. What do we do about this fact?

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

Well, otherwise the machine would have nothing to do? Well, that's pure fallacy - the assumption that these machines need to be asked questions. You can believe them very deeply, from the depth of your souls, and it's a characteristic of humans that they do believe things from the depths of their souls with passion. It's also a characteristic of some machines, and perhaps not of others.

The point that I want to make is this: that the community of people in this do worry, and I personally feel that there is very little one can say that makes any sense. One is embarking on an adventure that's creating a situation that is so different from anything we have known that we cannot be sure of any arguments we might point, and if we really believe that our allegiance is to the human race as a thing made of flesh, then we'd better not do that. If you think, as some people in this field think, that your allegiance to the race is not to the flesh, but to the mind, your allegiance is to intelligence, and if a more intelligent being appears, then we will see that as an evolutionary step and we will gladly abdicate our position and our existence, then, why, good, you'll make it. And I think most of us tend to alternate between these different points of view. Anyway, that is an important piece of the psychology and this kind of conflict, which since I said I don't think one can discuss anything about it, I'm not going to. I'm just reporting a fact that it is a conflict which deeply moves people in the area, and I think in many ways is responsible for slowing down progress. Many people who don't work in the area, many people who are in the area, are impeded by internal conflict.

QUESTION:

It seems to me you are glossing over one point in talking about what the nature of these machines is going to be, and that is that it's us who are going to build them. We can build them. There is some degree of uncertainty - you're not sure what a change in a program is going to do - but I think within fairly clear limits you can build them the way you want.

SEYMOUR PAPERT:

Okay, you are entitled to that thought. Isaac Asimov dealt with that very thoroughly in showing quite clearly in his stories about the Laws of Robotics that you cannot. And I think the content of some important metamathematical theorems - Godel's, for example - the only relevance it has to this is that you cannot. Creating an intelligent machine is creating a formal system which will have consequences all of which you cannot have decided in advance. You can have tried. To a certain extent you can succeed. Of course you should try. Of course we had better approach this on the assumption that we are going to control it as far as possible. Certainly we should face the danger that the very first machines we make will be maniacal, insane, and we should see that that doesn't happen, that they don't in some unnecessarily destructive act simply destroy us, and we have to take all these precautions. We need responsibility, but the height of irresponsibility is to say that I can be sure to control it and not to admit that, however many precautions I can take, it will get out of hand.

Okay, I'd like to stop talking about that, then, and talk about how we get there, what do we need to know technically? Now, about the dynamics of the knowledge, I think it's very important to contrast this with some well-established subjects like physics, where everybody knows about what's relevant. You'd better know differential equations, and you'd better know this and that and the other thing. There's a long tradition of knowing that these things pay off. There is also a danger, of course. Inherent in the fact that nobody can create knowledge from scratch is the fact that you have to commit yourself to certain assumptions and ways of thinking which might, of course, be wrong, and there's that danger, but at least you know that there is a lot that is right, although you can be sure that there's a lot that's tied you down to wrong ideas about the way it should go. In the area of intelligence, it's almost all like that. In almost everything that we've ever known, it's wrong, and there's no traditional knowledge that has really turned out to be a) obviously relevant and b) actually useful in any of the work that's happened in artificial intelligence. And I'd like to amplify mainly on that theme for a little while.

There have been discussions about the possibility of intelligent machines for a long time, but not necessarily about making them. For example, Descartes discusses in a lot of detail the problems of automata - how are people different from animals and from machines? - and Descartes really comes to the conclusion that a machine cannot be intelligent, and the interesting thing about Descartes' position is that he is absolutely right. That is, given his concept of what a machine is, such a thing could not be intelligent. Not only couldn't it be intelligent, but his argument really anticipates some of the most powerful concepts of modern cybernetics and automata theory. Essentially, Descartes says (for those who know this kind of mathematical thinking) that a machine has too small a number of states to be

intelligent and he has a really convincing argument that you need more than a few thousand states to be intelligent. Now any machine that existed then had only, maybe, a few thousand or tens of thousands of states. We have machines now that have $2^{100,000,000}$ states. The concept of machines has changed. We have very different machines, and the guts of what artificial intelligence is about is this changed concept of machine.

So just repeating this point that in all the discussions between mechanists and transcendentalists or idealists or metaphysicians that have happened in the past, there's been a lot of trash spoken on both sides, of course, and everybody can bullshit, but on the whole, the mechanists were much wronger than the transcendentalists, and the reason why they were much wronger was their concept of a machine was too simple, and such a machine couldn't be intelligent. And because they had too simple a concept of machine, they systematically distorted their thinking and could not imagine what an intelligent machine would be like. Their critics, the transcendentalist philosophers like Kant, I think, were much closer to understanding what it can be, and how it can happen. So it happens, though, that people who are attracted to making intelligent machines and to cybernetics and to machines in general, tend, in their youth, to come from a mechanistic tradition, which I did, and it took me a long time to get out of that, and I think this is one of the ways in which we are systematically distorted in our thinking by past history.

Well now, in what way are the machines different? I'd like to introduce one or two other concepts that have dominated this thinking. The distinction between mechanist and mentalist is a vitally important one in thinking about psychology. And, typically, psychologists round about the turn of the century were saying important things of the following sort. They were saying that if you try to explain, as earlier philosophers had, if you explain something in terms of wants or goals or desires, that's no explanation. Let me tell you a simple case which I don't think anybody then would have used. If I say, why does the moth fly into the light? A kind of modern explanation of that is, well, the moth tries to maintain a constant angle between himself and the light and the constant angle leads him into... If it's the sun up there, as he flies along the angle always remains constant, so you see the moth here flying along. If he's guided by the sun, when he gets here, the sun appears to be there; it's always at a constant angle. So keeping the direction of light constant leads you in a straight line if it's an astronomical direction of light. But if it's a direction of light at a finite distance, as you go along the angle changes, and so to keep it corrected you turn around, and if you follow that curve you see that you tend to fall in in a spiral into the light. And so some insects destroy themselves by trying to keep an angle constant.

Is this an explanation or not? "Trying to". Can that be an explanation? Psychologists at the turn of the century quite rightly said that's no mechanism. You aren't giving a causal explanation; you're saying what it's trying to do, but you're begging the question of how does "trying" get translated into effect. What's the relation between "trying" and actual physical events? They were right, except they've now become wrong. So I think the turning point in the creating of cybernetics, say around the beginning of the Second World War period, was a series of very fundamental papers by Wiener, Rosenblith, McCullough, Fitz, such people, which showed how systematically you can turn the concept of "trying", through the idea of feedback, into a mechanism. And so to a certain extent, even then they were able to say that any description in terms of trying to achieve a goal, if the goal is sufficiently well described, is as good as a mechanism. It really becomes causal, and this is a key concept for artificial intelligence that we see as one of the deep pillar stones of our new way of thinking - if we have one - that mentalism and causality can become merged. I don't mean any empty mentalism automatically is causality, but under controlled, more-or-less precisely definable conditions, mentalism can be translated systematically into causality.

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

Okay, I won't discuss it. The history - yes, of course, it's an older concept, and so on... I don't want to discuss it. He said it was a quibble; it's a quibble about the history of who is responsible. Okay, I don't care, you see, whether it was Wiener or whether it was Maxwell. That's irrelevant. And lots of the things I'm going to be saying in the next ten minutes I'll have to gloss over. Many points are dogmatic, oversimplified, subject to correction - I'm sorry. If I have to give a precise lecture, sticking very finically to details, it will take a whole year's course.

Nevertheless, although cybernetics and making these simple electronic feedback circuits enables one to translate certain goal statements into mechanisms, they are very limited. An idea of how limited they are can only be got from considering examples where it breaks down, and the kind of example where it breaks down is where setting up the goal involves not just doing it, as this flying insect did, but involves setting up a subgoal which you will pursue for a while, and if that succeeds you will try another, and if that fails you will try another goal, and so on. So roughly speaking, when we get

to the kind of behavior that's characteristic of human intelligence, where you don't merely follow one goal, but you have a complex mechanism of setting up goals and subgoals, you fall out of any possibility of being able to imitate that with a simple circuitry, and one steps into the realm of computers. The computer with very large memories and very sophisticated computer languages is what corresponds to more complicated goals like the servomechanism does to simple ones.

Now I want to show you a movie about that; what you will see is some pieces of the behavior of two programs. The main thing that I want to talk to you about is a program written by our colleague at MIT, Terry Winograd, for his PhD thesis, which was completed about a year ago, which was certainly the most advanced language-understanding program that exists. Now this is a program that understands language, and I'd like to say a few words about the obstacles in understanding language.

Artificial intelligence has acquired a bad name in many circles because of certain failures. One of the failures was attempts to make machines translate Russian to English at a very early stage of there being computers. It's unfair to attribute this to artificial intelligence, since the people who are now playing the central role in artificial intelligence were furiously critical of those proposals at the time, and the criticism can be summed up in the following aphorism which I like, which is: The problem in understanding language is not a problem of understanding language, it's a problem of understanding. If you don't know what that language is talking about, you can't translate it. And I think that's really a fact that we tend to too easily ignore: that I can know French very well, but if you give me a French text about some subject matter of which I am completely ignorant I can't translate that French text into English. And this is something that has become very apparent in the study of machines understanding language.

Now the triumph of Terry Winograd's program is that he doesn't try to make it understand English absolutely about anything; he gives it certain microworlds - and this is one of the important concepts that is becoming dominant in our thinking about artificial intelligence - he gives it a little world which it understands very thoroughly. It knows a lot about it, and because it knows a lot about the world you're talking about, it can understand very complicated English sentences, provided they are talking about this world.

Now, what I am going to show you is a micro-micro-world, a very tiny world, which is populated by a number of blocks, of wooden objects, of things - cubes, boxes, pyramids, a hand, a table. The program knows lots of things like: on top of a block you can put a block; on top of a pyramid it might fall off. Something can go inside a box, but it can't go inside a solid block. And so on. It knows a lot about these things, and by knowing a lot about them it's able to unravel rather complicated English sentences, and especially it's able to set up quite complicated goals.

You'll see in the movie things of the following sort: Sitting in its block world is, say, a big red block. (Unfortunately, you won't be able to see the colors, you'll just see computerized drawings - the block world as it is in the computer's mind.) There's a big red block there. On this is a blue block; on that is a green pyramid. And you say to it, "Put the yellow block on the blue block." Now in order to do that, it's got to take the pyramid and the other block away. In order to take them away it's got to find a place to put them, and so it starts setting up for itself goals and subgoals in a rather complicated structure, and what really makes it intelligent is that it can tell you about this. And let's see the bit of movie and then I'll talk about that a little.

[Delay in getting the film started.]

I hope that what you're first going to see is a very primitive robot actually picking up a real physical cube and this is part of another project at the A.I. Lab which is endowing computers with vision, with being able to see things, and roughly the definition is that I can see an object because I can go to the table, pick it up, and do something with it. You will recognize immediately from that that my idea of seeing is inseparable from my knowing about these objects, from my manipulating them, and so on. And one of the things that's become very clear to us is that the psychologist's division of the mind and mental processes into seeing here, and intelligence there, and understanding there, and memory there, and action here, is just impossible. You can't do things that way - they all overlap immensely. Anyway, our vision is that, and you'll see first an example of the very first demonstrations of a machine picking up a block under visual control.

I'd like to make a point about where do you draw the line between non-intelligence and intelligence, and "seeing" is a good case in point. As I came in through this building there was a door that opened as I walked through it and there was just a photocell there. Was it "seeing" me? Does the camera plate "see" me when you expose the film? Well, I say the camera plate - no, because the criterion is it doesn't do anything about it, but the photocell in the door does do something about it. So that's a very primitive sort of machine vision. And we can say this about everything that isn't alive; we just make them more and more and more complex and closer and closer to human vision and human intelligence and this is the way progress happens in any other science.

Unfortunately, in artificial intelligence it's rather built into our language that we should deny progress. You see, if I am trying to synthesize a chemical, I may first start to make a milligram of it, and certainly making a little of the chemical is progress towards making a lot of it. I've made the chemical, because a little of the chemical X is chemical X, but a little intelligence - is that intelligence? No, we have a special name for it in English. A little intelligence - we don't call that intelligence, we call it stupidity. [Laughter.] We say whoever has a little intelligence is dumb. So almost by definition we have to call the machine dumb and say that they have no intelligence at all until they've got enough intelligence to outdo us. So again you see one of these little ways in which the fact that we are loaded with a mentalistic vocabulary of the centuries influences our thinking and our way of categorizing things.
[Still having trouble with the film.]

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

Well, I don't think that it's profitable to make that distinction. The point is that you are getting sensory inputs and something inside is making sense of them. What I'd rather quibble about is your saying, "I see the door" and then your reaching out for it, as if there is a phase that can be appropriately described as seeing it, as opposed to understanding it.

Let me give a little example of the sort of thing that happens with machines. Here's a typical kind of bad drawing of the kind of thing we might do with a seeing machine. That's supposed to be a sketch, you see; it makes sense to you as it stands. There's a cube in front of a sort of bar (ignore the writing on them) and you see that. The fact that you see it means that this, this, this, is for you associated together. That, that, that, that, is associated together. Now in making a machine do that, notice some of the problems we run into. First of all, there's an electronic eye that gets information into the computer about light intensities. Well, I'll just gloss over that, although there's a lot interesting about it, but... Some of our programs work like this: At some stage they have detected these edges and they have decided that there's a region, which it has called R1, R2, R3, and it's made a list of regions, and now its problem is to put these regions together into objects. It's going to cluster these three together and those five together to say they are two objects. If it's smart, it should be able to say maybe there are three objects. And this ambiguity is part of it and not a problem I want to discuss just yet.

How does it do that? What one finds is that in order to do that one needs some rather new concepts of a sort that psychologists have never thought of in vision, because psychologists never had to make something see, and they could gloss over such little things as this. Secondly, one needs a lot of knowledge about objects, because one can't buy a completely general procedure that doesn't know anything, so far - one doesn't believe that one can parse a scene of this sort.

Let's notice also that technically parsing this scene turns out to be not very different from parsing a sentence in English. Notice I use the word "parse". What does "parse" mean? It means that if I give you a sentence: "The cat is red", or "The box is red", you are going to recognize "box" as the subject, "red" as an adjective, and so on. You can attribute a different role to different parts of that sentence. Attributing a different role to different pieces of this scene is of the same nature, and what we find increasingly is that always - almost without exception - techniques of concept pay off in understanding vision, in manipulating vision, as in manipulating language, and the theoretical point of view that is developing from this is two-fold. First, that one needs knowledge. One needs to know what a cube is; one needs to know about the kind of configuration that happens in cubes to parse a scene, like one needs to know English or some language to understand sentences in it, or even to know how to separate them into words. The other aspect is, of course, this homogeneity of intelligence.

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

Okay. Okay. I'd like to answer that. I was going, after showing the movie, to talk mainly about that, but since the movie hasn't come yet, let me take that.

Indeed so. As we think we understand better the problem of how to make machines be intelligent, we believe more and more that what we are really understanding has nothing to do with machines, but has to do with the nature of intelligence. So much so that during the last few years our lab has become more and more involved in actually teaching children, and we are, in fact, running experimental classes and we do, in fact, hold some very radical views about the nature of human intelligence, and let me comment about that a little.

I'd like to step back, though, about the machine thing again. There are two kinds of theories of intelligence. There always have been, and no doubt there always will be, until one is completely washed out. You could call these two kinds the hardware theories and the software theories, or the material

theories and the epistemological theories. The hardware theory - the material theory - says the property of a brain that makes it capable of thinking is in its matter of which it's made, and you notice in the tradition of science fiction writing that most often when people make robots the key thing is finding the substance that the brain is going to be made out of. As opposed to this, the epistemological theory that says, true enough, you need a material brain, but that's a very small part of it. The important part is the knowledge and the organization of knowledge that goes in that brain.

Now in thinking about machines, let me take an analogy. This has to do with what we need to know to make a machine. Do we need to look at the neurons? I think, very powerfully - I can't summarize the evidence here, but it's one of the most important things, I think, in the world for the human race - that the following statement be made. If it's true, it's one of the most important things for the human race. That intelligence is not a matter of neurons or blood or proteins; it's a matter of knowledge. All intelligence is artificial; it's a man-made thing.

Let's think of an analogy. People in the nineteenth century looking at birds fly, and saying how does a bird fly? What do we have to study to make a machine that will fly? And some people might have said "feathers" - and, you see, pull out the feathers and the bird can't fly. So obviously what we have to do is to set up a lot of national institutes for the study of feathers, and get a lot of people looking at feathers through their microscopes and eventually we'll understand flight. Now a very analogous thing has happened with neurons. People say, how do we think? Neurons - the brain's full of them - just as full as the bird is of feathers, even more so. Pull out the neurons, destroy the neurons, and it can't think anymore - conclusive evidence that it's by studying the neurons that you'll understand the secret of thought.

Now it wasn't so at all with the birds. Fortunately, nobody said that, I suppose, but we didn't have to study feathers; we had to study altogether different things like aerodynamics, and I think this is true of understanding intelligence as well. What we have to study is more like philosophy; it's more like literary criticism; it's understanding what people know.

So we say let's go back to humans and understanding human intelligence. There's a very pervasive theory just as strong as the feeling in every one of you that a machine cannot think. There is the feeling that some people are smart and some people are dumb. You admit it? Is there anyone who can honestly say that he doesn't feel some people are smarter and have more brain power than other people? (Especially himself - but not only.)

I maintain that there is hardly any evidence for this. There's hardly any evidence that stands up to the mildest criticism of the brain-power theory of human intelligence. Admittedly, with no brain you don't think - there's sort of a cut-off. But whether the difference between someone who is scoring 180 on the IQ tests, 800 on his academic aptitude tests, getting PhD's, and all that, as against the guy who's getting 90 on his IQ tests, is a school dropout, is unemployable because he can't learn to read and add simple numbers - whether the difference between those has anything to do with brain power is entirely a matter of superstition. It's an open question, and we believe that if we can teach machines to be intelligent, we can surely teach those people counted as average and below average to be superly intelligent, to satisfy all the tests and results.

Now, nobody has done this experiment. I see some heads being shaken. It is very significant that the kind of experiment that's done is you take two identical twins and you send one to one family and you send one to another family and they only get 15 points of IQ difference between them, so you say environment is only worth 15 points.

I'd like to tell an anecdote about that. Walk into a math class and look at the children doing mathematics (if you call that junk mathematics). What are they doing? There are a few of them gobbling it up and doing it very well and most of them are failing miserably. They can't do it. They're not doing it. So you say - the official people say - these kids are mathematically-minded, they say these are in the 90th percentile of mathematical . . . etc, etc. It's the same thing. There's the myth that some people are mathematically-minded and some are not. Well, maybe so, but the evidence, I say, is not only nonexistent, but pops as soon as you ask a few critical questions.

For example, let's go into the nextdoor classroom where French is being taught, and let's notice that in the French classroom the same thing is happening. There are a few kids learning it well and most of them are not doing anything worth talking about. They're certainly not talking French. Who says that kid's not Frenchly-minded? Why'd you laugh? You say he's not Frenchly-minded; he did not grow up in a French house. It's funny to say. You know quite well that if he had grown up in France he might not have been the greatest poet in the world, but he would not be having the kind of difficulties he is having in this classroom.

So you should ask the question, what about Mathland? Couldn't there be a Mathland? Mathland is to mathematics like France is to French. Mathland is a place where, if you grew up there, you would learn mathematics as fluently, easily, as naturally as...

Who's made a Mathland? Who's tried? We have. We're the only ones. There's one of our mathematically-speaking beings. That's a turtle - computer programmable - and we are trying at a first tentative step towards putting children in an environment where they will be surrounded by mathematical-speaking beings, by objects which they can control by talking to them in mathematics, by using mathematics. And we hope that maybe - and we're seeing results already in a very tentative way - that if you can let mathematics grow in the child's mind like it grew in the younger child, because before the child comes to school he learned a lot of mathematics in a perfectly natural way without being taught and mathematics historically grew by being used.

People used it to sail the seas, to guide ships. It wasn't an abstract thing in people's heads; it only became such after it was interiorized. And I say about children, too, why shouldn't they have the same opportunity that mankind had? Let them be in an environment where they will learn mathematics, not to do exercises in exercise books, but to do things with it.

So we're making mathematical toys, mathematical instruments, mathematical objects, control mechanisms. I'd like to see the children work on control engineering projects, like programming the computer to fly a model airplane and do stunts. There you really run into basic mathematical and physical ideas inside a context where it serves a purpose. These are the kinds of environments in which we are working, but we believe more fundamentally that by teaching the children what thinking is, maybe we will teach them how to think.

Before we turn on the movie I'd like to tell you one other aphorism about that. Normally, if somebody says to you "Teach me", you might say to him what do you want to do? Do you want to be an airplane pilot? I'll teach you how to fly. If you want to be a surgeon, I'll teach you about knives and cancer. I'll teach you about the things that you want to do. What is a kid in school - what's he expected to do? What's his occupation? Well, it's learning, thinking, playing, growing up. We never tell children anything about these things. We tell them about numbers, about grammar, about French Revolutions, American Revolutions, but we hope that by some magic they will learn to think, and then we complain that they can't think, and then we complain because they can't learn, although we wouldn't teach them what learning is.

Well, I think by programming these machines we are developing an image and a vocabulary for talking about learning and thinking which we can transmit to the children and teach the people who really need to know about learning to do so in a more sophisticated, articulate and effective way. Okay, well, that's our program. You're right, absolutely. Understanding intelligence ought to augment human intelligence. But still about my first remarks. We still have a brain only that size, with only so many cells, limited by biological factors in rate, and although I believe that we can enormously raise the level of intelligence manifested by the human population, my words of warning at the beginning are still true - that there are ceilings and limitations that apply to us which do not necessarily apply to machines.

Okay, the movie.

[Movie starts.]

Now what you see there very dimly is a mechanical hand hovering over a cube over on the left side. There's nothing special about mechanical hands; every factory is full of them. What is special about this mechanical hand is that it's tied to a computer, which is tied to an electronic eye, and it's picking up things by seeing them.

It's an amazing thing how little vision there is in modern industrial automation. I went for the first time in some years last year to an international machine tool exhibit in Chicago and was quite amazed at how undifferent it was from ten years ago. There is a lot of numerically controlled machines, but there's no intelligence behind it, there is no vision. Objects picked up on the conveyor belt have to be in exactly the right place; the machine doesn't look at them to see where they are, to see whether they're defective, see how they're oriented. And from the point of view of applications to automation, that's the kind of thing one should have in mind here.

An amusing development that we've been making of this level of work in our lab is we want to reduce the size - that thing's about four or five times human size. (You can't tell from looking at it.) Starting this year, we're starting a program of micro-robotics because we want to make a robot hand capable of doing things like that.

Ah, you see - clumsily - that was one of the very first demonstrations. It didn't see very well - it had to locate it by one eye, didn't have binocular vision to figure out where it was. It's going to grab another cube in a vain attempt to build a tower. Now what's it doing? Oh, it's trying to get a better grip on it. It's turning them over. You see it's very clumsy because it has one hand. You see the kind of maneuver that goes on in this little world of manipulating objects - trying to do things with them. And the important thing is that ... there comes the tower.

[Applause.]

Now, this is one of Terry Winograd's block worlds - computer-eye view. That's an instruction given to it: "Pick up the big red block". As I said, you can't tell which is the big red block, but it knows which is the big red block and watch it manipulate it. It takes a block - it puts it down. It had to find a

place to put it. Notice that it doesn't put it nowhere. You can't see very well - the perspective, I'm afraid, also - but believe me, it does. Now, that's the one it had to pick up. It had to clear it first, to take the other block off in order to grab it. Says okay ... grasp the pyramid. It'll have to put this one down. Oh, "I don't understand which pyramid you mean" ... that's the computer answering. So we'll find a block which is taller than the one you are holding and put it onto the box.

This is a beginning. You begin to see the complexity of the kind of language and you see the kind of ambiguity. Now notice that it notices the ambiguity and it makes an assumption. It just tells you what's in its mind. It didn't wait for you to tell it what; it told you that it had some trouble knowing what it meant, and it made the right assumption. Put it in the box and ... Now the word "support" has a technical .... This thing is very concerned with what supports what. That's the kind of complex sentence that it can make. The support of a thing is what it's sitting on. What color is it? Well, tallest pyramid supports supports. [Laughter.]

"How many things are on top of green cubes?" "I'm not sure what you mean by 'on top of'." Now you see, this ambiguity it doesn't know how to resolve. There's a certain joke in the way that it asks and answers the questions. It's been given the answer and it said, "Three of them."

Now we can ask it questions about its motives and what happened. Now this is where it's really different from a little piece of circuitry that might have been doing some feedback because it remembers the goals and subgoals it was following and it can answer questions of that sort - in English, as you notice - and it never saw that sentence. (Chomsky says you can't learn language - it has to be innate because you say sentences which you've never heard.)

"Why did you do that?" That's critical. "To clear off the red cube." "Why did you clear off that cube?" and it knows to give a reasoned answer, "To put it on a large green cube." "Why did you do that?" "To stack up the red cube, a large red block, and the large green cube." (Now these instructions were given to it in the piece that I cut out.) "Why did you do that?" "Because you asked me to." [Laughter and applause.] That was the ultimate thing.

So that's a kind of language activity - shows you about the level that these machines are capable of. Let's have these other shots while we're at it. Playing chess is a kind of activity that goes on - everybody knows about - in artificial intelligence. I think that's Baisley, a chess master who was at MIT, who worked on this chess program, which is mainly due to Richard Greenblatt of our lab. I think that playing chess - well, maybe I'll just let you see the game.

You might have noticed that you saw the moves on the board, you saw black and white in the usual notation, you saw something over there called principal variation, and this is an important aspect of this program - that you can find out a lot about what it thinks and its reasons for doing its moves. Not in English, as in the case of the language program; nevertheless, in a language that's understandable to the people who work on it. You can find out why it did what it did, and this is a very crucial point that I think I won't amplify on until we get to see whether this movie which I didn't see ...

This is just some computer-generated fun. It's polyominoes - all the possible arrangements of that set. Some of you must know these. It's trying them all, and it's finding out how many there are, and it also makes something good to look at.

You'll see when this ends a kind of rather dramatic computer display program where you get those dramatic kaleidoscope effects by using some simple principles of symmetry, some simple geometry, and just random ...

Okay, that's it. [Comment from audience.] That's a color CRT.

Let me comment on a few of those things, going back, but first of all on that very last one, of geometry on the scope. This, I believe, is one of by far the best contexts for a child to learn geometry - in doing things like that. And one way in which we are doing this in our geometry classes is those turtles like that can be used as drawing instruments. They can be commanded in a simple language that says forward, left, right. You can command it to draw quite complicated figures, as well as to dance and do things of the sort you saw, which provides a context for geometry that's more meaningful than proving theorems in the usual Euclid class.

About the chess thing, I'd like to say just one word there - one word about a theorem - and then I'll stop.

There used to be, in the early days of cybernetics, a concept of "learning machine" in which one thought of learning on a behaviorist model, where one thought of a machine that had buttons and you showed it an "A" and you showed it a "B" and you said, "What's that?" and it said "A" or "B" and you pressed a "Right" or "Wrong" button and you expected eventually the machine, by changing resistances, and neural ... etc., etc., inside its brain circuits - or inside its circuit circuits - you expected it eventually to learn.

Such concepts of learning machine did lead nowhere, and eventually Minsky and I were able to show why in a book called Perceptrons, where we were able to explain mathematically why they couldn't and why they learned the very limited things they did learn, and why they couldn't learn the more complex things. (I'll give you an example of a theorem like that in a moment.)

But the more important positive thing was this: that our concept of making a machine learn is very different and it could be embodied in one more slogan that I'd like to say to you. The slogan is: Why can't machines think? - It's because people treated them badly. You know, like you put pigs in filthy sties and then you call them dirty animals. Now if the only way you are going to let the machine learn anything is by putting it in a situation and saying right and wrong and letting it make some random change in its connections, it's never going to learn anything. Nor is the child in your classroom ever going to learn anything if you apply something like that.

How does one really teach a machine? How does one really teach a child? (And they are very much the same process.) If somebody comes to me and says teach me to play chess better, the sure thing that I'm sure to do - what I'm not going to do is say play a game, and then say good or bad, you've got a grade A or grade F. He's never going to learn like that. The way I'm going to teach him is I'm going to play a game with him. I'm going to try to project myself into his mind. I'm going to say what's he doing well? Where are his strengths? Where are his weaknesses? I'm going to identify them, I'm going to talk to him about them, and I'm going to make him better that way.

And this is precisely the model on which this chess-playing program has really got better, and one of its great superiorities over previous chess-playing programs was that it's written in such a way that the programmers can really understand much better than anyone previously tried to do why it does what it does. And so, by playing games with it and identifying its strengths and weaknesses, they could change the program.

You say, well that's cheating. Why not have the machine change the program itself? And I think there is the key point I'd like to stop on about A.I. and that is that that is the cut-off, the point of critical mass. For the moment, let's ask who's smarter, the machine or me? If I'm smarter for the moment, to make the machine get better I should make the changes in it. If one day I get the machine to be as smart as me then it's indifferent who makes the changes in it. And if one day it gets to be smarter than me it will progress faster by being able to make the changes itself. And the day will come when we can get machines to understand and learn and be intelligent when they can use their intelligence to advance themselves, and that's the day to be afraid of in competition with machines, if we are to fear anything.

In terms of people, the same applies. I say that a fundamental mistake of all educational theory has been this crazy idea that the problem is instruction. The use of computers in education has been dominated by an idea of having a tutor that says to you, "Wrong", "Right", "Do this now", "Do that now". What we need to do is to teach the child to give himself those directions. The child does not need a personalized tutor sitting over his shoulder. It's not what we want, either from people or machines, that they should become a personalized tutor. I never had a personal tutor and I got to be pretty smart - I think. [Laughter.] When I go into schools I say it's insulting to the children for me to say that those children - those dummys there - need a kind of treatment that I never needed - a kind of drill master, a kind of insightful tutor who will direct the mind and say what you have to do next and this and this - sequence things. (What a horrifying idea - sequencing.) We've got to teach the children to sequence themselves, to see in themselves what they are doing well or badly, where they are, what the learning process is, and how to direct themselves in it. That we have to teach them - very firmly and clearly. They can't make it up for themselves; it took us a long time to get there.

But, you see, what applies to machines applies to people, to people and machines. And I think I'll just leave it at that and not show you the theorem and just let you reflect on that as one of the central points that's come out of the saga starting from Descartes' demonstration that machines cannot think to Winograd's machine that was doing the very things that Descartes said was impossible, namely, recognizing many more linguistic forms than any person has ever heard, recognizing forms that it's never seen before. Descartes said, and Chomsky echoed, that this is what makes it impossible for machines to be intelligent. This is what makes it impossible for people to learn - for Chomsky says language is not learnt, it's innate - and this is indeed what we have found out is not true and what we can make machines and, we hope, people do.

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

Absolutely. Very far from an upper limit. I don't think any hardware of any computer is anywhere near a limit. [Comment from audience.] Oh, this was a super-slow machine; there are machines that go a hundred times as fast. It was a PDP-10 - there are much faster, much bigger machines that exist now.

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

Did you say the program or the programmer? In the program. Certainly so.

QUESTION: [Inaudible.]

SEYMOUR PAPERT:

No single microworld works. Terry Winograd's program really has several microworlds. One's the block's world, the other is a "words world" that deals with language, and another is an "intentions world" that deals with its intentions. And the way we're thinking about artificial intelligence is separating these little microworlds and understanding this knowledge.

It's interesting. You see, nobody has ever tabulated knowledge, ordinary knowledge. Like a few hundred years ago, nobody had ever tabulated words, nobody had ever made a dictionary. Nobody had made a list of all the words that somebody knew. Nobody had ever counted words. Has anyone counted facts? Little facts like: "If I'm near this, and this is near that, then I'm near that. But I can't apply this rule many times in succession." It's a little fact. Or another little fact that shadows have certain kinds of properties, or another little fact that whenever you see a rectilinial object it almost always has three lines meeting in a vertex. How many such facts are there? And I think that for understanding intelligence, we have to answer such questions like how many facts do you think a person needs to know in order to get on in the world? And I say not more than a million, probably a hundred thousand. Certainly not just five or ten thousand, which is already more than any machine has been given.

QUESTION:

I don't understand your critique of Chomsky, because, as I understand it, the machine you've just shown us a movie of does indeed have innate knowledge provided it by Winograd.

SEYMOUR PAPERT:

I think this Chomsky thing is a technical question. Maybe I should . . . I will concede, certainly, what I said about the program is not sufficient to answer the question about Chomsky. Nevertheless, I maintain firmly that <u>in total</u> the conception of language that's embodied in these programs is utterly different from the Chomskian conception. In particular, it does not see syntax and syntactic competence as a special skill that you acquire that has an existence separate from semantically meaningful logic and reasoning. And we believe if you look carefully at the actual arguments given by the Chomskians about what things should be hard to learn - which particular kinds of knowledge have to be innate - you see that it's highly dominated by their concept that syntax has to be acquired independently of other aspects of mental activity. And saying there's no such special skill as syntactic competence is like saying there's no such special skill as vision, as seeing, as apart from thinking, and so on. This is part of a whole thing.

If you'd like to know more (and this applies to anybody), write to us.[1] We will send you memos or anything you like and send you a voluntary bill for the expenses.

[Tape runs out.]

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[1]Seymour Papert, Artificial Intelligence Lab, M.I.T., Cambridge, Mass. 02139.

The Implications of Genetic Engineering

Panel with Dr. Isaac Asimov, Dr. Jerome Lettvin, and Larry Niven

TONY LEWIS:

Could we have the participants of today's final program please come up? Larry Niven - Larry, are you here? Right over there? Okay. Isaac? Dr. Lettvin?[1]

DR. ISAAC ASIMOV:

How come he's 'Dr. Lettvin' and I'm 'Isaac'? [Laughter and applause.]

TONY LEWIS:

Because he's got Maggie[2] and you don't. [Applause.] The subject of this panel or trialog... [interrupted by Dr. Asimov] Yes, master. Isaac is going to do a surprise. I'll pass it on to Isaac... Isaac, you're on.

DR. ISAAC ASIMOV:

Before I announce the subject, I just wanted to say I've got a copy of Ringworld - is that the title?

LARRY NIVEN:

That's Ringworm.

DR. ISAAC ASIMOV:

I've got the book Ringworm at home and I haven't read it because I'm writing a novel and I don't want to be thrown off. I don't want to say, "Oh, it's no use, I can't do this well." So, I'm going to be finished with my novel in about a month and then I'm going to read Ringworm and I'm going to hate it.

LARRY NIVEN:

You're going to love it!

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[1]Dr. Jerome Lettvin is a Professor in Biology and Electrical Engineering at the Research Laboratory of Electronics at the Massachusetts Institute of Technology.

[2]Maggie Lettvin conducts an exercise show, "Maggie and the Beautiful Machine", on WGBH-TV, Boston.

DR. ISAAC ASIMOV:

Any book that wins a Nebula and is nominated for the Hugo - I hate. Don't tell me. The only thing I'm sure of is that next year my novel, which is named The Gods Themselves, will win the Nebula and the Hugo - and I won't be around to see it win because on account of it'll be in Los Angeles and everybody knows I don't go to Los Angeles, and if you think that wasn't arranged on purpose you're crazy! You notice how I'm ignoring the person on my left. Let me introduce everyone. This is Jerry, this is Doctor Asimov, this is Larry Who...who?

And now I'm going to announce the subject of discussion. I took a quick look at this and I don't remember exactly, except it said something about genetic engineering. Now I would like to pick a different topic but Jerry Lettvin is an extremely limited person. [Laughter.] If we don't speak about genetic engineering he's tongue-tied. So, the question under advisement is this: is genetic engineering a good thing or a bad thing or in-between, or none of the three? And I will speak first. [Laughter and applause.] After me will speak Jerry Lettvin, and if there's any time after that, Larry Niven may say a few words - judging from Ringworm they'll be stupid words - and then maybe we'll throw the thing open to the audience.

First, genetic engineering, as you all know, is the deliberate interference with the genetic equipment of organisms by human beings. This has indirectly been going on for a long time because, of course, we have bred a great many domestic animals into a great many different varieties by taking advantage of natural selection.

DR. JEROME LETTVIN:

Don't insult the audience.

DR. ISAAC ASIMOV:

Why? You think it's possible to insult the audience? [Laughter.] Besides, I'm making a point. We get cows that give a lot of milk, we get chickens that are egg factories, we get sheep that manufacture wool

like there's no tomorrow, pigs that are nothing but fat with somewhere a little piece of bone, turkeys that are all breast, pigeons that are all funny shapes, dogs that are all funny shapes. We've bred everything but cats pretty much. No matter what we do, cats look like cats, because cats are independent and I love 'em. [Loud cheers and applause.]

So the question arises, "Why don't we do it to human beings too?" and the answer is that we don't know what we want from human beings. We know what we want from cows - milk; we know what we want from turkeys - breasts!...and drumsticks; and we know what we want from dogs - we want a lot of slavish love and I hate them. But from human beings what do we want? Brains? Are we sure? Have you ever been in the same room with a lot of brainy people? It's unbearable! [Laughter.] The best combination is to have one brainy person - me - and a bunch of mediocrities - they should listen. [Laughter.] Do we want creative genius? Every single one of them neurotic? See, we don't care what happens to a cow if it gives a lot of milk - for the rest, it can be miserable. I mean, no one cares.

What we want, presumably, is happy human beings and a well-balanced society. We need human beings of all kinds; that's the only way you can have a well-balanced society. We can have people who like to be plumbers as well as people who like to be nuclear physicists. (If you have your choice as to who to live next door to, live next door to a plumber, because your pipes may go wrong in the middle of the night; your proton accelerator never will.) [Laughter.]

Now we might, of course, try to eliminate all kinds of congenital disorders. Let's say we start genotyping all babies, so as soon as a baby is born, maybe as soon as a fertilized egg develops, we get a genotype on it, type all the genes and read it and say, "Aha! This kid's going to have diabetes so let's make a fix on it so it doesn't have diabetes." One of the questions: are we really that hard up for human beings so that we have to save every fertilized egg in the world? Can we maybe just pick the best ones, which raises a question as to which are the best ones, because maybe the one with the diabetes also has musical genius, the potentialities of musical genius. It's hard to tell, especially since we don't know what gene combinations give rise to musical genius. So in a sense we'd have to wait and see, or should we? Should we say: Here's a guy with a serious congenital disorder, not just like diabetes which can be treated with insulin, this guy's going to grow up with a hole in his heart. Let's fix that. Maybe we shouldn't. Maybe we should consider it a ruined fertilized ovum and just sort of drop it in the waste basket.

And then too, supposing it turns out that we happen to like the fertilized ova mostly from the Latvians; the Latvians score very high, genetically, in fertilized ova and the people from Liechtenstein (very few Liechtensteiners in the audience, right?) score abysmally low. Well, you don't suppose the Liechtensteiners won't object and say that a coterie of Latvians isn't running the entire organization? And if we reverse it, won't the Latvians object?

The number of social problems that will arise in genetic engineering is horrifying, and one approaches this with the thought after a while that perhaps we'd better stick to the good old-fashioned way of letting randomness and natural selection settle things and hope for the best. Not because it's a good system, but because every other system has the strong potentiality of being worse.

LARRY NIVEN:

And also because it's less work.

DR. ISAAC ASIMOV:

And also because it's less work. You see now, I keep thinking of moral reasons and serious sociological reasons and Larry keeps thinking of doing less work. This is what they call type-casting. On the other hand, Jerome Lettvin thinks that genetic engineering is good, he thinks I'm all crazy, and he is now going to talk to you and prove to you that genetic engineering should be adopted instantly. Go ahead, Jerry.

DR. JEROME LETTVIN:

You've double-crossed me, you know. You were going to take the other side, but seeing that you took the side you took, I can only take the opposite.

DR. ISAAC ASIMOV:

Absolutely.

DR. JEROME LETTVIN:

My thesis on genetic engineering is that it is a fine thing.

DR. ISAAC ASIMOV:

Do you have a Brooklyn accent! [Laughter and applause.]

DR. JEROME LETTVIN:

I undergo protective coloration. On genetic engineering, the important thing to realize is that it is a serious project for making work. You see, I think one tends to take the various projects that come up in science with all seriousness. You think, for example, nowadays, that when somebody puts in for a project he means what he says. That is, what he finds will, in the end, do the sort of things that he imagines they will do. I think those who have been around the scientific community for a while realize that the promise far exceeds anything that you can actually do. In fact, if you come to M.I.T. I will gladly show you a variety of projects that have lived on promise for the last two decades without the faintest difficulty at all.

The Genetic Engineering Panel: Larry Niven, Dr. Isaac Asimov, and Dr. Jerome Lettvin
(Photo by Jay Kay Klein)

One of the reasons that you want to hold the promise out of genetic engineering is that it is the only way in which you can get money to look at genetics at all, in fact. I do not know if you realize presently that money, being withdrawn across the board as it is by the government, is getting in such short supply for any serious work you can do that any mishegas you bring forth is a useful one. But you imagine that genetic engineering is something that people really think they can do - don't kid yourself. They'll go and they'll patchkeh around and most of the time they'll kill things off. The reason they'll kill things off is that any trouble with the genes at all in nature ordinarily kills things off anyway. So, it's a form of euthanasia and that's a good thing too. So, you shouldn't worry.

But the other thing about genetic engineering which is extremely important, is that while these people are patchkehing around, you know, going ahead, even per uterine, killing off one fetus after another in the name of whatever it is they're doing, there will be enough spin-off of money to support honest geneticists. [Laughter.] Look, this is a very important point! You think, for example, that one could maintain a laboratory in studying the nervous system if you didn't promise that you were going to cure schizophrenia? Who's going to cure schizophrenia? Don't kid yourself. So all right, no cure; big deal. But you keep on promising it, and occasionally you go into a state hospital, and that allows you to go ahead and do what you're planning to do anyway. Now on this basis, unless one supports genetic engineering as a future discipline you're going to see the death of yet another science on your hands. I mean genetics itself. Genetic engineering is a kind of a specific way in which this new discipline, a very strong one, can keep on supporting itself. From the point of view of the substance, it's laughable, and from the point of view of the ethics, it's abominable.

But you see, it's very much like the artificial intelligence boys. They tell you that we're going to have something that's going to take over the government, make all judgments, we are super-human beings, and you look at them and you say gesundteheit - I wish you well. But so long as you're getting all that money, spin a little bit off into the laboratory - and they do, you see. You know very well they are not going to come through on the promise. Similarly, the various Huxley's, the various other people who come along and say: let's go in and fix up a couple of genes, let's be eugenic; your initial feeling is - what monsters. Very superficial attitude - what monsters. Without these monsters as a front you never get any work done, you see. [Laughter.] That's my whole point.

DR. ISAAC ASIMOV:

Before passing it on to Larry Niven, I wish to translate some of the terms that Jerry used: a 'mishegas' is a female native of Michigan; [Laughter and applause.] 'gesundteheit' is a strong feeling of

hatred; 'patchkeh around' is to slap someone all around the room; and 'euthanasia' is the killing of youth in Asia. [Laughter.]

LARRY NIVEN:

They've both got accents; they're against me. I'm a science fiction writer; I'm going to assume that genetic engineering is possible. The other questions raised are good. There are a bunch of ways to try to improve the human race. The first, I suppose, is the way we improve radishes, which is to use the best seeds and replant them and you can wind up with all kinds of funny-shaped radishes just by aiming for what you think you want. Likewise dogs, except that the side-effects have been somewhat bad in that respect. It turns out that if you set up certain qualities for a collie, say, and breed straight for them you wind up with some very bad side effects. Every breed of dog which has become popular among dog lovers and dog show lovers has been virtually ruined.

So how would you breed human beings? Aside from what you would breed them for, you'd have to persuade, one way or another, certain people not to breed. Here's a suggestion: If you go to a doctor for a major ailment, the price of being cured is that you shall not have children thenceforth and the mechanism would be you'd get your tubes tied off if you were a lady and you'd get certain other tubes tied off if you were a man. This breeds us for health, right? It also breeds us for not wanting to go to a doctor. [Laughter.] What the side effects of this would be I don't know, but it would make the medical profession somewhat unpopular, if they weren't already. Actual gene tampering seems a lot more complicated. I'm not an expert on it and he [Dr. Lettvin] refused to talk about it, which is irritating.

DR. ISAAC ASIMOV:

I'm an expert on gene tampering, where's Jean? [Laughter.]

LARRY NIVEN:

He's in the audience, Isaac. [Laughter.] Gotcha!

DR. ISAAC ASIMOV:

You just think you got me. I'm not letting you get near me.

LARRY NIVEN:

I don't really have much to say on the mechanisms of gene tampering; I don't know that much about it. I know that DNA is heavily involved [Laughter.]; that's about it. As for the aims and the morals of the thing, they are quite heavy. As someone pointed out in the story long ago - and it's the only part of the story that stuck in my head - it was somebody asking: what kind of a man would you want to crawl through and clean out a tube, a sewer pipe, two feet in diameter? No nose for one thing, and he's long and thin, right? This is probably frivolous, but as for breeding a genius physicist on the one hand and a competent plumber on the other, I think the answer is to breed for all geniuses and make machines to do the plumbing. The brighter we get, the easier it is to design a machine that'll do all the plumbing for us, right? Unfortunately, we can also design machines to do all the thinking for us; there's no theoretical limit on how intelligent a machine can get. As far as I know, there's no practical limit on how intelligent a machine can get.

DR. JEROME LETTVIN:

You have me baffled. How intelligent can a stone get? Is there any limit?

LARRY NIVEN:

Certainly.

DR. JEROME LETTVIN:

Why? How do you measure it?

LARRY NIVEN:

I'd build a machine brighter than me and let him do the measuring.

DR. JEROME LETTVIN:

You've done that?

LARRY NIVEN:

No, not yet.

DR. ISAAC ASIMOV:

At what point do you yell out bullshit?

LARRY NIVEN:

A stone is different from a computer, man; a computer is a tool. Is there a limit to how sharp a knife can get? Yes, there is. It's easy to discover. But how sharp a computer can get we haven't found a limit.

DR. ISAAC ASIMOV:

Well, of course, if you let the computer get larger and larger and larger without limit, presumably you can make it more and more complex. But it would be interesting to determine how complex you can make a computer within a certain volume. For instance, how complex a three-pound computer can you make? If you can make a three-pound computer as complex as the human brain, then obviously you will have the potentiality of building a...

LARRY NIVEN:

Six-pound computer that's twice as intelligent as a human being.

DR. ISAAC ASIMOV:

Yes, yes. But I was about to say that you could build a robot that was approximately the shape of a man and as intelligent as a man, and then you can possibly make a robot that's more intelligent than a man with a large bulging head, or by still further increasing the density of the intelligence, make a normal-seeming robot that is more intelligent than a man. In either case it'd be a good thing.

DR. JEROME LETTVIN:

Oy, vey! [Laughter.]

DR. ISAAC ASIMOV:

The reason he objects is, he wants nobody to know that he is a robot as intelligent as a man. Incidently, I would like to take issue with something you said, Larry. You implied that people wouldn't like not to breed. Now don't confuse 'wouldn't like to not have sex' with 'wouldn't like to not breed'.

LARRY NIVEN:

I haven't.

DR. ISAAC ASIMOV:

There are lots of people who would object to not having sex but there are lots of people who wouldn't object to not breeding. But the entire social pressure of this stupid world is in favor of breeding. I have somewhere up in my room a letter I picked up at the school which yells like mad at me because I say there's an overpopulation problem; they claim there isn't.

LARRY NIVEN:

Isaac, a man who would not object to not breeding and who even takes special precautions to see to it that he doesn't breed is likely to kill you for telling him not to breed, if you put enough authority into it.

DR. ISAAC ASIMOV:

Well, that may be, but that's a sign of the stupidity of humanity. As a matter of fact, almost everybody who knows that it is possible to take precautions against breeding and has the facilities to do so, does so, so that the so-called natural impulse to breed is very easily subverted.

LARRY NIVEN:

But one group telling another group "None of you may breed" can cause all kinds of different problems. Even if some of them don't want to breed.

DR. ISAAC ASIMOV:

Well, that's why I'm against one group telling another group. I say that everyone must have a limit. In other words, nobody must be allowed to have more than two children. [Applause.]

LARRY NIVEN:

Now we're back to the matter of breeding for certain traits.

DR. JEROME LETTVIN:

You know we really ought to get back to the topic, namely genetic engineering.

LARRY NIVEN:

I'm still working at aims and means. What are you breeding for if you tell everybody that it would be bad for the world for them to have more than two children? And if you make that argument as convincing as possible, and if you can demonstrate that you are right? What are you breeding for?

DR. ISAAC ASIMOV:

Survival, frankly.

LARRY NIVEN:

No, you're breeding for inability to understand your argument! That's what you are breeding for.

DR. ISAAC ASIMOV:

Explain that, Larry.

LARRY NIVEN:

The people who understand your argument won't have more than two children; the people who don't understand your argument will have all the children they want. Presently, you'll have a lot of dumb people.

DR. ISAAC ASIMOV:

So, in other words, it looks like voluntary arrangements won't work.

LARRY NIVEN:

That's right.

DR. JEROME LETTVIN:

Not dumb people - Asimov-misunderstanders.

LARRY NIVEN:

Asimov-misunderstanders tend to be dumb people.

DR. ISAAC ASIMOV:

True. [Laughter.] Then what we might be reduced to is, as soon as the woman has a second child you tie off her tubes.

LARRY NIVEN:

Ummm, coercion. I think coercion has been getting an undeserved bad name lately.

DR. ISAAC ASIMOV:

Why? We live with coercion all the time. Do

you drive an automobile? If you drive an automobile, your every move is coerced.

LARRY NIVEN:
That's right.

DR. ISAAC ASIMOV:
Can you go two feet without seeing a sign telling you what to do? Do you dare disobey?

LARRY NIVEN:
Some people dare disobey. Some people run red lights.

DR. ISAAC ASIMOV:
Just last July I brought home Lester del Rey, Gordie Dickson, William Tenn, and Judy-Lynn Benjamin in a car. I had a concentration of human intelligence there like you wouldn't believe, and I drive into Manhattan, finally, and I have to take them to the place where they're going, so I said "Where do I turn?" So they say - I won't tell you which one - they say "Turn right on Broadway." So I turned right. I was only halfway right when a cop was waving me to the side and as he was waving me another guy was turning right and he was being waved. This was Needle Park, Broadway and 72nd Street, called Needle Park because the drug addicts are piled this high, and all they have are four cops collecting illegal right turns. It cost me 15 bucks, and just because there was a sign that said "No Right Turn" and I happened not to notice. 15 bucks for not noticing a sign. That's coercion. Believe me, if I were fined every time I broke a highway rule I'd be a pauper right now. Fortunately, I'm only caught one time in 100,000.

DR. JEROME LETTVIN:
Can I make a point?

DR. ISAAC ASIMOV:
Go ahead, Jerry - say something intelligent.

DR. JEROME LETTVIN:
I want to talk about intelligence because, you see, now that I have fulfilled my obligation of talking against you, now let me be, just for a moment, serious. I don't know how many of you have seen the recent work of Professor Herrnstein, of Harvard, on the genetic intelligence and inferiority of the lower classes, or the work of Jensen on the genetic inferior intelligence of the Black, or the work that's been coming out in England and a variety of other places. You see, sooner or later, in the science fiction convention, the question of intelligence crops up and genetic control of intelligence. Now I don't think that I have ever been really quite so appalled in my life by the science fiction, the rather bad science fiction, being written for the social psychology and psychology journals. Bizarre. About the business of people coming out and blatantly saying: "This is a genetic consequence." On certain blood diseases, certain other things where you can make a very good case, I think there's no question that what one can see genetic difficulties and trace them and even make a very beautiful strong case in human genetics for, say, the inheritance of such traits as the sickle-cell anemia, or some of the things that Haldane found in India. There are a variety of genetic diseases, no question about it.

But when one goes to the supposedly marginal differences in intelligence, supposed differences that are picked up by I.Q. tests and the like, this is an entirely different story. You have a variety of self-servers in the field who want very much to have a continuous plenum of the elite, you know, like everybody is a genius. That's okay, I suppose, but it is not in the least clear that there's any genetical way of determining this. In fact, it is not clear if intelligence is genetically determined by any of the tests that you can imagine. The number of changes that occur within the first few days, or first year or so of life are enormous, and it is these that, in the end, determine what sort of intelligence you have.

There are a number of rather good stories about isolated villages with particular traits that look genetic and then, as soon as one looked at them carefully, were not genetic in the end. But you see, there's a very funny social self-serving now among those of the scientific group who are in support of the establishment, to render the establishment, not only into permanent status quo, but into something that, shall we say, can never be torn down. That is, by propagating the myth of diminished intelligence among those who are either unlucky or improperly faced by life in early years, they establish a kind of a necessity, the divine right of the upper classes, which becomes propagated and stays permanent.

One of the things that disturbs me about the genetic engineering is that, on the level of blood discrasias, on the level of heart discrasias, on the level of a number of other things - certain metabolic disorders - yes, it seems to be a not unreasonable thing. But inevitably the eugenicist addresses himself to intelligence - inevitably because that's what he had to have to understand genetics in the first place - addresses himself to intelligence and then, with the cooperation of distinctly second-rate social scientists (which are already distinctly second-rate whatever they are), proceeds in this self-serving way.

I find myself very unhappy, presently, with the spate of papers appearing in support of genetics of intelligence and an eugenics based upon it. I consider it not frivolous, I consider it not irresponsible, I consider it downright evil. And I cannot say, really, much more than this. It would be delightful if geneticists would limit themselves to metabolic disorders,

blood diseases, but they don't, and the eugenics aspect sooner or later creeps in with intelligence as the prime factor. Intelligence is the one thing in man that we have no genetic information on, no reliable genetic information, not even the vaguest hint of genetic information, and the sons-of-bitches just want to go ahead. [Applause.]

LARRY NIVEN:

I go along with a lot of that. It's true that we know very little about intelligence, but it does seem that sickness of almost any kind can get to your brain, can affect your intelligence. What we should be breeding for, if we use techniques for breeding for any trait, is to breed for good health. This we can work on; this there is objective data on.

DR. JEROME LETTVIN:

Is there?

LARRY NIVEN:

I think so. You can tell whether a man is sick or not, can't you?

DR. JEROME LETTVIN:

Yes, but you see, this was the Nazi master race idea too. I don't go along with that either; I think that thin shrivelled scrawny, fat sloppy people, tall gangly people, everybody has a kind of a place and it is not up to me to make the ethical decision that people are or are not intrinsically handicapped, evil, or whatever else, except to remove whatever it is that makes them uncomfortable. This you're allowed to do as a doctor. Genetically, if you detect a metabolic complaint and you can alter it - yes, by all means. But to go one step further and say this is what should be bred, there I leave you and come on the opposite side.

DR. ISAAC ASIMOV:

I just want to say one thing. With reference to people who talk about dividing human beings into two groups, one of which is more intelligent than the other: the people who do this division always end up on the more intelligent side. [Laughter.] It's always the other side which is less. Now I am waiting for one person, <u>one</u> person in the history of the world to come out and say: "I have discovered that the following group tends to be less intelligent on the whole than the rest of humanity and, alas, I am part of this group." <u>Him</u> I'll believe. Until that time happens, I remain unconvinced. [Applause.]

QUESTION: [What do you have to say about the natural inferiority of women?]

DR. ISAAC ASIMOV:

I tend to believe that women may be superior biologically. I know I would far rather associate with them than with men, believe me. [Laughter and applause.]

LARRY NIVEN:

The man has a point. [Laughter.] I still want to talk about applying genetic engineering to improve the health of the human race in general and specifically. [to Dr. Lettvin] You're against that?

DR. JEROME LETTVIN:

Yes, sir. The reason is that there is a kind of monkey's paw law. You know the story of the monkey's paw? You have three wishes and each one, for whatever you wish for, turns out to get clobbered worse. Now I don't know any single thing in a connected body in which you can change this aspect without, at the same time, changing everything else. The connectedness of the thing is such that you can say no part is an island unto itself.

DR. ISAAC ASIMOV:

That's a good line! [Laughter.]

LARRY NIVEN:

Here's another good line: "There are some things that Man was not meant to know."

DR. JEROME LETTVIN:

No, it's not 'not meant to know'. It's just if you're going to fiddle, to say I'm going to fiddle to get <u>this</u> particular thing, you're kidding yourself, because in order to get that particular thing you may be sacrificing a huge batch of other stuff. Look at what happens in modern medicine. You go to the doctor; you're sick. He says I know just what to do for you. He gives you a drug; it clears the bug up, but what it does to your gut, what it does to your flesh. He says "You only asked me to clear the bug up." And here you are staggering around, an idiot. You've got to go to a shrink, to assure you that you're not going crazy, and that's part of the medicine. Now, in a certain sense that same aspect of medicine appears through everywhere. You cannot approach the thing in a rationalist fashion, saying "I'm going to change the hand, and then I will change the arm, then I will change the head." That's nonsense, because each part depends for its form, its function, and so forth on all other parts.

DR. ISAAC ASIMOV:

You notice that he says nasty things about doctors; you heard what he said about shrinks. In case you don't know, he's an M.D. and he is a psychiatrist. I just want you to know. [Laughter.]

LARRY NIVEN:

When you start fiddling you've got to resign yourself to keep on fiddling. If we start with genetic

engineering, we can't stop. This is true. It's a Pandora's box. There have been a lot of them in history. Many of them should have been opened, possibly a few shouldn't, but they're all going to get opened. Nobody's ever failed to open a Pandora's box.

DR. ISAAC ASIMOV:

Should we throw this thing open to questions? How much can they absorb without raising objections?

QUESTION: [Inaudible.]

LARRY NIVEN:

I object to breeding for plumbers, myself. It seems to me that being a plumber wouldn't be too much fun. This may be a totally personal prejudice - I'll withdraw it if there are any plumbers in the audience. They can always take up writing science fiction. [Laughter.] No, I don't want to eliminate plumbing. Plumbing is one of our most important... [Laughter.] Inventing machinery that would do the plumbing? Why not?

DR. ISAAC ASIMOV:

Well, it's only a matter, you know, of changing the attitude towards plumbing. There was once a time when you paid money to people who came and collected the residue...

LARRY NIVEN:

Night soil.

DR. ISAAC ASIMOV:

Night soil. Thank you. I'm not so acquainted with it. I'm a city boy. You'd collect the night soil in a bucket and carry it away on your back, and he was the primitive plumber. So, by inventing pipes and all that sort of stuff, you eliminated the plumber and you invented a new plumber who fools with the pipes. Now, by inventing automated plumbing devices, self-correcting, self-repairing, you'll develop a new plumber, a guy who knows how to manufacture these things and how to correct them when they go wrong.

LARRY NIVEN:

And it's probably more fun for him, just the way it's more fun for a modern plumber than it used to be for this guy who came to carry away the night soil on his back. He had a lousy job.

DR. ISAAC ASIMOV:

You know I must play the devil's advocate; because I, too, am in favor of automating the world and eliminating all kinds of stupid labor.

DR. JEROME LETTVIN:

You mean not only an electric toothbrush but an electric wiper as well? [Laughter.]

DR. ISAAC ASIMOV:

Well, I must admit I used an electric toothbrush and then quit. It was too violent, started gouging out pieces of teeth.

DR. JEROME LETTVIN:

You know, you say plumbers automated, and so forth, garbagemen automated, and most of the things that we do every day are clearly automatable. There comes, however, a point at which you're in a very funny position. Anything that you do is slavery or trivial because a machine does it. What then do you do? Sit and think? I mean just what?

DR. ISAAC ASIMOV:

Well, my objection to replacing plumbing with automated machinery - and I'm being a devil's advocate, because deep in my heart I want to do it - is that the more complicated you make things, the more terrific the mistakes are. It's like the joke about the two mathematicians looking at the answer delivered by this huge computer that covered an entire wall. And one mathematician says to another: "Do you realize it would take 400 mathematicians 200 years to make a mistake this big." [Laughter.] Hey, that's Poul Anderson there! Everybody turn and look.

POUL ANDERSON: [Inaudible.]

DR. ISAAC ASIMOV:

Yes, and we also perform genetic engineering when we make mating any other than a random function in any way. For instance, it isn't really possible for anyone to marry - or otherwise - anyone because there are strong social objections here and there to a person in group A intermarrying with a person in group B, so there's a tendency to keep them separate. There's all sorts of feelings of marrying beneath you.

LARRY NIVEN:

There are laws against marrying your brother or sister.

QUESTION: [What will be done by the year 2000 in the field of genetic engineering?]

LARRY NIVEN:

I think we'll be well into it. I cannot predict what area of approach they will use. I think an elegant method might be to design a virus to do just what a virus does, which is replace some of the DNA in your cell and cause your cells to produce other viruses; a tailored virus might cause your cells to reproduce not other viruses, but a better-designed cell.

DR. JEROME LETTVIN:

What do you mean, better-designed cell? [Laughter.]

LARRY NIVEN:
Healthy, rather than sick, for instance.

DR. JEROME LETTVIN:
I don't understand...

LARRY NIVEN:
Non-hemophiliac.

DR. JEROME LETTVIN:
A cell is hemophiliac?

LARRY NIVEN:
I don't know, is it? [Laughter.] I'm a science fiction writer; you're the man who ought to know this. Is a cell hemophiliac?

DR. JEROME LETTVIN:
No.

LARRY NIVEN:
Okay, what could you cure by such an approach?

DR. JEROME LETTVIN:
I damn well don't know.

DR. ISAAC ASIMOV:
You infect a fertilized ovum which will replace one gene with a virus. Where the one gene which is deficient will give rise to a human being with hemophilia, with the virus added the human being that develops does not have hemophilia. Something else, maybe, but not hemophilia. Is this what you mean, Larry?

LARRY NIVEN:
That's what I had in mind. I don't know if it's possible but it sounds like an elegant approach.

DR. ISAAC ASIMOV:
He listens to me closely and writes science fiction novels, all the time.

LARRY NIVEN:
This is true. [Applause.] Mr. Lettvin, what Isaac Asimov just described, is it possible?

DR. ISAAC ASIMOV:
Don't say "possible", say, "Is it conceivable?" [Groans.] No, no, there's a big difference between possible and conceivable: possible means it can be done; conceivable means you can think of it.

DR. JEROME LETTVIN:
I don't know. We tend, in general, in biological sciences (I shouldn't say it, because I'm not really a scientist, I'm a dilettante, you know), but in science we're tending more and more to a notion of viewing the world in a very curious patchable way - that is, very much like you view a car. A tire goes; you put a patch on it. Most of you with cars realize that this is fiction; if anything goes wrong it means that the whole schmear is going wrong and you've got a lemon very shortly. But this whole notion of patchability - you know, that you do this, that, and the other thing, and isolated things change - I think is a very false notion which has not been engendered, to my knowledge, by any of the geneticists who are at work.

Now, if one thinks, for example, about genetic engineering for changing a particular trait in some particular way, there are cases where, as I say, given a metabolic disorder one feels that just converting, shall we say, one little patch back will allow the kid to have a chance, and there I am all for it. This is a different question from changing in a generalized way, patches here, there, and yonder to see what effects they have. But to answer the question of this fellow in the front row: To be quite honest, I think that by the year 2000 the genetic engineering will have undergone the most major change that you could imagine. That is to say, the injection of noise into the system on a scale never before accomplished, if you get what I mean.

DR. ISAAC ASIMOV:
Before I give you my feeling about where I'll be in 2000, I want to explain another word. He said 'dilettante' and some of you may wonder what a dilettante is. A dilettante is an aunt who smells like a dill pickle.
[Groans.]

Now I'll tell you where I think genetic engineering will be by the year 2000 - nowhere! Because I think that in the years to come genetic engineering will prove to be one of the temporarily irrelevant sciences. Mankind is going to be very worried about how to survive and genetic engineering is going to be the kind of luxury he's going to put off for afterwards, unfortunately. I'm just hoping that he doesn't do the same thing with space travel.

QUESTION: [Inaudible.]

DR. ISAAC ASIMOV:
I see, he wants the geneticists to play with hamsters.

DR. JEROME LETTVIN:
You misunderstood me. I don't think that the eugenicists and the genetic engineers can do a goddamn thing that they claim they can do. Indeed, their playing around on volunteers, if they can get volunteers, is okay by me, because when you see something like this occurring you know that it's not going to work, so let them go ahead and try it. All you're wasting are a few ova and a few million dollars. What I do object to,

however, and this is a very interesting thing, is the second aspect of it. You see, science has two aspects: one is the science that you do in the laboratory; the other is the public aspect, namely, the science that people who read science fiction or who read The New York Times believe in. You read the columns, science columns, and you believe it. Science says this and science says that.

Now, the interesting thing is that the social changes that come on because of what people believe about improper experiments or improperly done experiments or, in fact, perfectly insane experiments, sometimes is very much to the point. For example, I pointed out that Herrnstein's experiments showing that there's a genetic inferiority of intelligence in the lower classes can be completely a lie, as I believe it is. Nevertheless, this is going to be an instrument, if you wish, of oppression. Now this is the thing that bothers me - the social consequences of insanities of this sort. If these guys wanted to sit around the laboratory and do genetic engineering, I wish them well. Let them go ahead, why shouldn't you try something out; that's okay. But to publish it as a project with that sort of thing in mind, namely that we are going to convert the race to something better. This is the thing that gives me the cold shudders, because under this aegis and with this as an excuse, the most profound social injustices can be done. Okay?

QUESTION: [Inaudible.]

DR. JEROME LETTVIN:

Yes sure, so what? The thing dies off. You know, almost any fiddling of this sort is bound to be fatal. So you don't worry about that. What you worry about is the myth that arises, that is propagated by these people about what they're doing.

QUESTION: [About genetic counseling.]

DR. ISAAC ASIMOV:

As I understand, genetic counseling is the kind of thing you do when you advise people whether or not they should have children, because since they have had five people with homicidal mania in their immediate family ... Okay, I was exaggerating. Muscular dystrophy, sickle cell anemia...

DR. JEROME LETTVIN:

The counseling, I think, is excellent. I mean, sickle cell anemia is a rather dreadful sort of a thing to have and the Panthers are presently doing an extremely good job in going around and testing the Black population in Boston, New York, Los Angeles; they're finding one in eight with the sickle cell trait. Now, I think it's a very good thing to know that you do have the trait because you can govern, as it were, the fate of your children thereby. There's no sense in having a child that is going to be sickly and die very soon, a drain upon you, a pity in itself, and the rest. So you do your best to avoid that sort of thing. Yes, why not? That's perfectly common sense.

QUESTION: [How do you propose to make them accept the advice of the counseling?]

DR. JEROME LETTVIN:

By showing the consequences of going ahead and breeding the trait. Now these things are very palpable. One in 300 has red cell sickling among the Black population in Boston. Now one in 300 is not a very small quantity. You can go and actually see what the consequences are and then say "I choose not to do this or take this chance for my child." You see, I'm not talking against genetics; genetics is a fantastic, beautiful and really probably the only scientific science in biology, in a classical sense. It's a very good science. I'm talking about the schmucks who call themselves engineers.

LARRY NIVEN:

At the same time you're still breeding for unpersuadability with this genetic counseling.

DR. ISAAC ASIMOV:

In other words, the people who believe you, limit their kids, those who don't, won't.

QUESTION: [About the possibility of cloning Isaac Asimov] [Laughter.]

LARRY NIVEN:

That sounds like fun.

DR. ISAAC ASIMOV:

One Isaac Asimov is great; a thousand Isaac Asimovs even I don't want to have. [Laughter and applause.]

LARRY NIVEN:

All thousand of me, Larry Nivens, agree with Isaac Asimov on the score of having a thousand Isaac Asimovs around. [Laughter and applause.]

DR. JEROME LETTVIN:

You see, you're making, covertly, that very bad assumption that things like intelligence, talent, and so forth are born into a person. I will not make that covert assumption. So far as I am concerned, all new-born children, with the exception of those very obviously and seriously lacking a brain, possess pretty much the same sort of abilities. As near as I can tell from looking broadly at the literature, and quite specifically at this point, I have not seen any evidence for supposing that Isaac was, in embryo, a science fiction writer. That is, I find this a very

strange sort of an assumption - or even that he was, in embryo, given as a very intelligent man. I find this also surprising. The potentiality for intelligence was in Isaac born, as it is in every other child born. But the accident of his developments led him to be Isaac. It's not that you would breed a new Isaac, don't kid yourself. You don't breed anybody in that way; but the accidents that occur in the course of development of the child determine that they turn out to be a fat, jolly science fiction writer. [Laughter.]

DR. ISAAC ASIMOV:
That's what I call good thumbnail description.

QUESTION: [About medical prolongation of life]

DR. ISAAC ASIMOV:
I am seriously perturbed, honestly, by any prolongation of life at this point...

LARRY NIVEN:
Except your own.

DR. ISAAC ASIMOV:
... except my own. In view of the serious overpopulation problem that at present exists and will exist, I don't know how I can justify to myself the mad desire to keep people alive. And yet, on the other hand, I don't see any way out, because, certainly, I don't want anyone to say that I am to die if I can be kept alive and, if I say that about myself, I don't see I have the right to deny it to anyone else. This is one of those horrible clashes of idealisms and I'm not smart enough to know what to do. The effect of any attempt, any successful attempt to prolong the life is to further exacerbate the population explosion, to bring closer the inevitable raising of the death rate through famine, through epidemics, through disease. In other words, it is, to use a fashionable word of the present, counter-productive. And this is what bothers me.

LARRY NIVEN:
Another result is that you will raise a lot of sick children. But the only alternatives open to us now are to persuade people with such sicknesses not to have children and, in that case, you are breeding for unpersuadability again.

DR. JEROME LETTVIN:
Can I answer that for a moment, too? You know, I'm sort of astonished at Isaac taking a dim view. Look, in New Guinea in the highlands, one of the ways they've solved the protein shortage is literally to eat each other. That is to say, you don't go ahead and kill people to eat them, but the protein you don't allow to go to waste. Now so far as I'm concerned, I think that sooner or later undertaking will be a dead profession. [Laughter and groans.] And really, from everything that I know of, human protein is a perfectly good protein. In fact, I once had a man sandwich and I can assure you it's not terribly unpalatable. And I don't mean to bring the Jonathan Swift approach in here; I'm not particularly bitter, that is, it's not the point that I'm talking about - bringing children to the table with an apple in their mouth. But I really don't see any reason for the wasting of our enormous amount of dead.

LARRY NIVEN:
I'd like to add that the population explosion isn't necessarily as bad as he [indicating Isaac Asimov] thinks it is. It's scary but it's not that scary. The population of Holland is enormous and yet they're doing okay with it.

DR. ISAAC ASIMOV:
That's called the Holland fallacy! The reason that Holland is doing okay with it is because they're a highly developed nation which depends for its comfort on the exploitation of other parts of the world not as highly developed. [Applause.] If all the world were populated as densely as Holland is, they could not exist because there would not then exist a reservoir of miserable people who would support the entire world - unless we can place them on the Moon. And so, anyone who quotes Holland instantly is the victim of a fallacy.

LARRY NIVEN:
That's still a pretty good argument for pushing the space program.

DR. ISAAC ASIMOV:
No, it isn't. Because at the present rate of population increase, in the next 30 years, there're going to be at least 3 billion [3×10^9] more people on Earth and we can't possibly, at the most optimistic view, place more than, say, 3,000 people on the Moon. So that means we're left with the remaining 2,999,997,000. Frankly, that leaves us very little better off.

DR. JEROME LETTVIN:
Except if you multiply it by body weight and compute what steaks you could get out of it.

DR. ISAAC ASIMOV:
I wouldn't like to eat human beings because, considering the condition of health of most human beings, who knows what I'd be eating? I would want government certified human meat. [Applause.]

LARRY NIVEN:
The DDT and mercury content would probably be very high.

QUESTION: [Inaudible.]

DR. ISAAC ASIMOV:

Well, I see his point. What he is saying - let me summarize - he is saying that one of the things that we are talking about may involve mechanisms as complicated and as far-reaching as evolution itself. In other words, we are going to replace the vast mechanism of natural evolution by something which is just as vast, and we may find that it is impossible to do this. So that genetic engineering, so to speak, has a built-in limitation. This I think is the most interesting thing of the number of interesting things he has said, and he sounds like a person who is in Doc Lettvin's class. Doc Lettvin, I don't mean your class in school; I mean your class as a division of humanity.

DR. JEROME LETTVIN:

Oh! I would never arrogate to myself an equal position. Yes, I remember we talked last week [to previous questioner]. You told me that, in fact, you were going to show that brains succeed to computers, that computers could do anything, in fact, you know, this sort of horseshit that goes around. So fas as I'm concerned, I'm perfectly willing to grant any legitimate proposition that you bring up, you know, and if you say it's going to be complex doing genetic engineering or even euphenic engineering, I'm perfectly willing to grant this. I'm not going to deny you saying this; in fact everything that you say I completely go along with. I have no comment.

ELSIE WOLLHEIM:

[Could you repeat what the previous questioner said?]

DR. ISAAC ASIMOV:

I should repeat the whole thing? It would take an hour at ordinary speed.

DR. JEROME LETTVIN:

What he said, was this: that it's going to be hard to do eugenic engineering, genetic engineering, euphenic engineering (which means altering something between the genetics, the mechanisms directed by the genetics) and what do we got to say to it? Well, the answer is yes.

DR. ISAAC ASIMOV:

Somehow, I don't think Elsie is satisfied, but I'm not gonna look. Is there another question?

CHRIS MOSKOWITZ:

[About inheritance of definitely substandard intelligence]

DR. ISAAC ASIMOV:

Okay, I'll turn this over to Jerry in a moment. But I just want to say that the point that two morons are sure to give rise to a moron child ... but just remember that the child born to two morons is raised by the two morons, too, and this may have some effect.

DR. JEROME LETTVIN:

Look, the objections why, that is, the reasons why I am willing to throw out all, literally all, of the data accumulated by Jensen, by Herrnstein and his colleagues in England, and so forth, is the following: can I give you an anecdote, if you will allow me to give you one. There's a fellow by the name of Carlton Geideshek who runs a major virology program down at National Institute of Health. He also is an anthropologist of some acclaim. He has been working in New Guinea for a very long time. The story he tells about two villages, I think, is very important.

Along a river in New Guinea in the Highlands, there are two villages around two, three miles apart. In village 1, every child nine months old or older can swim. He's not taught to swim; he swims naturally. He goes out and plays at the riverside, falls in the water, and paddles back to shore. In village 2, no child the age of four or five can swim. In fact, they have to be taught to swim at a much later age, and it's a very serious teaching. When you look at the two villages, the impression that you have is of two distinct populations, one with an innate ability to swim and the other without that innate ability.

The trouble is that village 2 and village 1 interchange their women. The children from village 1, when they are dissatisfied, go to village 2. As near as anybody can tell from populations, the two villages are more or less uniform; yet, all the children in village 1 can swim from the age of nine months and none of the children in village 2.

It took our friend, Geideshek, probably two years to discover what was the secret. In village 1 the women have a village habit, as they are working along, doing whatever it is that they are doing, of dropping the shoulder on which they carry the child. If any of you have ever played with children and suddenly dropped a few inches the kid, you'll notice he brings his hands up and holds his breath. The kid learns to hold his breath, but without being startled, and the consequences of learning to hold your breath without going into panic is that you can swim. In village 2, there is not this habit among the women. It is not obvious that the habit of the mother relates to what it is that the child can do but, in the end, it makes a very clear distinction in populations.

Now, ask yourself what is it that a child goes through in our contemporary society in the several months up to the first year - and it goes through a helluva lot. It goes through a great deal, namely, the society as mirrored in the parents and this is a non-verbal conditioning of a major sort. The society is mirrored in a number of ways and the attitude of society. The kid is molded or sculptured to a particular form by the social forces around it.

This occurs even as early as one, two months of age. At one or two months of age you can already begin to see profoundly disturbed children, that is, children who have been, through improper treatment, guaranteed a future that is also going to be sad for them. I have no idea how far back this goes, but every time anyone brings up that nature, or genes, direct of certain particular consequence because of a certain uniformity of results, or statistics, or vague correlations, what springs to mind is this very sharp picture that I've given you of the two villages in New Guinea, and I find with that sort of an image, I don't see how any man can commit himself to a genetic view of intelligence. We simply do not have enough data.

May I give you one last point. It's well known among baby rats, you know (that is, among people who deal with baby rats) that if you pick up a baby rat, new born, for ten seconds away from the mother, that particular one grows up stunted in intellectual development, cannot learn to run mazes, or anything else. It's a very interesting thing - that ten second experience is determinative of its life, and at this point when you see that occuring in rats - mammals, you know, our brother animals - you ask yourself, well, where do these scientists get the chutspah - to use an old Anglo-Saxon word [Laughter.] - to issue the dicta that they do?

LARRY NIVEN:

Another word for chutspah is hubris, the kind of pride that causes one to challenge the gods themselves.

Dr. Lettvin says that we don't have enough data. I agree. Let's get more data.

DR. JEROME LETTVIN:

I did not say we don't have enough data. I said any data that you get; no matter how you get it, is suspect.

LARRY NIVEN:

The more you get the less suspect it is.

DR. JEROME LETTVIN:

No sir! Look at ESP, for example, and the amount of data collected on it. There's a very interesting thing about data collection, and that is that the law of large numbers eventually takes over. What happens is this, you know, as you run more and more and more experiments, you correlate out more and more what is in common between the experiments, and what could be more in common than the intentions of the experimenters? Has that ever occurred to you? So you see the business of collection of huge amounts of data must first be predicted upon an argument that is sensible. Just collecting data by itself is crap. First you've got to have an idea. Then you've gotta have a notion of how to judge the data. Just collecting huge amounts of data means nothing.

QUESTION: [Inaudible.]

DR. ISAAC ASIMOV:

The question is: does natural selection still work now as it did millions of years ago? Are we not interfering by means of our medical techniques and so on? Well, natural selection is the result of the environmental influence upon individuals - how they fit the environment. Well, the most important aspect of the environment to modern man is human society. So it's becoming another aspect of natural selection. It isn't the old kind of natural selection because the environment has changed, but it's still a natural selection. Jerry, do you have something to say?

DR. JEROME LETTVIN:

You said just what I was going to say.

DR. ISAAC ASIMOV:

I apologize.

DR. JEROME LETTVIN:

You know, it was delightful to hear it from you.

DR. ISAAC ASIMOV:

That's because I speak with a better accent.

QUESTION: [Inaudible.]

DR. JEROME LETTVIN:

This whole story about adoption, in which, very frequently, you'll get some social scientist, excuse the expression, or another telling you that, yes, you can see more of a relationship between the adopted child's intelligence and the real parents' than the adopted child's intelligence and the natural parents', you run into a very funny problem. Now you see, the trouble is this: the questions that really rise up take an awful lot of time to answer and I hate taking up your time, but let me mention a few things that are very important.

The girl in back there spoke of a critical time in a dog for learning to be socialized. Recently there's been a conference at the Museum of Natural History on critical times. It turns out that for every animal there are critical times for A, B, C, D, and so forth. For example, if a kitten has blinkers put on it, you know, actual patches over its eyes, between the 21st and the 31st day after birth, it gets permanently blind. In spite of the fact that all of the apparatus, you know, looks as if it should work, the nerve cells are still there and so forth, the animal is permanently blind. Similarly, there seems to be critical times for other affairs.

Now what happens in a culture like this is that you find the assumption that there is a uniform critical time for A, B, C, D. A child that is adopted by a pair of parents who may have a different tempo, or a different critical kind of period, or in a society where it is a different critical period, may in fact show an enhancement of bad features, bad symptoms, simply by having the periodicity not arranged properly.

Those people who look, for example, at literacy among the Indians, are now astonished by the enormous illiteracy of tribes whose literacy was tremendously great as near as 50 years ago. It turns out that the institution of our method of schooling among the Indians has, in fact, insured a tremendous amount of dylexia, inability to read, and things of this sort. Nobody has investigated, what is the tempo, what is the natural tempo of one kind of child over another, what are the critical periods for one kind of child over another - and in this lack of investigation on the assumption of a kind of general uniformity, we create trouble. I cannot understand or believe most of the things that are told to me about adopted children as indicating a kind of genetic constitution that either inclines them to low intelligence, to high intelligence, or whatever. It strikes me that this is all balderdash in the light of the business that we do not know what are the critical events, what are the critical times, what are the critical histories; what are the critical manipulations, in the life of a child from one kind of group to another, from one kind of race to another.

QUESTION: [Inaudible.]

DR. ISAAC ASIMOV:

It's not easy to compare the push to cure cancer with the push to reach the moon. The problem of reaching the moon was entirely an engineering problem; the scientific aspect of reaching the moon was solved in the 1680's by Isaac Newton. We've known where we were for 300 years; it was just a matter of adding engineering details, which you can buy with money. Unfortunately, the problem of cancer is still in the science stage - we still don't know enough about it scientifically. And this is an uncertain sort of thing that can't be surely bought with money. What do you think, Jerry?

DR. JEROME LETTVIN:

I agree with you.

DR. ISAAC ASIMOV:

Again! Oh, I'm in bad luck today. How about you, Larry?

LARRY NIVEN:

And once the government had a cancer cure and control of the cancer cure, there would be another problem. You see, governments have always had the power of death over their subjects; the governments which have had the most power are those that have the power of life and death. (i.e. in most cases they controlled the water supply.) An American government that had an option of who to give a cancer cure to would have the power of life and death, and it might get quite restrictive.

QUESTION: [Inaudible.]

LARRY NIVEN:

Right, the Salk vaccine didn't cause any restriction problem. A cancer cure probably wouldn't either.

JOE ROSS: [How do you prevent the government from going too far with genetic engineering?]

DR. ISAAC ASIMOV:

Well, what we're saying here is that if we start interfering with smallpox by means of vaccination, then we start interfering with the common cold, then we start interfering with just dyslexia, then we start interfering with all sorts of other things, where do we not start? Do we not start anywhere for fear it'll get out of hand? Do we not start anything because you can go from there to something worse? Is there no way of deciding that we'll do something in moderation? Does everything tend to extremes?... Jerry says yes ... Larry says no. I say who knows? [Laughter.]

LARRY NIVEN:

I say start anything you please and let anyone else start anything he pleases, but be ready. The answer to Joe Ross's question is to stop the government before they start breeding for strong minds. And just before, got it?

DR. JEROME LETTVIN:

There is yet another answer, and that is: if you engage in science, don't publish. [Laughter and applause.]

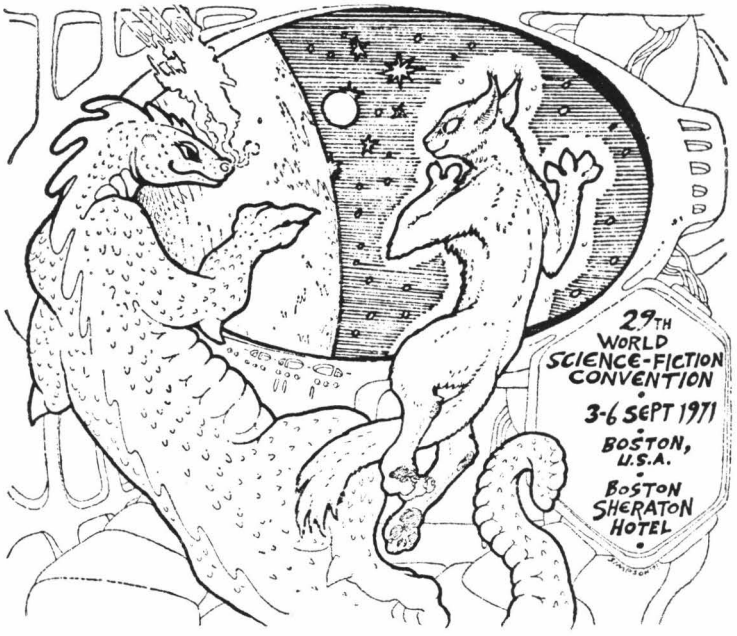
LARRY NIVEN:

Oddly enough, that solution was the alchemists' solution. How well that worked out, you can judge for yourselves, but some of what they said does seem to make sense. Don't give your secrets to princes for they will use it for power.

DR. ISAAC ASIMOV:

Well, ladies and gentlemen, you have been most patient for a discussion which was sometimes in jest, but for the most part was satisfactorily serious, and seems to have been received as such. I thank you. [Applause.]

SF: The Writing on the Wall ~ Prophecy or Graffiti?



Science Fiction Critics and Reviewers

Panel with Lester del Rey, Dr. Richard Peck, Terry Carr, and Charlie Brown

TONY LEWIS:

I'd like to start this panel on science fiction critics and reviewers by introducing the gentlemen up here. Starting over on the extreme right, we have Dr. Richard Peck, who is a professional science fiction writer and also a Professor of English at Temple University. Sitting next to him is Terry Carr, well-known science fiction writer, anthologist, and editor of the Universe series, a series of original science fiction anthologies, which, starting with Universe 3, will be brought out by Random House in hard cover, and paperbacks will follow. Passing on from him, we have Charlie Brown, fannish electrical engineer and publisher of Locus, fandom's largest, and perhaps most influential, newszine; and to his left--this is Lester del Rey, well-known raconteur, dirty old man...

LESTER DEL REY:

Authority!

TONY LEWIS:

Authority, sorry...science fiction writer, editor and what-have-you and whatever you want. I suppose since we would like to have a bit of controversy, the natural person to start off with would be Lester del Rey. [Laughter.] I'll leave you because I have nothing to say here.

LESTER DEL REY:

Well, we just ended this panel, as a matter of fact. I hate to tell you this, but when we found out what the subject was, I made the statement that there are no critics, there is no criticism of science fiction at the present time, and most book reviewers are hardly worth reading, so why bother? So we sort of agreed that there wasn't anything more to say on that and Good Night!

[Laughter and applause.]

No, actually, I don't know what the heck anybody else is going to say on this subject, but what I'm interested in is less what we do in reviewing than what we get to review. Let me define criticism first, as opposed to book reviewing. A book review is meant to give you some clue as to whether you want the book or not - whether you want to buy it. A criticism is no darn good to you until you've already read the book. It is supposed to examine the book, suggest new ways of looking at the book, lead you into a more complete realization of what went on with the book, examine general honesty, depth, scope, everything else, of the book, and you won't know what's going on unless you've read it.

There have been some excellent criticisms in the past, of almost everything except science fiction, and, frankly, I have seen so little even adequate criticism of science fiction that I just tend to dismiss it. Most people who think they're doing criticism aren't doing criticism, they're doing, perhaps, a glorified book review. So I don't see much point in talking about that, although I wish to God there were some decent criticism; I wish there were somebody who was qualified. I'd like to see a C. S. Lewis really examining science fiction as he has examined the allegories, as he's examined literature in general (as in "Experiment in Criticism"), and so on. But we won't have any chance of that, unfortunately. I'll leave it to somebody else to start, if they want to argue with me.

DR. RICHARD PECK:

In the last month I had to come to a kind of distinction in my own mind between criticism and reviewing. It may not agree with Lester's but it got forced on me because I was handed a collection of Miriam Allen de Ford's short stories to review for the Temple Alumni Review. (This is kind of a tangled story, so hang on for just a second.) Miss de Ford graduated from Temple in 1911, has been around a while, and has written a lot of science fiction and a lot of mysteries. A new collection came out of Walker called Elsewhere, Elsehow, Elsewhen, a collection of some 16 stories, and I was asked to review it. There are about five or six constituencies or audiences involved here. Temple probably expected a laudatory

review; she's an alumna, and I don't have any business picking on somebody with her age and experience anyway. And if I were to criticise the book in general - criticise, that is to knock it - then those colleagues of mine who also teach English and know that all SF is junk would say, "Aha, you had to admit it yourself!" So somehow I had to give it a plus notice, given the place where it appeared. (And that's a funny kind of distinction on reviews. Reviews that appear in fanzines, for example, have a little more barb to them - maybe not enough thoughtfulness, but a little more sting - than the ones in the popular press.) I read the stories, and, individually, each one of them is fun; each one of them is the O. Henry story that has a snap ending; in some of them, you can see the ending coming by about the second or third line. They're still entertaining, but in a batch it got pretty gray to go from one to another of the same thing, and I got out of the whole dilemma by being only a reviewer and not a critic. It's a distinction I drew for myself.

As Lester says, a reviewer tells you what's here and that ought to be enough. If you like what's here, you can go ahead and pick it up. The critic's job, more often, is to tell how it's done and, finally, whether it was worth doing. I'd agree about the absence of many good critics of science fiction. You can count them on the fingers of one hand and have a couple of fingers left for scratching. Most of the good critics of science fiction, it seems to me, are themselves professional SF writers and that's almost a requirement I'd put up if I had to define the good critic. I think he ought not to criticise something he hasn't at least tried to do.

There's a 19th century French novelist - and Lester can probably give me the name, I've forgotten it now - who said that critics are like eunuchs in a harem. They see the trick done all the time and they're bitter because they can't do it themselves. And that's what tends to infect too much of the worst criticism. You get people who have never tried to sweat out a book sitting down and glibly, in one sentence, dismissing someone else's work as trash, when I think the very effort deserves enough respect for the critic to pay some attention to how it's been done.

Part of the distinction involves a matter of time. The reviewer has to have it by Tuesday and a critic can take his own time with it, but he ought to be a little more thoughtful, he ought to have had some experience in trying to work through this particular genre himself - of trying to write it; he ought to give the author the respect that the effort behind it is due, and then he ought to hit him with both feet <u>if</u> the man has not lived up to what he seems capable of doing.

Any critic you know, whose work you respect, you respect because he has defined the ground rules early on in the whole situation. You knew, for example, what Atheling [William Atheling, Jr., a pseudonym used by James Blish for some of his critical works] was going to do to a certain kind of story. He defined it pretty early in his series of reviews and in the later collection of them. You know pretty well what Damon Knight will say about a given story. Even Joanna Russ, who has reviewed for a shorter length of time, has implied a series of standards that she's using. If you know the critic, you know whether or not you can trust the kind of judgements he makes.

I tried making a distinction between the reviewer who tells you only 'what' and the critic who tells you 'how' it's done. There are lots of stories that are only 'reviewer' stories. That is, once you know the plot, it's the end of it. You don't care how it was done - or maybe whether it was done - and there are stories that are more fruitful for criticism. A little game that I played with myself, and argued about with my wife before we came up here, was to try to distinguish the magazines from one another as to whether they publish 'reviewer' stories or 'critic' stories, and I think that Analog for several years has been publishing primarily 'reviewer' stories. When the 'what' is exhausted, the 'how' hasn't seemed to be so important. Terry [Carr] and Damon Knight tend to publish in their anthologies, it seems to me, more 'critic' stories than 'reviewer' stories. Ted White is nearer 'critic' than 'reviewer'. Ejler Jakobsson has been about in the middle of that scale, probably because he had so many magazines he was doing at once, he didn't have quite so much time to spend with them, and he had to balance what he was doing. Those are some of my personal distinctions that you ought to want to argue with. I've talked too long already; let somebody else argue with this.

TERRY CARR:

I have a basic predilection, I suppose, towards the area of creativity, towards the area of doing things rather than talking about them. Which is gripe number one that I would make about critics or reviewers or whatever, particularly those who haven't, as you say, actually written things themselves. I heard recently of a pretty well-known fan critic/reviewer who's been reviewing, I think, for about two or three years in fan magazines and isn't bad - he's pretty good, as critics go. He recently sold his first story. He's having a lot of trouble selling his second; he's discovered it's much, much harder to write fiction than it is to criticise it. This is because if you are a reviewer, all you have to say, as Dick says, is what goes on, what the plot is. It's very easy to recite what somebody else has already done. But when you begin to make it up from whole cloth yourself, it's an entirely different matter. You begin to wonder how those parts that you've labeled already fit together, how the junctures stick together, how you keep it from falling apart, how you make the ending come to the point that it should come to...things like that.

This is not a gripe against critics or against reviewers; it's a gripe against science fiction writers. How's that? Because I think we all don't really want to talk about critics or reviewers, so let's talk about science fiction writers in connection with reviewing and criticism. Dick just mentioned something about the various editors who publish this kind of story or that kind of story - whether it's aimed at the critic or at the reviewer. That's an ex post facto judgement; you know that.

DR. RICHARD PECK:

What I was trying to say was that the stories in Universe 1 or in the Orbit series would draw more attention, more respect, and more willingness by a critic to put in the effort than those that appear in some other magazine, which you can review and forget. And whether it came out that way or not, it was half a compliment for two or three of the series that I like very much, and, without naming them, criticism of a couple of the magazines I'm not so fond of.

TERRY CARR:

Yes, I would agree. Where I was going with these remarks, though, was the effect of the critic in science fiction. I think immediately of the god-awful effect during the 60's of Judy Merril, who was the regular critic for Fantasy and Science Fiction, who had very strong preferences in what she wanted to see done in the field. She had very strong ideas about what she thought the field should be and she pushed that very, very hard as a kind of hobby-horse. That's okay; this is the role of the critic; it's one role of the critic anyway, and it's a fair role - I won't complain about Judy. I will complain about the people who read her reviews, or her criticisms, whichever they were, and then went out to try to write something so that they could get a good review from Judy Merril. I think this is a dreadful kind of reaction to something.

I think right now that we're facing something that's much worse than Judith Merril ever dreamed of being; we're facing an influx of academics into science fiction. We have the Secondary Universe Conference, and we have Extrapolation, which is the English departments' fanzine, and we have a whole bunch of people who, as I understand it, are simply people who don't have anything else to write papers about anymore. Everything in the world has been covered. I mean, if you ask anybody who has taken his degree in English in the past 20 years what he wrote his thesis on, he'll tell you something like - what was it Roger Zelazny wrote his on? - some minor poet of the 16th century, and that was one of the better subjects, I think. They usually get down to very, very minor nitpicky subjects.

But now, somehow, science fiction has been let in the door, the critical door. It's now open to review, to criticism by the academics, and, yes, this is good, we can use it. We'll get some fresh viewpoints; we'll get some viewpoints from people who aren't jaded, who come to things fresh. We'll also, hopefully, get some people who are intelligent enough to review this field, possibly even somebody like C. S. Lewis eventually. But in the meantime, we have terribly, terribly scholarly articles coming out, and I'm frightened to death of the scholarly stories that we may be getting in another two or three years. I think this is a bad thing; I think that, ideally, any writer who's worth his salt shouldn't read the reviews at all. However, you'll find very few who have that much strength.

LESTER DEL REY:

Terry, it's amazing to me how much alike we think on how many different things that we were sure we'd disagree on. [Laughter.]

CHARLIE BROWN:

Well, I want to get back to the original question of... I guess there was an original question of critics and reviewers. I agree with most of you that there's very little good criticism and very little good reviewing, but let's talk about what reviews should have and what criticisms should have. I don't think that the writers make the best reviewers or critics; I think, in many cases, they're too close to what they're writing about. I've noticed that when I try to write some book reviews, my views are colored by what I know about the author, by what he's told me about the book, and things like this. An ideal reviewer should not know any writers, should not attend conventions, because it colors his view, and really, the thing you want to talk about is the actual book. It doesn't matter what the writer was trying to say, it's what he says that counts, and one of the logical things that comes out of this is that a writer should never write back to a critic and say, "Gee, you didn't see what I was talking about here, it's something else." Because in most cases it's the writer's fault for not making it clear; it's not really the reviewer's fault at all. So I think the ideal reviewer is somebody who has very little connection with the science fiction field on a personal level. But unfortunately, there isn't anybody who really does that and can do it well. So we've got this other side of the problem.

I'll make a flat statement and then try to deny it or something. No review should be longer than 7 or 8 lines long - anything else is wasted. The main purpose of a review is just to tell you a little something about the book, just to give you an idea whether you want to go out and buy it or not. In other words, a review is for an audience that has not read the book. Ideally, if you have a person whose tastes you know completely, he could just say, "Yeah, buy this one" or "Don't buy this one." This would be a perfect review as long as you knew the reviewer well. So this

gives you a dichotomy between what I think a reviewer should be: on the one hand, he doesn't know anybody, and, on the other hand, you know him very well. Now if somebody wants to write to everybody in a vacuum like this, fine, but I really can't see how it can be done. So the conclusion is, of course, that there aren't any good reviewers.

DR. RICHARD PECK:

There's a funny kind of left-handed review, or half-hearted, or half-headed, or half... (fill in the blank), that shows up in the magazines in the letters column. For people who have been writing longer than I have and are used to this and have thicker skin, it's okay; but to have somebody write in, and in one line discuss you like cold meat on a butcher's shelf, and toss it off very flippantly where it's published for everybody else to see, it's as if everybody is a reviewer of everything that's been published in the magazines. It's the only field I know of where individual short stories are "reviewed" by fans, by people who write letters in to say "Yes, that was good; that was awful", and that's the end of it. With never any reasons given or anything but personal opinion.

CHARLIE BROWN:

What's wrong with personal opinion? I think that's really what counts in this case.

LESTER DEL REY:

This is what, in the long run, every single review certainly does; it takes a personal opinion. The only reason I'll disagree with you, Charlie, on the length of a review is because I think it is very often necessary to have a longer review so that the reader can see which of your biases you're using in judging the story at that time. For instance, if I write a review of a book on Gor - Norman's Gor series - I've got to let the readers know that, in the first place, I'm predisposed towards this kind of junk, and why. [Laughter.] Yeah, it's true - I am!

CHARLIE BROWN:

You mean you can't do that in eight lines, Lester?

LESTER DEL REY:

Yes, Charlie, I can do it in eight lines, and nobody would read my reviews if I did because they'd be so damn dull. A review must necessarily be interesting enough for people to read, as well as everything else. You can boil it down, but you have to throw it around enough so that at least it doesn't evoke: "Oh God, I've seen exactly these words before on a book and I paid no attention to them." You have to seem to get a little bit of interest in you. That's something book reviewers have to do which good critics do automatically. But most critics do not do it at all because they assume that people are automatically interested in reading about the subject, not realizing that there isn't anything in the world that people are automatically interested in reading unless they're forced to read it by teachers. [Laughter.]

CHARLIE BROWN:

One thing about book reviews being dull: I find the hardest thing to write is an interesting review on a book that I liked. It's so easy to knock something and so difficult to say anything but "Yeah, gee, this worked great, and that's fine, you should really go do something about it and read it."

LESTER DEL REY:

And a book reviewer must <u>not</u> tell what is done. That's the first rule that a good book reviewer must always follow. He must never tell what is done. He must only tell how it is done. Because if he tells <u>what</u> is done, he has given away the story, he has robbed the reader of a lot of the pleasure in it. The ending, all the basic points of the story, must <u>not</u> be revealed, so you must do a fairly cautious job in reviewing; you've got to indicate why the story goes off. Oh, if it's an absolutely atrocious story that you can feel quite sure that most readers will not like, you've got a little more margin, because there's no point in their buying that anyway. But particularly in a story which is good, or almost good, you have to be damn careful not to say exactly what happens - not what happens to any character. These things are all unfair to the reader if he buys the book and then says, "Oh, I already know about that". If the book publisher wants to do it on the dust-jacket, that's his problem. But you still have certain obligations as a reviewer. You've got to let the reader know whether he wants it or not, but you mustn't tell him what it is all about - not exactly.

TERRY CARR:

I think it's incorrect, the thing Charlie said just recently, about reviews being much more easy to write and more interesting to read if you don't like the book. I think that's not necessarily 100 percent wrong, but I think it's enough wrong that I want to argue with it. I think there's a great tendency that people have, if they think of themselves as reviewers or critics or experts, to want to lash out and to tear books apart. I've done it once or twice myself and believe me, it's a ball. But the kind of thing that you do when you rip a book to shreds can be done exactly the same way and exactly as well for a book that you like very much. For instance, if you're ripping a book to shreds, you'll say something like: "This man couldn't write his way out of a paper bag. For instance, take <u>this</u> paragraph" and you quote the man and let him hang himself.

You can do it just as well if you like it. You can do the same thing as people have done, for instance, with Roger Zelazny. You say "Roger Zelazny works word magic", and you quote a paragraph of Roger Zelazny and this will get your point across. Also, instead of telling where a book falls apart - where it goes to hell- why it doesn't work, you can analyze why it does work. You can analyze the forces that are playing against each other in the story, the forces that are moving toward the end, the aspects, say, of the main character that make him appealing as a character. This doesn't give away the ending, it doesn't give anything away except what's good about the book and what's appealing about it. I think you can do a review like this, and that there should be more reviewing like this, instead of people who really just vent their spleen.

LESTER DEL REY:

You know, you can do a trick if you like a book sometimes, which is rather useful. I had a chance to do it with Anne McCaffrey's Dragonquest as opposed to her first one, which I didn't like nearly as well [Dragonflight]. What you can do is to find out the faults of the first one, setting it up that this one does not have those faults, it's taken care of those things, and so on, and that lets you make a comparison. You're actually saying, "This book that you people love so much isn't very good and this one's good," which, in other words, says "This one's a hell of a lot better," and that's a perfectly fair way of making a comparison.

DR. RICHARD PECK:

Even a competent reviewer, not just a good one, has to know the field. When you talk about reviewing one of Anne McCaffrey's books against another one - I see reviews that mention books as if they were the first ever published, without taking into account other things by the author, other things that are so similar that it's embarrassing. A man has to know the field before he can make pronouncements that anybody else ought to respect about individual books.

TERRY CARR:

Yes, I think that's true even though I do think that each book should be reviewed in a vacuum; I feel very much two ways about this. Joanna Russ did a review several years ago, I think it was possibly her first review for F&SF, and she reviewed a novel by Jim Blish, the title of which I forget - it was published by Lancer Books [The Warriors of Day], and she panned it very badly and very painfully because she's a great fan of Jim Blish's writing and she said, "What is Jim writing stuff like this for, anyway?" Well, she missed looking on page 4 of the book which said "Copyright 1952" or something like that by Love Romances Publishing Corp. I talked with Jim about that and he told me it was a novel that he had written over a weekend because somebody had a terrible hole in Two Complete Science Adventure Books. It was the first novel he had ever written, and he did it by dictating it onto a tape recorder and having it transcribed out, and just, you know, drinking a lot of coffee and talking a lot into your tape recorder - and there's the book, and twenty years later when you're a well-known writer, it gets reviewed... [Laughter.] And it was painful even to the reviewer.

You really should know what is going on when you review a book. For instance, I was rereading some early Ray Bradbury stories - I could review those in vacuo and leave them in vacuo. But, on the other hand, if I've read the later Ray Bradbury stories, as I have, I can give a much more substantial review of those stories. I can say: "This is an example of where he was going, here's an example of it already in 1942, in this otherwise dreadful story, but notice this particular phrase", or "He seems to be interested in this particular theme here; this is interesting." The same sort of thing goes with Phil Dick's stories, his early short stories. Almost all of them are what we might call, I suppose, hack science fiction. He was making a living as a science fiction writer in the early 50's writing tons of short stories - tons of them. (I don't know why he didn't take a pen name.) And he learned a lot about the craft; he got very smooth at it. But if you read them today, they're not particularly good stories, just as most stories from that period or any other period are not particularly good stories. Still, to go through there and see all of a sudden ZAP, there's a simulacrum - first time he used it - and then to follow that a little bit and see a reference to the I Ching - that stuff becomes interesting.

DR. RICHARD PECK:

Agreed. Personal project. I just backed up because of Silverberg's Tower of Glass and collected about three feet of Silverberg - on the shelf - and I've been rereading and finding early hints and ideas that he had...

TERRY CARR:

There's about six feet of Silverberg around here somewhere.

DR. RICHARD PECK:

I know, I know, but I picked up early short stories and some of the earlier novels and have been going back through them (including some that I had missed before) and it's fun to find ideas that finally get developed after he's got even better hold of his craft and can do even more than he might have years ago. It's interesting to see those things shaping early and finally getting developed only recently.

CHARLIE BROWN:

Well yes, that's nice, but on reviews, don't you really have to gauge your reviews to your audience? You're talking about reviewing the stories by knowing everything else the author has written and comparing some of it. That's fine for an audience that reads a lot of the stuff, but what if you're doing a general review? Let's say if you were asked to do reviews for The New York Times; how would you gauge your reviews when you realize you are writing to an audience which knows very little about science fiction? You can't tell them "Well this one is not as good as some of the author's other books", because you've got to review just that book you have in front of you.

DR. RICHARD PECK:

Yes, you do have to review just the book you have in front of you, but I think it is fair, particularly in the case of Phil Dick or Ray Bradbury. What if you get a book such as - what is Bradbury's latest book? - I Sing the Body Electric, which has a few of his earlier stories in it which aren't among his better stories? If I were reviewing that for the Times or whatever, for a non-science-fiction audience, I think I would point out that these are early stories, that they are not among the best of Bradbury's stories, and that we are now getting down to scraping the barrel a little bit. I'd probably end up recommending a different Bradbury book.

LESTER DEL REY:

Every reviewer, I think, is trying to do two things - every conscientious reviewer. One of the things he's trying to do is to teach his audience a little bit about reviewing books, in a sense. In other words, teach the audience a little bit about understanding books, looking for what's good and what's bad. He necessarily has to do that just in establishing his own criteria for reviewing. He has to teach them something about that, and if a book reviewer's worth a damn he knows a lot more about reading and understanding stories than the average reader does. Otherwise he shouldn't be in that position. So he's going to be trying to teach a little bit. But if you go on to a general purpose magazine then you're going to have to teach a lot about science fiction in your review. You're going to have to teach a hell of a lot about it; you're going to have to let the people know what the basic idea behind this story is. In other words, you're going to have to let them realize things that we take for granted.

Once you've set up a future society it must be consistent; they don't know that because most of the stories that they have read and have thought they liked in science fiction have been hopelessly inconsistent. Then you have to know a best seller list and look at all the things that were vaguely fantasy, vaguely science fiction on that, like the stupidities of The Andromeda Strain, the true and the false magic of Rosemary's Baby, and so on. You have to know all those things and be ready to kick your average reader in the head a little bit with the fact that he doesn't know, so that when he does read a book he can follow it.

This makes general reviewing tough and, of course, the average reviewer in The New York Times is usually a man who has just had his own book published and he thinks this one is somewhat the same because, after all, both have the word T-H-E in the title. And he probably is teaching - with one hand he's teaching philosophy and with another hand he's teaching creative writing and, since he read Jules Verne when he was a child, he's now teaching science fiction courses in the school. Therefore he's eminently qualified, and besides which, he doesn't know what the average reader reads anyway because one of his big points is that he's never read a best seller in his entire life. So he's eminently qualified to write a book review and does, just according to that standard. It's garbage. It's untrue to science fiction, untrue to literature, untrue to his readers, and untrue even to himself if he'd relax. You get those horrible reviews; I don't know what the hell we can do about it. Maybe we'd better go around and start educating publishers; but that's hopeless, as you know, Terry.

TERRY CARR:

I've educated some publishers here and there; they just weren't the right ones. I'd like to change the subject a little bit, Lester, and ask a question of you to see if what I think is true. When you edit things, if you're asking for a rewrite on a story, it seems to me that the level of critical ability that you have to bring to that story has to be awfully high. In the first place, you have to get into what the writer is trying to do. Then you have to convince him that you know what he's trying to do. Then you have to convince him that you know something better for him to do. Then you have to convince him he can do it - and get all of that into a letter to a writer who is very close to his craft. So that, I think, is a much more demanding kind of criticism which is very rarely seen by the general reader.

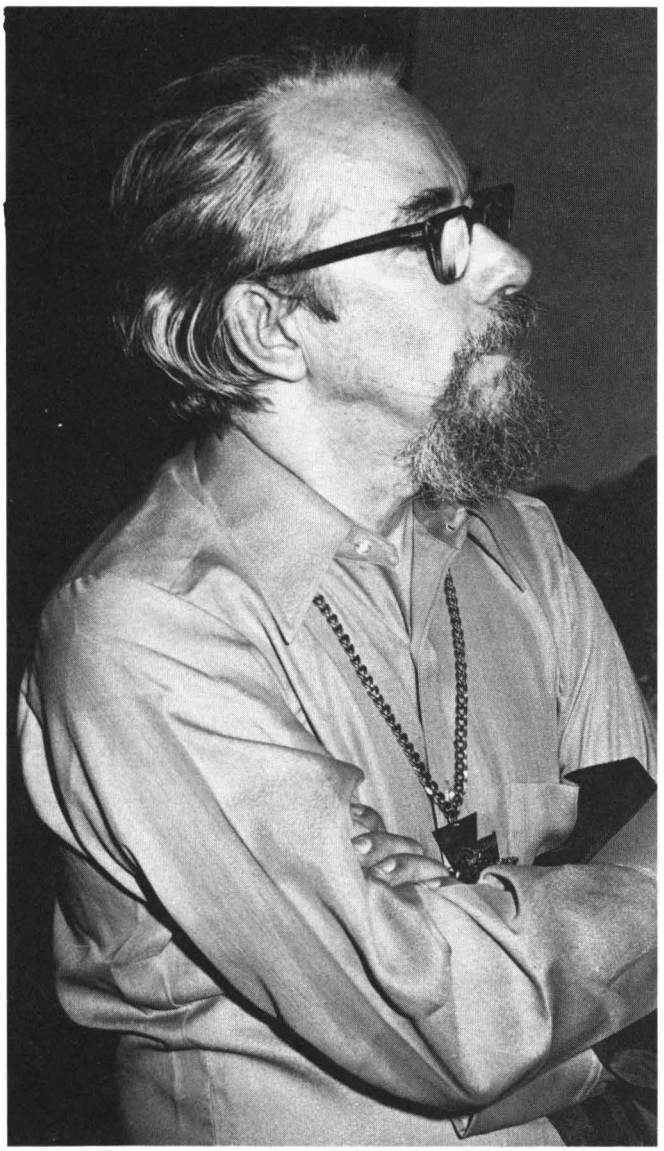
LESTER DEL REY:

It is extremely tough, and there's a strange thing: a great many of the younger writers today will refuse, no matter what you do. They have somewhere picked up the idea that art is whatever they have put down on paper and not one word must be changed. This would come as a surprise to Will Shakespeare and a few others. But the older writers have a tendency to accept too damn much of what you say. They should have a little more independence than that. I wish we could fix it so that the younger writers would recognize that they aren't always perfect and that they do need changing - therefore, examine very

carefully what they're asked to do and make sure, first, that it isn't right before they reject it - whereas the older writers should say to themselves "You know, the editor may be right, but I may have been right too." There's too much of an acceptance. I've seen, well, I've done it myself.

I got a letter from John Campbell in the old days with a suggestion for an ending. Now what John was telling me was that my own ending was lousy, and it may very well have been true, or it may not - I don't know. (In one case I don't think it was and in a lot of cases he was right.) But it was only a suggestion. Yet in one disastrous story I simply incorporated his suggestion instead of stopping and taking a good look and saying, "No, that wasn't what I meant at all and it's dead wrong." That was a mistake.

Lester del Rey.
(Photo by James R. Saklad)



On the other hand, I have refused to change a story simply because I wasn't smart enough to see what the editor was saying to me. In one case in particular that was true. Unfortunately, he couldn't make himself plain; he could not have told me that a mouse had four legs if he had to. (Well, eventually he wasn't an editor, probably because he couldn't communicate with writers.) But, nevertheless, when I finally figured out years later what he'd meant, I wished I'd redone the story that way.

I've made both mistakes and I'm sure that most writers will, eventually. But you know, the perfect editor there ain't, any more than a perfect writer. I suppose that a perfect editor would be the supreme critic, the most marvelous teacher in the world, and an extraordinary book reviewer in advance, a writer who could adapt his way of thinking and his way of writing to every writer who comes up to him and all the other things. Well, that's a little tough to do, and you just do the best you can.

CHARLIE BROWN:

One thing about writers that's always interested me: the way they react to reviews. Boy, do they react!

TERRY CARR:

Some of them don't, Charlie, but you don't hear that.

CHARLIE BROWN:

Some of them don't because they've learned a little better, I think. Everybody reacts to them, but the writer who starts writing long letters to reviewers and correcting them is very wrong, I think.

LESTER DEL REY:

Very much so. He's a fool because he's assuring himself that he's going to get bad reviews in the future, to begin with. A writer's attitude towards reviews should be very, very simple. In the first place, everybody has a right to review his thing and say almost any stupid fool thing - except a lie - that he wants to. If he said that the man said Mars is inside the orbit of Earth and the man actually said it was outside the orbit of Earth, that's a lie and he has the right to object to that. But opinions, no. A critic's entitled to those, because as far as I'm concerned, when I finish a story it is exactly the same as if I had made a pair of shoes. I am putting it on the market. A great many people will buy it. They have a right to determine for themselves whether it's comfortable, whether they like the style, whether it fits, and all the rest of it. They've paid their money for it; they're certainly entitled to their opinions. On the other hand, I don't have to pay any attention to their opinion because I may have decided that I made the shoes the way I wanted to. Their opinion doesn't necessarily mean a damn thing to me.

I will read a review; if it's a flattering review I'm not interested in it, for a damn good reason. The worst thing that writers can do is to read flattering reviews because a flattering review says: "John Dokes does such and such very well", and pretty soon you will do exactly what A. E. van Vogt did. You will start doing that same cheap trick over and over and over and over because a few people told you how well you did it. Okay, you did it well. You don't have to do it well all the time; you've done it well. But, if you insist upon making that, "Oh, I am the greatest thingbobber in the world", and thingbobbing in every story, 800 words each scene of the story instead of 900 sometime or 700 another; if you insist upon accepting flattering reviews, you're apt to get yourself in some bad binds.

On the other hand, when I read a bad review I want to see only one thing in it. I don't give a damn about the review writer's opinion, that's of no importance to me - not even when he was Tony Boucher, who generally was one of the reviewers I respected most. All I want to know is, is there any point in there where he picks on something and says that this specifically was true. For I can at least sit for a moment or so and think about it, because I have learned some things from people who said bad things about me; I've never learned a thing from anybody who said good things. I like good reviews. Don't get me wrong. I'm very pleased with them. I love them! I don't intend to read 'em. I don't have to read them; I'll glance at them. One of my juvenile publishers always sends me reviews. It's interesting to notice that nine out of ten favorable reviews are simply copies of the dust jacket anyway; but, there is the other occasional one. I'll glance at 'em, but they're really of no importance.

And a bad review - well, I got a bad review once, where the guy said: "It's darn funny that del Rey, in doing some ten books for teenagers and so on, with all kinds of people under all kinds of conditions, never even had one of them mention the word God. Now you get any random sampling of people under all these stresses and so on and somebody is going to be religious and at least make a cliche appeal to his God." He was dead right. I hadn't thought it out myself. So I thought it over the next time. The next time I sat there and I thought about it and there were a couple of times in there when not just God, but other things that come from standard background experiences - the fact that people are random - needed to be in those books and I had been leaving them out. That was a useful criticism; that was a bad review, and a good one.

If a man says, however, "Del Rey's characters are wooden", I don't care about that; that doesn't interest me. If they are wooden I don't know it and I can't do anything about it - and maybe it's his head that's wooden. But that's of no importance. That's his opinion against my opinion. But when he states a fact, then I'll read it; that's the only thing I can think of that a writer should read for. That is criticism that might be true. Unfortunately, Terry was dead right. Most writers today are writing for reviews and, of course, the men who do the reviews - even I, even the reviewers in the field - are not their audience. In the first place, we get their books free and they aren't making anything from satisfying us. In the second place, we read so darn many books that we're not in the position of the average first reader at all. However much we try, we're not comparing one adventure story to another; we're comparing one to a hundred others. That makes a difference, no matter what we do. Academic criticism? That's sure as hell ain't our audience because if we have to satisfy them to write, then we won't be writing science fiction. Then we will be right back competing in the same old field and a lot of the boys who are writing for their criticisms would be darned unhappy if they didn't have the easy magazines to sell to - the science fiction magazines. (That's what they think they are.)

CHARLIE BROWN:

I'd like to make a point here. I went from a reader to a reviewer in a short space of time. I continued reading all I could get, but then I was looking at books for review, and when you're reading a book for review, in many cases it's completely different than reading a book for pleasure. When I read for pleasure, and I'd pick up a book to read on the subway or something, I really enjoyed the adventure stories of Andre Norton and Keith Laumer and stuff like that. When I sat down to read books for review, I couldn't finish any of these books because they really had nothing much to say. They were fine for wasting an hour but if I was reading for review I was not looking to waste an hour. So, I would read the first chapter or so, glance through, read the ending, say "Yeah, it's the same as the others", and people would complain that every review I write of an Andre Norton book is exactly the same. Well, yes, it is, because the books strike me as exactly the same after a while. But if I was just reading for pleasure, I would probably enjoy most of them.

LESTER DEL REY:

You notice too much when you're reviewing.

CHARLIE BROWN:

Yeah, when you review you tend to look for things that you normally do not look for when you're just reading. And this created a problem for me: should I recommend these books even though I couldn't finish them at all? And sometimes I do, sometimes I don't - it depends on what I had for breakfast or something like that.

LESTER DEL REY:

I'm rather naive. I tend to read a helluva lot of books anyway, so when I'm reviewing I don't change my attitude as much as I might otherwise. I manage to get by just reviewing the books that I normally read. And I get a lot of books that I never even crack open. It's up to the publisher's blurb, the reputation of the writer, and the first few pages. I feel no obligation to read any book. I do feel this: that if I decide that I'm going to review any book I must have read all of that book. That much I do believe. But I feel no obligation to read a book or review it, so in a way I don't care, I get by all right.

I'm reasonably sloppy in what I pick up. Well, I think the average person on the stands is reasonably sloppy in what he picks up. Ace sends me an ungodly amount of stories, thank God; Ballantine sends me an ungodly amount of stories, thank God. A few of the others drift in, although it's interesting to me to see that Putnam (which has a pretty good line of science fiction) very rarely sends me a list, but they do make very sure that I get all their ghost stories and flying saucer stories and men-like-god stories and so on, because it's obvious to somebody over there that science fiction deals with all this crackpot stuff. Coward and McCann is even worse; they never send any science fiction but they send me two and three copies of everything about starships being golden chariots seen by the Assyrians back when and that kind of nonsense - as proved by a dinosaur footprint or something. [Laughter.]

Well, you know, the funny thing in reviewing is that you have a tendency to like a story too much. If you're reading an awful lot of fiction you find so much bad fiction that every time you come across a fairly good one, you have to restrain yourself and say, "Wait a minute, boy; is it just comparison that's making this seem good?"

CHARLIE BROWN:

How do you choose your books? Do you only review books that look interesting to you and you like?

LESTER DEL REY:

Oh. I'm very scientific about it. I take the books out of the box and look 'em over. I read the back blurb or the inside dust jacket; I look at the title of it; I look at who published it. For instance, I have to tell you right now that if it's Doubleday who publishes it I'm much more apt to throw it aside because, particularly if it's one of the English authors they reprint, I don't bother reading it most of the time - I know I'm not going to like those and I'd really rather mention in a review column books that are interesting rather than books that I just don't like. I could have a whole flock of those. And then I look at the name of the writer; some writers are worth reading no matter how dull it is, and if there's even the faintest doubt in my mind about the book, if I'm the least bit curious about it, I'll glance through the first two or three pages. Then it's up to the writer to catch me.

TERRY CARR:

The original title of this panel as it was given to the panelists in the mail was "The Role of the Critic in Science Fiction." I spoke about this with a science fiction writer before we came up here, and I said, "What is the role of the critic in science fiction? Quick, tell me!", and he said, "Well, the role of the critic in science fiction is to offer intelligent praise." [Laughter.] This is apropos of your remarks, Lester, about worthwhile reviews, useful reviews.

LESTER DEL REY:

Mine would be just the opposite view: intelligent examination and fault-finding are what would be really valuable.

TERRY CARR:

Sometimes, for instance, you can tell an author about something he does well that he doesn't know he does well and this is valuable too. There are two kinds of bad reviews, as Lester said. Okay, there are two kinds of good reviews too. One of them is intelligent praise. And the other kind is the rave review by the guy who didn't understand the story and you get about half-way through the review and your stomach begins to sink. "Oh good God, he's reviewing somebody else's story", or something like that. That'll drive you up the wall.

LESTER DEL REY:

I accept it. I accept that case. That's the worst thing you can get.

TONY LEWIS:

I think on that note we'll close the panel per se. We'll now have a brief question and answer period. Most of you people seem to be down on what Lester refers to as the academic critic. I think that there are a couple of the people in the audience who I saw grimacing when you said that. Perhaps they have some comments they might like to make on this. Are there any?

TERRY CARR:

I think actually, the comments that were made, Tony, were against the reactions of the writers to the academic critics, not to the critics themselves.

QUESTION: [Inaudible.]

LESTER DEL REY:

Every single critic has the obligation to make his understanding as broad as it possibly can be against all of man's achievements, against all of

man's literature. This is what he is doing. No, he should not narrow himself! I agree, he should try to make his readers - and we assume that a critic writes for perceptive readers, a book reviewer may not - a critic has to get as large a frame of reference in literature as possible and to appeal to perceptive readers over as wide a territory as can possibly be done. Always. Now there are limits, of course, to the magazine in which his work appears and that may influence him. But generally... Don't, for God's sake narrow it down - widen it out. Take science fiction with you, if you can. It'll resist, but then that's fair, maybe you can take it with you.

QUESTION: What do you think of Sam J. Lundwall's book, Science Fiction: What It's All About?

TERRY CARR:
I have never read the book.

LESTER DEL REY:
He was a Swedish fan.

TERRY CARR:
Sam J. Lundwall is a Swedish fan, probably the number one science fiction personality in Sweden for the past ten years. He published his book originally in Sweden, rewrote it for the Ace edition - that's all I know about it. I really haven't read it, nor did I write it. If I'd written it I would have read it. [Laughter.]

QUESTION: [Inaudible.]

LESTER DEL REY:
I doubt that a lot of the time. I write a fair number of my reviews from galley proofs, so that in many cases you have not read the book, the book is not on the stands by the time the review comes out. I'm very careful about that. This isn't true in a lot of cases - in a lot of cases you're right, the book is already off the stands, but, so far as possible, I try to work when I can from the galley proofs. Again, I may like the book and may not read it, but, generally speaking, I read a fair number of the books I have. For instance, I just got done reviewing a book that won't come out until January 24th; the review will be out about six weeks before the book is.

QUESTION: [Inaudible.]

LESTER DEL REY:
Absolutely wrong! Absolutely wrong! I may write to the writer, but I am talking to the reader. I don't think the writer will ever see it.

QUESTION: [Inaudible.]

DR. RICHARD PECK:
That's okay, that's good. One of the gripes we've been sharing up here is the writer who pays too much attention to criticism, and tries to write to order to satisfy a critic. If the critic damns a man for doing what he can do best, or what only he can do, he still has to do that. The critic or reviewer is only one voice out there; he may not be speaking for an entire audience. I'm not fond of, let's say, sword and sorcery, pick a sub-genre, whatever you like. If I were to review it, my personal bias might show up, but I know there are lots of other people who would still read it and I certainly hope the author wouldn't pay attention to any private strictures I might offer him. My own gripes shouldn't affect the way he works.

QUESTION: [Inaudible.]

LESTER DEL REY:
I don't think they're having much effect on the writers. I hope not.

CHARLIE BROWN:
Well, they certainly affect their personal correspondence. I get more letters from writers complaining about reviews than about anything else.

LESTER DEL REY:
They might spend that time writing instead. I mean, crying in your beer is good exercise for the eyes, but not for the fingers.

TERRY CARR:
I've never seen a period in science fiction's history when so many science fiction writers were so incredibly concerned with the kind of feedback they were going to get from other people. It is not the role of any kind of writer to spend any great portion of his time reading what other people say about what he does. His role is to sit down at the typewriter and write.

CHARLIE BROWN:
I don't think that's true, Terry. I think that the writer needs something back.

QUESTION: [Inaudible.]

LESTER DEL REY:
Well, then the answer is don't review it because you don't know enough about the subject. You see, to us who do know the field, we know in the first place that this was a story that was written back around 1950, that it's been rewritten, that it's come out in parts in the magazines, that this is a changed version of it, and we also know that even while this is on the stands, some other parts of the sequel are appearing in the magazines, and we have a general idea of when

it will be coming out. Now, if you're doing it for - you said, I believe, for a Chicago newspaper - if you're doing it for a Chicago newspaper, obviously you aren't going to know all this. All you can hope for is to have a general familiarity with science fiction, more so by far than your readers, enough so that you can understand what you read. If I were doing this I wouldn't review To Your Scattered Bodies Go for the general reader because I don't think that you can make it plain enough - this tour de force that Phil Farmer has produced - I don't think you can possibly do it for the general reader and make it plain to him. I would tend not to review that and to pick on something that the general reader could read instead - unless you've got a whole regular weekly science fiction column. Do you have that?

REPLY: [Inaudible.]

LESTER DEL REY:

When you get one like that with a continuous thing that they can turn to, then you can probably begin to get more sophisticated and follow up on these more sophisticated stories. It would be my guess - I don't know.

QUESTION: [Inaudible.]

CHARLIE BROWN:

I reviewed it for the Locus audience and I gave it a very laudatory review. I mentioned that casually, but I think everybody knew it before they read it.

LESTER DEL REY:

I did the same in If. I told some of the story behind it. I gave it a very laudatory review, but I indicated that there was a lot more to go in it, and that I hoped the rest of it would be up to the same standard. I didn't say that it would be, but I hoped it would.

DR. RICHARD PECK:

Anybody here who hasn't reviewed it? [Laughter and applause.]

TONY LEWIS:

I think we'll have one more question. Tom Clareson?

TOM CLARESON:

[Inaudible question interrupted by applause.]

TERRY CARR:

No, actually it isn't. We'll take again the example of the Joanna Russ review of the James Blish novel. A proper review of that novel in vacuo would have paid no attention whatsoever to the reputation of Jim Blish as a writer, it simply would have reviewed a book by a writer, and it would have panned the book because, indeed, it was a very bad book and there's probably not a soul in the world who thinks it's any good. A review in vacuo of that could have been a completely honest review, even though the person didn't know when it was written, didn't know the conditions under which it was written, or anything like that. It would simply be: "This is a bad book and this is why it's a bad book."

TOM CLARESON: [Inaudible.]

TERRY CARR:

Well yes, as a matter of fact we've talked about several methods of reviewing, and I've talked about at least two myself, when I was talking about reviewing an early Bradbury story just as itself or talking about it in terms of what Bradbury wrote later on. This is a different type of criticism; it will tell you a different kind of thing. It depends on what you want to read or what you want to write.

TONY LEWIS:

Lester, as usual, wants to have the last word, and we will let him have the last... Let me finish, so you can have the last word, Lester.

LESTER DEL REY:

I want to have all of them.

TONY LEWIS:

But as Tom says, tomorrow he will be up here and these gentlemen might be in the audience and he'll be up higher and he'll be able to shoot his ideas out. But now, Lester, give us the last word for today.

LESTER DEL REY:

I'm just interested in this method of new criticism. I've followed it. It came into popularity around 1928 or 29 - don't let the word "new" fool you, it's one of those labels that's been put on it - and I followed it with a great deal of interest. One of the things that always struck me about it was that their first thing was one must always review the book and not the writer, with which, generally, I tend to agree. My second point of interest in it was that they always reviewed the writer and not the book! They are notorious for this, and incidentally, that's one of the things I have most against Damon Knight as a critic: he reviews the writer and not the book a hell of a lot of the time, because he is basically sympathetic to the new critics and he follows their standard procedure here.

TONY LEWIS:

Well, Lester's had the last word, as usual. Gentlemen, we'd like to thank you for your participation. [Applause.]

Current Problems in the Critical Analysis of Science Fiction

The Science Fiction Research Association

TOM CLARESON:

Literary criticism or critical study - academic study - of any subject can take a number of approaches as the particular individual takes a position and tries to develop his idea, his analysis, by formal method. So this afternoon we should like to show you, I hope entertain you, with four presentations in this order: Alexei Panshin, the title: "Science Fiction and Academia"; Professor Beverly Friend, who is also a reviewer in Chicago, will substitute for Ivor Rogers and read his paper, the title: "The Physical Redemption of Reality and the Science Fiction Film"; Professor Ginny Carew from Queensborough, who was chairman of the first SFRA [Science Fiction Research Association] conference last year, the title of her paper: "LeGuin - Artistic and Formal Maturity"; I am Tom Clareson; the title of my paper is simply "Speculations". Alexei?

Science Fiction and Academia

Alexei Panshin

ALEXEI PANSHIN:

My paper is "Science Fiction and Academia".[1] With the foundation of the Science Fiction Research Association a year ago at the third Secondary Universe Conference, the regular academic science fiction convention, a new era has begun for the SF world. It will be a greater or lesser agony for everyone in fandom. The old, comfortable insularity we have enjoyed for 40 years and more is gone forever and no amount of wishing will bring it back. The egg has fallen off the wall, the academics have arrived, and they won't be going away again. They've begun to unpack their bags, as this hour with four members of the Science Fiction Research Association is proof.

There are people who are going to see this first SFRA program as a major catastrophe when they've had some time to think about it. An important battle lost without the firing of a single defensive shot. I think that, to many of us, the academics will seem to have come only to usurp and misconstrue what is not theirs. We have always been hungry enough for approbation to be willing to take our friends and allies where we could find them, but always until now these allies have either become fans and played by our rules or had the good grace to like us as much as they were able at a distance and then go away. Neither of these is going to happen this time. When the fact becomes apparent a lot of grief is going to come down, rending of garments and painting with ashes.

I think SFRA has some inkling of this, if only an inkling. Some months ago, Tom Clareson, the Chairman of SFRA, asked me if I would deliver a fifteen-minute paper on a topic of my choice as a part of this program. He suggested, I don't know with what seriousness, "Dangers of Academia" or some such. Well, that wouldn't have occurred to me as a topic to choose if he hadn't suggested it; but I've been thinking about it since then.

I may be the right person to talk about the dangers of academia to a worldcon audience. My ties to science fiction in the natural order I made them, and in their natural order of importance are: first as a reader, second as a writer, third as an active fan, fourth as a critic, and then only fifth as a member of the Science Fiction Research Association and a summer substitute for Joanna Russ teaching a course in science fiction at Cornell. But on the other hand, I

[1] These remarks were published in slightly different form in the December 1971 issue of Fantastic, ©1971 by Ultimate Publishing Co., Inc. Reprinted by permission of the author.

have an M.A. degree and my upbringing was around a college campus, so I can speak the language. And the truth is that I do have my reservations about the gang of people who are going to be sweeping in from far-flung departments in search of the scholar's dream - plausible work.

Now that I'm set to thinking about it, I do wonder how well science fiction and academia are going to take to each other. It is clear that the deluge is coming. We are going to be up to our ears in scholarship. Science fiction is a long-neglected area of study with both respectable and admirable antecedents and increasingly obvious present literary and social importance. Academic recognition and study is going to beget even more of the same. SF is about to become an academic hot item. Jack Williamson, who in his academic persona is the compiler of a roster of the current college courses in science fiction, lists this fox hunt of sponsoring departments: English, Physics, History, Psychology, Chemistry, Humanities, Communications, Theatre and Speech, History of Science, Popular Culture, and Religion. And that very breadth indicates something of what we can expect.

What else can we expect? We can expect the usual academic mixture of the profound and the ridiculous. We can expect articles, essays, tabulations, monograph series, the republication of unknown classics, much dusting of old library shelves, and mammoth studies. We can expect minute examinations of our past and our present; Dr. Frederick Wertham will publish his long-awaited sequel to Seduction of the Innocent on science fiction fandom, [Laughter.] and become to the field of psychology what Harry Warner is to the field of sociology. [Laughter.] Expect specialized journals; expect to see statistical analyses of the political conservatism of the Golden Age Astounding; expect argument on the meaning and significance of Robert Moore Williams, David R. Bunch, and Stanton Coblentz - comparative argument. A hundred good papers and nine hundred foolish ones in the natural proportions of Sturgeon's Law.

Still, I think we can learn to live with both academic construal and academic misconstrual. Fans are more likely to be bibliophiles than slans and we've had our own delvers, brilliant and stupid, right from the beginning: historians like Sam Moskowitz, indexers like Donald Day and Walt Cole, bibliographers like Donald Tuck, editors, critics and critical publishers. Advent is now in the process of issuing the monumental third edition of Tuck's A Handbook of Science Fiction and Fantasy in three volumes, the manuscript for the first volume of which is 600 single-spaced pages. It impresses me more than any other book on science fiction as a work of genuine scholarship.

We've lived with our own construal and misconstrual. Fandom has traded its fanzines even up for Leland Sapiro's desperately academic and desperately fannish Riverside Quarterly. If SF can accept Leland's "The Mystic Renaissance, A Survey of F. Orlan Tremaine's Astounding Stories", or on another level, John Jeremy Pierce's "eschatological romanticism", or on another, someone signing himself "Stephen E. Pickering, sociologist-research consultant", then it can accept Extrapolation as another fanzine, sometimes plausible, as in "Three Kansas Utopian Novels of 1890", and sometimes not plausible, as in "Heinlein's The Door into Summer and Roderic Random". [Laughter.] Academic serconism is bearable; it falls within SF's established limits of toleration.

But I think the fear of science fiction is not that academia will get us all wrong. I think it's that academia will take science fiction away from us, stiff-arming us with the credentials and formalism that we've always been glad to do without and then get everything wrong. I think that what is feared is exclusivity and exclusion. But I think the fear is misplaced; at least, I sincerely hope that it is.

Yet, there is sufficient mandarinism in SFRA to make the fear natural. As an example, it strikes me, the first SFRA Pilgrim Award for distinguished SF criticism - the unanimous choice of the committee, composed of J. O. Bailey, author of Pilgrims Through Time and Space, after which the award is named, Northrop Frye, Mark Hillegas, Judith Merrill, P. Schuyler Miller, and R. Dale Mullen - will be presented this fall at the Secondary Universe Conference in Toronto to Professor Marjorie Nicholson, the author of a small 1948 book entitled Voyages to the Moon. The age of the book and the limitations of subject and approach might lend an impression of fastidious specialness; Voyages to the Moon has no interest in science fiction; it has rather more interest in Alice in Wonderland. In the last paragraph, it makes the wan remark: "Our modern pulp and movie and comics writers who deal with the theme (of voyages to the Moon) have lost the delicacy and the subtlety of humor, conscious and unconscious." That is the sum of Miss Nicholson's references to the heirs of Gernsback.

Her real interest is the scholarly recollection of old marvellous voyages in all their unconscious humor for the benefit of a forgetful present. The "pseudo-scientific fantasies" of H. G. Wells are discussed only in an uncomfortable epilogue on "the Moderns". Miss Nicholson ends her book by saying that although trips to the Moon aren't as much fun anymore, and although nobody has been writing them the way she likes them in the last 100 years, once there was a place called Camelot: "For although Wonderland may have faded and the Cheshire Cat has vanished from before our eyes - a smile remains."

For that matter, Pilgrims Through Time and Space itself shows small knowledge of modern science fiction. The book was based on theses entitled "The Scientific Novels of H. G. Wells" and "Scientific Fiction in English 1817 - 1914". Dr. Bailey has made

the acquaintance of The Skylark of Space and he is content to let a lone 1945 George O. Smith story serve as "a fair example of current run of the mine scientific fiction from the magazines". This is as far as his knowledge seems to extend and his interests, like Miss Nicholson's, are all historical. (Tom Clareson asks me to add that the materials on modern science fiction were really only added at the last moment at the insistence of the publisher but this, I think, probably re-emphasizes the point.)

I don't think Voyages to the Moon is the stuff of which unanimous awards are made, but, still I can accept SFRA's choice. There is a real place for the scholarly recollection of old marvellous voyages for the benefit of a forgetful present. We have every reason to find out where we came from, and to honor those who can tell us. The science fiction world, our microcosm, has been content to date itself from 1926 and nod to Verne and Wells. But the academics have squirrelled away the antecedents of science fiction in their true variety and kept them safe in their libraries all these years until interest arose in them again. They are tracing out the formal and obvious connections between the gothic horror stories, marvellous voyages, and utopian novels of the beginning of the 19th century and the technological fiction, interplanetary romances, and dystopias of the early 20th. And they are showing how these, as much as Gernsback, as much as Verne and Wells, provided the basic stuff out of which science fiction, the modern incarnation of speculative fantasy, has been made. We need to know these things, we need to know about The Auroraphone: A Romance, A.D. 2000 and Willmoth the Wanderer, or The Man From Saturn, the three Kansas Utopian novels of 1890 of Ben Fuson's study in Extrapolation. We need to realize that we did not spring from nothing, that we do have roots. Having realized this and having charted the fictions of the last two centuries which share the superficial trappings and metaphorical devices of modern science fiction, we will at least be ready to move beyond to the deeper but less obvious ties that link science fiction to older speculative fantasies. It is only when we discover what speculative fantasies have historically meant that we will have any appreciation of their potential for healing our modern crisis of spirit. As Northrop Frye recently wrote to Energumen: "I am interested in all forms of literature that seem to show clear connections with mythology, and twenty years ago science fiction seemed to be about the liveliest and most interesting literary genre from this point of view. It has not, as far as I can see, really fulfilled its promise, but one has hopes".

In spite of its distance from us then, Voyages to the Moon is not a dishonorable choice for an award. I think we would only start drowning in mandarinism if subsequent unanimously chosen Pilgrim Awards went to, shall we say, Roger Lancelyn Green, Mark Hillegas, and H. Bruce Franklin, rather than, shall we say, Damon Knight or James Blish. That is something that needs to be seen and it is my suspicion that, in spite of our deepest fears, it won't happen.

Part of the reason is that, to a very real extent, 'they' are already 'us'. That is, many of the new academics who are invading us are nothing more than old fans who have grown up, gone to school, earned their degrees, and are now doing what they've always wanted to do - earning a living by fanac. Tom Clareson, Chairman of SFRA and editor of Extrapolation is a committeeman from Philcon II, the 1953 Worldcon. James Gunn, the new President of SFWA, is a professor at the University of Kansas. Jack Williamson, who was a fan before he was a writer and whose first SF novel appeared in Hugo Gernsback's Science Wonder Stories in 1929 and whose most recent novel has just been serialized in Galaxy, is the author of a Ph.D. thesis on H. G. Wells which is being published by Mirage Press, a fan publisher, this year. A substantial number of familiar fans and writers are among the founding membership of the Science Fiction Research Association. There is nothing to be afraid of in people like these.

What is more, the academics have shown evident pleasure in making contact with the science fiction community. Willis McNelly, Darko Suvin, and Tom Clareson have all been pressed into service to write critical summaries for Nebula Award volumes. And, as I pointed out earlier, the committee that chose SFRA's first Pilgrim Award included Judith Merril and P. Schuyler Miller. And Extrapolation's newly-named Board of Editors, a listing that I assume is intended to serve as an attractive mirror for the magazine's desired audience to look into, includes among its fourteen names: Brian Aldiss, James Blish, Samuel R. Delany, Judith Merrill, me [Alexei Panshin], and Jack Williamson, not to mention Alex Eisenstein and Franz Rottensteiner who are fans, if not professional writers.[2] In fact, Extrapolation respects Franz Rottensteiner's earnest fanzine Quarber Merkur. We have far more to fear from academic bad judgment than from academic bad intentions, and I've already indicated that I think we can live with a few mistakes. It will probably take some kicking and thrashing around under the sheets but, in time, I think we will all be comfortable in bed together.

That leaves just one danger of academia to be considered and it isn't a danger, it's a certainty - the fact of presence. Like the added swarms of people who have been attending science fiction conventions in recent years, the academics are here and what was once ours alone is no longer private property. It's very like the days when suddenly half the world was

[2]Alexei Panshin wishes it mentioned that in 1973 he was dropped from Extrapolation's "Board of Editors" without notification.

reading Tolkien and you couldn't tell them that you were there first, that you had read The Lord of the Rings or Stranger in a Strange Land, for that matter, when it first came out and you hadn't liked it all that much [Laughter.] - I mean that you had had the option not to like it. But that particular feeling of loss of special and private possession, is something that everybody is faced with a dozen times in a lifetime.

I'm reminded of a scene at the airport in San Francisco following the World Science Fiction Convention in 1968. Four fans, two older and two younger, had shared a cab to the airport and as the habit is after a convention, they were thrashing out one or another of the great unsettled questions of convention politics. Finally, one of the younger fans brought authority into the discussion, he quoted Ted White's opinion on the matter. The oldest fan, a member of First Fandom - which means that science fiction was his own special private property prior to 1938 - looked bewildered and said, "Just one thing. I know that I've heard the name, but who is Ted White?" and his friend took him off for a cup of coffee to explain to him who Ted White is. Imagine how many times since 1938 that fan has had that feeling of loss to the barbarian hordes. He's lived with it - so can we. Have a cup of coffee and relax. [Applause.]

TOM CLARESON:

Thank you Alexei.

The Physical Redemption of Reality and the Science Fiction Film

Ivor Rogers

TOM CLARESON:

Professor Beverly Friend - "The Physical Redemption of Reality and the Science Fiction Film", by Ivor Rogers who could not make it because it's his first week of school at a new university.

PROFESSOR BEVERLY FRIEND:

A quick check of Tom Clareson's new checklist of critical works on science fiction reveals one glaring omission. There are practically no articles or books devoted to the science fiction film. I hasten to add that this should not reflect on the editor; the horrorific fact is, practically nothing worthwhile has been written on the subject. If science fiction and science fiction criticism had existed in a ghetto, separated from mainstream literature, then we may see the science fiction film as a genre that has not moved out of the ghetto. When it has, it has lost the respect of its tribe and of the gentiles alike.

Required reading for any critic of the science fiction film should be the series of articles written by Charles Beaumont for the Magazine of Fantasy and Science Fiction back in the 1950's. The theme of these articles was that commercial science fiction, properly called sci-fi when referring to the film product, was made by insensitive clods who neither understood nor liked sci-fi, on a budget that demanded the use of stock footage, poorly contrived special effects, and the most shopworn of studio contract actors. Physically no distinction was made between true SF and the horror/thing films in the minds, to use a polite expression, of either film maker or the film audience.

Although the millenium has not yet arrived, we are making some progress in science fiction film criticism. Richard Hodgson's article "The Short Tragical History of the Science Fiction Film" was one of the first serious studies of the field. And I'm happy to note it's being reprinted in Tom Clareson's other new book. Don Faubun had a good article on the science fiction film, and my speech from the first Secondary Universe Conference was reprinted in Arts and Society a few years back, and that's about the whole field. There are, of course, numerous reviews, some fanzine articles, and Susan Sontag's article on horror/thing films. Carlos Clarens has an excellent treatment of the science fiction film in An Illustrated History of the Horror Film. The Butler book treated many science fiction films in the context of the horror films, and one book - one book - by John Baxter, has recently been published that deals exclusively with the science fiction film. One film festival - Trieste - deals exclusively with the science fiction and horror film, but it is more a tourist attraction than a course for film bookers and critics.

However, the furor caused by 2001: A Space Odyssey pushed the science fiction film out of the limbo where it had been withering on a Roger-Corman-nourished vine into the mainstream of film criticism. An entire book was devoted to 2001 - nameless here because they chose the one line that I would most like to forget (from 17 pages of reviews that I sent them) to print as my contribution. Also nameless because they not only didn't pay me but didn't even send me a complimentary copy. We were very close to having a film or TV script included in Bob Silverberg's science fiction anthology The Mirror of Infinity but last minute considerations forced it out. A correspondent in Russia, Boris Lyapunof, claims that he is now working on a book connecting science fiction with the cinema in the U.S.S.R. One hopes for more. There will be more competent science fiction film criticism just as the level of film criticism has risen over the past twenty years.

It is heartening to see that the Magazine of Fantasy and Science Fiction has been running a series of reviews by Baird Searles, a great improvement over the usual prozine practice of grabbing the first science fiction writer in their stable to knock out 1500 words on the latest spectacular. Mr. Searles is essentially a film man who likes and knows science fiction. The situation is somewhat analogous to asking a biologist to write articles or review articles on physics; why not, they're both sciences, aren't they? Now that we're getting a few biophysicists in the field, we should turn the work over to them. Far too many writers of narrative science fiction simply do not know how film works and tend to criticise in terms of narrative fiction, rather than in terms of cinematic technique. If you think that I am being unfair in picking out science fiction writers, I am equally opposed to professors of English Lit. acting as film critics. Some of the worst critical commentary on film ever committed to paper comes from specialists in narrative literature. Even Robert Scholes, who is head and shoulders above the run-of-the-mill critic, is at a loss with film.

For just one paragraph I would like to comment on science fiction criticism in general and then get back to where I really want to go - film aesthetics. Science fiction criticism has been blessed with several very fine critics: Merril, the Panshins, Russ, Blish and Knight. Of none of these critics can it be said that they write about what they cannot do. Unhappily, there are few individuals who can find the objectivity for criticism and, at the same time, have the passion for creation. The common cry from the SF field is that the professors have invaded the field and don't know anything about it anyway; this is nonsense. Professor-writer combinations like Jack Williamson, Joanna Russ, Robin Scott Wilson, and others, are just too common to make the position tenable. There are a lot of professors who are as much into the scene as any fan or writer; Tom Clareson is a member of First Fandom and my career as a letter hack was cut short, mercifully I might add, when TWS [Thrilling Wonder Stories] failed to print my maiden contribution back in 1939: "I'm eight years old and I have been an active reader of your wonderful magazine for the past two years..." (I'm sure you all know the formula.) It is ridiculous to suppose that we don't know what the hell we're talking about. Our sin, it would appear, is having read something other than science fiction. There is a large group in the science fiction field that considers all professors fair game, whether from a sense of insecurity or simply from a misapplied sense of the ghetto effect, I don't know. It makes one feel a little like Samwise as he looked back at Cirith Ungol and saw that the walls were not intended to keep people out, but were meant to keep them in. (This simile is just to demonstrate that Darko Suvin and Charlie Brown are right; I can't talk about science fiction without dragging in Tolkien.) Most ghetto writers are not as bad as Sam Lundwall, who uses the term "professor" the same way he uses "Nazi" or "communist" - a catchall phrase for things he doesn't like, but they can usually be identified by their tendency to ignore standard critical terms. Surrealism is a favorite catch phrase; it is usually used for surrealism, expressionism, sturm-und-drang, impressionism, symbolism, action painting, electronic music, and anything written by a writer they don't like.

There is no need for this intellectual copperheadism; it is not beyond the bounds of possibility that a person may prefer criticism to creation, and both disciplines are demanding of both time and psychic energy, often to the exclusion of the other discipline. I have over a hundred credits as a creative individual in film and theatre; I've paid my dues to have the right to stand here and make comments about my art, but it is not the only way to approach criticism. I do want to observe that just as there are many critics from within the SF field who are incompetent because they don't know anything but science fiction, there are many critics in the field of academia who don't know a diddley-damn about science fiction. On both sides of the wall there are incompetents. And we want to stamp out that brand of criticism too. The technique is simple: read a few books, science fiction and criticism. Similarly we must present the case for science fiction film criticism to eliminate the ignorant aesthetes and the practising creators who know (as critics) only their narrow technical expertise.

To the aspiring film critic I would suggest that there are three things he must know so well that he feels them in his bones, and the science fiction film critic must acquire a similar feeling for science fiction as well. These three landmark theories of film criticism are the Russian theories of montage, French auteur theory, and the physical redemption of reality theories of Siegfried Kracauer. All of these theories are post hoc theories: attempts to explain why something happens the way it does in film making. Thus, they are not entirely coherent or consistent, either internally, or externally among themselves. The day we get a theory that fits over ninety percent of all cases is the day that we program the computers and eliminate all artists. But this fallibility seems to upset many SF fans who expect results as predictable as a classic lab experiment. The state-of-the-art isn't that far advanced, nor will it ever be, the artistic impulse being what it is, but the aim of criticism should not really be the refining of the pure metal from the dross, but should be the recognition of all that is worthwhile. We should look for values, not impose them.

To fully understand the importance of film, we must understand the theories of montage. This concept was first enunciated by a series of Russian filmmakers after a close study of pre-World-War-I

American and European films. These theories are chiefly concerned with how a visual medium tells a story. The classic experiment was performed by a Russian filmmaker named Kuleshov; he spliced together shots of an old woman laid out for burial, a puppy, a plate of borscht, a pretty girl, etc. Between these shots he put a close-up shot of the face of an actor. The close-up shots of the actor were always the same; he just printed it several times and used the same shot over and over. The critics commented upon this actor's great mimetic ability, his talent enabling him to register sorrow, joy, hunger and love. What was assumed from this experiment was that the crucial action of the film came not so much from the acting itself but from the reaction of the audience to these images. The director Pudovkin claimed that it worked like a mason creating a wall, each shot corresponded to a brick in the wall and the finished story corresponded to the finished wall. Eisenstein, one of the great geniuses of the cinema, claimed that it was the conflict between the two shots that made the difference. That is, it couldn't just be any shot next to just any shot, but the visual components of each shot had to be matched against the visual components of the next shot so that the conflict between the two images created a story in the mind of the viewer.

Examples: Pudovkin cited a scene from the American film Tol'able David where we see a character coming down the road, a shot of a cute little kitten, a shot of a man picking up a stone and throwing it, and the final shot of a kitten running away. This series of "bricks" tells us very clearly the character of the man and serves as a ground upon which we can build the structure of the wall. In Eisenstein's film Battleship Potemkin we see shots of the wormy meat fed to the sailors, the excellent food fed to the officers, and a picture of a sailor washing a plate with the words: "Give Us This Day Our Daily Bread" written on the plate, and finally a shot of the sailor smashing the plate. Certainly one of the most vivid and economical conflicts showing the causes and actions of revolution that has ever been devised.

These techniques of montage are used today in practically every feature film made, including even the most inept sci-fi horror/thing film. Indeed, there are instances where a limited budget would actually increase the imagination and stimulate the use of montage in sci-fi film. Since the advent of the talkies, we are able to spell out certain turns of plot development and character portrayal by the use of dialogue. "This scheme is mad" can be a shorthand for many of the building blocks needed in a silent film; a phrase like "You must be mad to..." limited a great deal of subtle scenes where we show someone acting in a deranged manner. Some film critics prefer such earlier techniques because it is, in the long run, a much more effective method of character portrayal and plot development.

This is why so much controversy was raised over 2001. Kubrick demonstrated the failure of mechanical technological means in solving the ills of our society, rather than preaching at us and telling us that it was so. The sequences of the videophone call to his daughter, the encounter with the Russian scientists, and the fantastic briefing scene on the Moon, tell us very little in terms of plot advancement but demonstrate a great deal about the society in which these people live. All three concern themselves with problems of communication, which is what Kubrick seems to be telling us is the problem of the society of 2001. Some critics are so unused to this technique that they made snide comments about the fact that the scientist was the only passenger on the Moon rocket, such as "business must really be bad for Pan Am", missing the whole point that it must be big trouble indeed that would send a special passenger rocket to the Moon with just one passenger. Kubrick could have shot a scene where a general with 5 or 6 stars on his collar says "Get a special rocket to take him to the Moon" and the aide replies "Sir, that would cost $300,000" and the general replies "Damn the expense; this is a national emergency." Clearer perhaps, better - no.

This type of understatement, shown by doing not telling, is the basis for auteur theory. Basically this theory says that in the very best films the extraneous verbal padding has been cut to the bone, and the stamp of the individual filmmaker can be seen on each film. It is an extraordinarily abstract theory in all of its ramifications, and I find it difficult to point to a single source for more details. Perhaps Peter Wollen's Signs and Meaning in the Cinema would be as good a place to start as any, with the observation that he drops names ten to the paragraph and it can be a bit discouraging to realize how little you've actually read in the field that you thought you knew.

Auteur critics prize the American B film of the 40's and 50's as good examples of what they liked in filmmaking. Westerns, detective thrillers, and action adventure films ground out by Monograph and other B film companies are their special delight because of the spare, dry bones approach used by filmmakers on a limited budget. A perfect example in the science fiction field would be Howard Hawks' film based on John W. Campbell's "Who Goes There?". Science fiction fans usually groan with agony over this film because it took a fine, subtle, SF detection story, with one of the most fearsome menaces from outer space ever to grace the pulp pages, and turned it into another foam rubber, snarling, moaning, human-flesh-hungry abomination. Yet, consider the scene where the space vehicle is first discovered. At a time when the flying saucer panic was at its height, the scientists don't just stand around rubber-necking "Wow, looky there, flying saucer". Hawks has the men in the expedition move out around the edges of the object buried in the ice, and, after showing us that it is indeed saucer shape,

has one of the men stammer his incredulous "It's a saucer". This could be amplified in scene after scene but it would be rather tedious, and the film was, after all, barely worth this type of analysis.

We now come to the most abstract theory, but the one which has the most application to the science fiction film. Siegfried Kracauer is essentially opposed to the type of building block or conflict montage represented by Eisenstein and Pudovkin; his claim is that film is, and ought to be, a physical redemption of reality; that the function of film is to reproduce life, to capture the fleeting evanescent moment, and, by so capturing it, redeem it. This word "redemption" is the crux of this theory, by it he means capturing on film an unstructured and unstaged moment that can never be planned, simply because we cannot completely control all nuance of expression and gesture. This theory stresses the importance of the candid photograph over the planned studio portrait with its patina of falseness and tortured reality for effects.

Perhaps an illustration from Bergman's Wild Strawberries and Dryer's Nosferatu which I have borrowed from Michael Reamer will suffice to demonstrate what I'm getting at. In Wild Strawberries there is a dream sequence in which the old professor sees a group of images: a deserted street, a clock without hands, a man without a face, a body in a coffin with his own face. It makes a tremendous impact upon the film viewer simply because it plays upon so many of our subconscious fears and anxieties about death and loss of identity. Kracauer would prefer the scene from Nosferatu where a man dreams that he approaches a coffin and sees himself inside the coffin. At this point the viewpoint of the audience is shifted to one inside the coffin. Two carpenters place a lid with a glass cover on the coffin. As they shave down the edges, curls of wood fall on the glass lid, drops of wax from the candle fall and splatter on the lid, and finally the coffin is lifted up and carried out of the room with the spectator still seeing the scene from within the coffin. Kracauer considers this a better nightmare because the concrete details of the experiences are shown. (If Roger Corman were directing the film we would see the clods falling on the lid and the worms churning through the soil.) These concrete details are better because they are not staged like the scenes, and I will not hesitate to call these scenes surrealistic, in Wild Strawberries.

Why is the scene in Nosferatu better? What does it have to do with science fiction? For this I have to go back to Professor Tolkien. It is his theory that scenes of magic, and we may include the special effects of the science fiction film, are never really believable; we know that they are staged somehow. If we see a person's head being cut off in a film we know that they faked it somehow and, for someone with even the slightest bit of incredulity, it ruins the scene.

This varies from person to person. I was quite taken by the special effects of 2001, but I remember the first time I ever met Hal Clement [pseudonym for Harry Stubbs], we had a very nice discussion of the special effects and the errors made. Mr. Stubbs is a far, far better scientist than I am, and he noticed inconsistencies and muffed effects that I would never have noticed. The film was not entirely successful in the redemption of physical reality for him, although it was for me.

Sometimes the effects can be poeticized - that you do not mind. I'm thinking of the sword fight between the Zen-adept swordsman and an arrogant samurai in the early scenes of The Seven Samurai. The samurai is killed by one masterful stroke of a sword, and at that moment the camera shifts to slow motion. What we are seeing is not just the stark details of a death, but a death poeticized and made deliberately unreal by the slow motion camera. A scene from an unfilmed scenario by Carl Dryer of the crucifixion of Christ is an example of the good use of physical reality. We see the cross from the rear and see the points of the nails being driven out from the wood; we never see a frontal shot of nails being apparently driven through the hands of an actor. To paraphrase Tolkien, we would be horrified by the actual acts but are convinced that it is all somehow a fake, and wonder how they are doing it. Even when Barbarella was taking off her space suit under the opening titles of the film, I was not concentrating as I should upon the delightful body of Miss Fonda, but was wondering how the hell they did it.

If we accept the theories of Kracauer, it must seem as though we are denying the possibility of any science fiction film being successful because we have constructed what Professor Tolkien calls a tertiary world. This does not necessarily follow. First, there is a possibility that we may wish to achieve what Bertolt Brecht called Verfremdungseffekt - alienation. For certain types of film, usually ones with a highly didactic approach, we may wish to call attention to the fact that we are not watching reality. The author does not want us to suffer along with Mother Courage as her children are sacrificed, one after another, to the war. It is no coincidence that the son shot by the firing squad is called Swiss Cheese. Brecht wants us to be continually reminded of the fact that her son was riddled with holes, not for comedy effect, but to remind us of the horrors of war. Don't identify with the poor bastards who get chewed up into lead hamburger by war; concentrate on the evil of war. Swiss Cheese and his mother are not people; don't grieve for them. They are actors depicting the horrors of war. I'm sorry that I can't give you an example of this technique from a science fiction or horror film; we simply have not yet reached this level of science fiction film production.

There's another aspect to Kracauer's theories that I would like to go back to. He has stated that neither the play nor the narrative fiction are proper sources for the film because they are concerned with inner ideas, not the moments of physical reality. The film is concerned with rendering up images which will create a new impression, a new vision of reality, to the viewer. It cannot bring to the viewer the inner workings of the mind of the characters. Films can and do tell us what a character is thinking, but when they do, they go against the grain of the medium. The function of film is to show, not tell. It will best express what it can express by the depiction of the reality in front of the camera lens. It will never thrive as a literary medium. It might not even function best as a story-telling medium. Therefore, I would like to suggest that we are at the stage of stick drawings in the use of film science fiction. There are whole universes of new cinematic worlds out there for us to conquer. Just as the science fiction narrative story has stood the universal tradition of story-telling on its head by technique of projecting the narrative forward into time, the science fiction film can be a new wave of cinematic tradition if we discard the traditional ties of the film to the narrative tale and search out what film can do with the medium of film. Because of this I would like to say that the first true science fiction film is yet to be made. What we have had so far is just the adaptation of traditional material to a medium that is not suited to it. Perhaps the great philosopher Susan Langer was closer to the truth when she said that film is not closely related to narrative literature but has a closer relationship to poetry. Perhaps the truth is that it will be closely related to art. Certainly Ed Emshwiller has come closer to producing a real science fiction film than anyone else, and 2001 was a very near miss. I do not plan to speculate any more. I simply wish to ask you to think in terms of what could be the best use of science fiction themes and materials in a visual medium. [Applause.]

TOM CLARESON:
Thank you, Bev.

Le Guin - Artistic and Formal Maturity

Professor Virginia Carew

TOM CLARESON:
Professor Virginia Carew - "LeGuin, Artistic and Formal Maturity".

PROF. VIRGINIA CAREW:
I'm going to try to show that the SF genre is reaching a form of literary maturity and I'm going to do it by looking closely at Ursula LeGuin's 1969 novel, The Left Hand of Darkness. That the novel won a recent Hugo [at Heicon in 1970] makes it, of course, especially suitable for discussion in this time and place. That it can be discussed at all in terms of artistic maturity justifies and, in a sense, explains the presence here and the existence of SFRA. Most particularly, it seems good and necessary to demonstrate artistic maturity because a considerable number of SF devotees seem to reject it, seem to favor pulp style immaturity instead of artistic maturity. Now by artistic maturity I do not mean "new wave" or anything necessarily like that. Nobody has accused The Left Hand of Darkness of being "new wave"; it's mainstream standard. In the course of the past six months I have used this novel in four college courses, together with works like Catch 22, Antigone, and The Love Song of J. Alfred Prufrock. That is, it has been presented in general literature courses along with many other works regarded as significant in human culture and without any apologies. This is important; it didn't need a pulp context to shine. Neither I nor my students found it seeming shoddy even in the best company. As a contrary example, The Skylark of Space in that context would have seemed amateur, badly articulated, clumsy - that is shoddy - even to beginning students. You couldn't put it beside Antigone. The Left Hand of Darkness didn't look shoddy, even beside Antigone.

Now this may seem like an emotional judgment, what Tom Clareson would call impressionistic. But it really is not a judgment at all, but a fair-minded observation of some learning processes and learning situations. Students responded to T. S. Eliot, Joseph Heller, Sophocles, and Ursula LeGuin as if they properly belonged together. They argued happily about whether Creon was the same sort of autocrat as Argaven of Karhide. And they used the ambisexual Gessin society to demonstrate sexism in Shaw's Pygmalion. (They did!) Even beside Catch 22, which is very relevant and modern to most of my students, Left Hand of Darkness did not seem insignificant or what I'm calling shoddy. Parenthetically, the work that showed up as shoddy in association with other works was Shaw's Pygmalion and this was among evening students of mature judgment. Another SF novel presented in the same group, Jack Vance's 1957 The Languages of Pao, did not stand up to examination quite so well as the LeGuin novel. It is more than a decade older than The Left Hand of Darkness, so possibly its comparative weakness reflects a development

toward maturity in the genre rather than significant differences in auctorial ability. Students who were younger or who were naive readers loved the Vance novel and could not admit its deficiencies. Basically I think they liked its excellent pulp pacing. Significantly, nearly all the students found it easier to enjoy the Vance novel, but easier to respect the LeGuin novel.

Here I should remind those of you who deal in the phenomenon professionally, and explain to those who do not, that there is in most of us a certain resistance to "good literature". Typically, one is very glad that one has read the Book of Job and the ideas and values in it become an important part of one's mental furniture. But one is reluctant to get started, saves it for vacation reading or a rainy day, keeps it on a list of things to read in the future, and only with difficulty submits to whatever magic it holds. That is, once a thing is widely known as "good" it gets mixed up with our peculiar cultural idols and we partly forget that it has been labelled "good" in the first place because it was a lot of fun as well as somehow illuminating to share the author's world. I strongly suspect that on a basic animal level we resist the expenditure of energy that getting the good out of a good thing requires. The tired businessman syndrome is by no means restricted to tired businessmen. I have it sometimes and I'm pretty sure I'm not atypical and that all of you, unless you are blessed with the endless impossible energy of an Asimov, can recognize some of this resistance to demanding works in yourselves.

That resistance always shows up in students, including students who are themselves teachers. The only distinction is that teacher-students usually deal with this resistance privately because they know what it is, while student-students need the prodding of a teacher and idiocies like exams and grades to help them deal with it. Genuine SF readers are rather like the first group. If it's SF they'll read it and think about it, although War and Peace might be on their reading list for twenty years.

Now, given our human resistance not only to learning but to practically any demanding but pleasurable experience, consider that an SF novel not only met almost the same resistance from students in several classes that the play Antigone met, but met it in parallel ways, and it met that resistance in spite of the fact that all students knew that Antigone was two thousand years old and a cultural monument while The Left Hand of Darkness had gotten a Hugo a year ago and was only science fiction. More than my own readings, more than the excellences that emerged under the focus of many attentions, more, even, than my own pleasure in the book, the resistance of students has convinced me that for some reason or other The Left Hand of Darkness is a work of art - perhaps a really good work of art.

Let me recall some specifics. First an easy one. Students objected because they couldn't say Antigone's Greek names and they also objected because there were many strange names in the first chapters of the LeGuin. These were easy to handle of course; they simply pronounced all the Greek names - probably wrongly - but the names really don't matter and the objection is a false objection, a symptom of resistance rather than a literary comment. For the LeGuin, I isolated a handful of important names, wrote them on the board, pronounced them - perhaps wrongly - and suggested that many names were not directly necessary for initial reading. Again, a symptom of resistance, rather than a serious comment. As confirmation, nobody in any of those classes complained about the names in the Jack Vance novel, and they are at least as odd and as numerous as the names in the LeGuin or in Antigone. Indeed, one student tried to compare the ease with which strange names were absorbed in the Vance novel to the difficulty he faced in the LeGuin novel, and ended up in a muddle because in direct comparison the LeGuin names were no harder than the Vance names. He finally had to actually say in class that the real difference was that he had to think harder while reading the LeGuin than while reading the Vance. These objections obviously are expressing a reluctance to deal with the language that the artists are using.

Students also felt hard done by because Antigone was "in poetry". (I'm afraid my classes of students are invited to say that kind of thing.) The parallel objection to the LeGuin novel was actually to the shifting point of view, although the students couldn't put it that simply. They would say that Chapter 2 and Chapter 9 didn't fit and they couldn't understand the continuity. Both chapters are actually carefully labelled historical documents inserted by the narrator, Genly Ai, because they cast a specific light into his report. Their relevance to the narrative thread is like the relevance of metaphor to idea in poetry. Thus the difficulty of relating the ideas in these chapters to the novel as a whole is precisely like the difficulty of dealing with poetry in Antigone. The same students complained about Catch 22 because the narrative is not arranged in a chronologically customary fashion. You see that these objections are very similar. They are all non-literary comments that actually reflect a reluctance to come to terms with a specific form of each work.

The third and last reluctance that I'm going to burden you with is a reluctance to deal with the author's real themes and contents. If you truly read Antigone the very least you come up with is a question about the proper time to die for your beliefs; a minimum theme in Catch 22 is the problem of when and how to deny duly constituted leadership. The superficial thematic problem - there are deeper ones - in

Left Hand of Darkness is the probable inadequacy of our sexually-conditioned viewpoints. Rather than focus on such minimal thematic ideas, students evade. Of Antigone they say "Who cares about a handful of dust on one stinking corpse?" or "What has this old city-state got to do with atom-bomb-building nations?" or "This was only Sophocles' idea of Thebes. How do we know what Thebes was really like?" All respectable questions that must be answered of course, but none of them serious attempts to deal with the object as literature. Of Catch 22, students would say "Why am I supposed to care about one lousy deserter?" or "That was a time we had to fight and it has nothing to do with Viet Nam now, does it?" or "Is this Heller some kind of hippy?" Similar evasions appeared for Left Hand of Darkness: "This isn't even a real planet so how can it be relevant?" or "You expect us to take this bunch of theories seriously?" or "What is this woman, some kind of Women's Lib nut?"

Such questions seem to me to demonstrate that these three works, one of them SF, were meeting similar resistance from people who did not want their world views disturbed. Now art is fun and disturbing. Pulp work is only fun, and not even that much fun. Such resistance to being disturbed is a good hint that this novel, and perhaps the SF genre too, has reached a certain artistic maturity, since I got parallel objections to language, to form, and to thematic content for each of these widely disparate works. I feel justified in presenting this as observation rather than as emotional judgment or as Tom's hated impressionism.

I got lots of other objections, too, about Left Hand of Darkness. One student said it was pretty dull for the first half of the book, but got better when they were on the ice. Such objections can be bypassed because they only show that a) the reader did not know how to read SF and b) action adventure was the only thing he would notice about any story. Since I privately felt the episodes on the ice may have been drawn out too far and may have actually interfered with the story development, I took the student's hint and looked again, finding of course that I was as wrong in skipping over the ice episodes as he was in concentrating on them.

And this provides a place to change from considering the novel's reception as a mature work to looking at the novel itself. Let's assume for the time being that you agree that it might be a mature work and let me go on to explication. Not criticism, explication. I'm going to try to show you some of what I can see about the novel - not going to try to tell you whether it's bad or good. Now setting is far more important in SF than in most mainstream stuff. Sometimes I think that SF is an imagination of setting with action as decoration. In any case, after one bit of comment I want to deal with other aspects of this book in order to elucidate setting later.

Most of those who read it once or quickly thought this was a story about a near-human race with only one sex. Instead, a closer look suggests that this detail of sexuality functions more like a major metaphor, points toward LeGuin's theme but is not directly itself the thematic context. That is, I think many readers confused an important part of the setting, the ambisexedness of Winter's people, with the aboutness of the book. Instead, it is possible that LeGuin, in choosing this metaphor, chose one that overwhelmed the meaning that was supposed to be behind it. And by that I mean, well, you all know the metaphor: My love is like a red, red rose. Alright, give that metaphor to a garden nut - one who grows peace roses all over his back fence. He isn't going to compare a rose to a girl, he's going to compare a rose to a rose. In the same way I think the sexual metaphor in the LeGuin, because we are rose fanciers, may not have really functioned as a metaphor but might have occupied too much of our attention. I'm not sure of this.

Plot here in this novel is really very simple. A stranger with a mission passes through a small country, roils its politics, flees through even stranger lands and through physical, mental, emotional, and spiritual difficulties to finally accomplish his mission, roiling local politics even more. We are able to read the story at all because it is cast in the form of a report to superiors, thus the point of view is action or emotion recollected in tranquility - mostly first person narrative. Certain kinds of primitive suspense are as absent in this form as in Greek tragedy. We know the narrator, Genly Ai, will survive. He will land where recollection and tranquility are possible. We do not know the outcome of the mission at first, though by page 68 of the paperback the Handdarata Faxe has predicted a favorable end to the mission. So in the fifth of twenty chapters, a quarter of the way through the book, the standard sources of suspense - survival and success - are forbidden to the reader, and the author has put all the interest aroused by, and associated with suspense into meaning. One asks "What will the success mean - to Genly Ai, to Estraven, to Karhide, to Orgoreyn, to Gethen the planet, to the Ekumen, to us?" And since the author carefully encourages this kind of suspense by having a narrator frequently speculate on products and techniques Gethen can offer the Ekumen, as well as on the impact of Gethen on some of the Ekumen's skills, she must have meant us to read the book this way. This sort of philosophical suspense. Not with the simpler "Will he make it?" suspense. I think this is the sort of artistry one may expect in a mature genre.

To continue a little further with the question of point of view. Ten chapters are directly narrated by Genly Ai, four are taken from Estraven's diary, five are significant tales from the Lore of Gethen, and one is anthropological field notes. These changes in point

of view are not just used to tell the reader facts and events the narrator didn't know at the time. They are also used to establish tone and are vital for the author's method of characterisation. This is the artistic and mathematical elegance known as economy. Ultimately, unless the variation in narration and point of view is somehow perceived, the intent of the book is apt to escape the reader. Genly Ai is a highly trained, completely rational, clean-souled, clear-headed, technically oriented observer. He is a sophisticated, slightly stuffy, boy scout. As such, he cannot convey the realities of the planet Winter - of the natural forces, traditions, and perceptions basic to the society. The creation myths, traditional love stories, and so forth from Winter's largely oral tradition correct and amplify Winter's real nature, and in reversal help to demonstrate the limitations of Genly Ai's perception. Now, without those inserts and without Estraven's diary LeGuin would not have used Genly Ai's chapters so much to characterize him. She would have had to use a more neutral character, one that was not so involved in confusion in human frailty. There's one example in Chapter 10: Genly Ai, who knows very well that he's deficient in intuition, uses the technique of far-fetching to amplify his limited powers. The technique works, and the reader partly understands his results, but Genly Ai doesn't understand and blunders right on his usual course. If she has succeeded here, LeGuin has accomplished a technically difficult feat - that of telling a complex series of meanings through a complicatedly clear and muddled mind.

One of the things that happens when the narrator is not a character to be simply identified with is that readers are forced toward aesthetic distance. That is, you have to partly reject Genly Ai because he's a bit of a jerk. Then you try unconsciously to identify with Estraven, but he's ambiguous too. One who sees himself as somehow slow in action, who must use techniques of the fastnesses to compensate for his deficiencies; one who knows himself a failure, twice exiled, pursued by memories of dead love and unfaithful to it. Since you cannot identify with either of the two main characters as they see themselves, you are forced to try to identify, that is, feel with their developing relationship and its significance for several cultures. One ends by seeing both men as valuable but limited humans important to their worlds partly because of their efforts to deal with their limitations. Men - not heroes - who nevertheless do heroic deeds.

This writer, then, has been trying to prevent us from identifying with one character and to give us means of staying at the aesthetic distance. That is, she's been trying to give us a work of art. The happy dreams, the wish fulfillment bits are there, but she doesn't give us little pulp dreams of power and proficiency. No adolescent harem dancers. Instead, in Chapter 15 Estraven remarks "And if there were such a good government on earth it would be a great joy to serve it" and Genly Ai reflects "There we understood each other". In context this is notable because the reader has now, again, because of skillful use of point of view and narrative voice techniques, begun to realize that these two have barely understood a single word they've said to each other in the first three quarters of the book. When Estraven tells a simple truth Genly Ai thinks he's being ironic and distrusts this most trustworthy of men. When Genly Ai asks questions Estraven cannot treat them as questions because of shifgrethor considerations, and so on in endless cycles of confusion. The confusion, of course, is not broken completely ever and does not break up at all until each saved the other's life and mindspeech is established between them.

This confusion between characters can take us directly toward theme or meaning, as can many other parts of this novel. "Light is the left hand of darkness", starts a poem in Chapter 16. Light and dark are "like hands joined together". Confusion and clarity, distrust and love between people are like left and right. That is, they are nearly relative terms. The people of Winter themselves, conditioned by their ambisexuality, provide wholly new and confusing relative terms for the use of the Ekumen. They cannot see themselves at all in terms of the yang-yin symbol, but rather are central between light and dark, always in the year 1, central in time, always unique, allied to no other beast on their planet.

Even the sun of Gethen is used in Chapters 18 and 19 to reinforce this "light is the left hand of darkness" theme, when daylight,because of meterological conditions,gives no shadows on the snow. Without shadows Genly Ai is physically disoriented and immobilized while Estraven nearly dies in a crevass. Also, of course, the actual plot problem is linked tightly to this theme. Early on in Chapter 3, Genly Ai tells the mad king Argaven that the Ekumen seeks the augmentation of the complexity and intensity of the field of intelligent life. In Chapter 15 Estraven quotes the same phrase to explain an earlier adventure of his own.

Framing the exploration of this theme, and recurring through the text, is the question of Truth. Brief examples: Genly Ai in the last chapter tells the king that Estraven has died for mankind and realizes that this is only part of the truth. He has also died for Genly Ai's sake and that is only part of the truth, too. Then in the final paragraph one of Estraven's relatives asks for the tale of crossing the ice while the other asks for facts. At once the reader is catapulted full circle right back to the first lines of the book. "Truth is a matter of the imagination...You can choose the fact you like best yet none of them are false." "Light is the left hand of darkness and darkness the right hand of light." [Applause.]

TOM CLARESON:

Thank you, Ginny.

Speculations

Tom Clareson

TOM CLARESON:

Let me begin by acknowledging that the basic reason all of us read science fiction, or speculative fiction, if you like, is that it entertains us. We like it. But there the unity seems to end. C. S. Lewis, for example, disliked those stories which leap a thousand years to find plots and passions which they could have found at home, but he praised John Collier's "Tom All Alone" in the novel Full Circle because it portrays an heroic action among people fallen to barbarism. He also liked those stories dealing with sense experience and probable emotions and thoughts of men visiting a new and strange place, but these are very subjective criteria on which to judge any literature. On the basis of these remarks, I assume that he would have enjoyed Defoe's Robinson's Crusoe, Arthur C. Clarke's "The Sentinel" and Harlan Ellison's "A Boy and His Dog" equally well. [Laughter.]

In The Shape of Further Things, Brian Aldiss speaks highly of Ray Bradbury. In SF Horizons James Blish reprimands Bradbury for his indifference to accuracy of even the minimal sort, and slaps Brian on the wrist for the same error. There, too, Blish calls Kingsley Amis's New Maps "the only existing serious study of any weight by an outsider". I cannot recall an American enthusiast who would go even that far. At the BSFA meeting in 1970, Blish spoke of a revolution in science fiction, saying that most of its works had failed and its advocates had been in error. Yet he praises to the skies Barefoot in the Head, one of the most experimental novels in the genre.

In a recent issue of Locus, the reviewer of Orbit 8 began by asserting that once again the Orbit series had explored the peripheries of science fiction without much profit. Last year Alexei Panshin suggested that the Gernsback formula had persevered only so long as Gernsback was the only editor in the field, even if then. Judith Merril has espoused the New Wave. In June 1969, Robert Conquest insisted that the New Wave enjoys "the same material as its equivalent in mainstream fiction - pornography tempered by incomprehensibility." [Laughter.] Science fiction critics are a partisan lot.

Such differences of opinion are not unique to SF. One has only to turn to the reviews and evaluations - the early ones particularly, of, say, Dreiser, Hemingway, and Faulkner as late as the 1940's - to find their parallel, often enunciated at the top of the critic's voice. And the same basic issues have been in contention: What is the proper subject matter of fiction? What is its function? And how should a story be told? Such differences of opinion are vital to the examination of any literature. But they can be carried to the point that they obscure that evaluation either of an individual author (they delayed the recognition of Faulkner for at least fifteen years), or of an entire area, an entire genre of literature. The deeply felt and sincere disagreements existing in the field of SF have undoubtedly made more difficult its acceptance and evaluation, in part because they have drawn our attention from a perspective of the genre as a whole.

By genre as a whole, I mean to emphasize three things. First: that however dated the content and narrative methods of early stories, at least four generations of writers have responded to the impact of the science of their day upon the literary imagination and have produced what may be called scientific romances, science fiction, speculative fiction, SF, or sheer fun. In other words, science fiction has existed quantitatively as a recognizable genre within fiction for at least a century. I recall that in the introduction to Analog 3, 1965, in a discussion of the nature of science fiction, John Campbell called the Martian novels of Burroughs pure fiction, although pointing out that they were based on Lowell's description of Mars, a point, incidentally, which Richard D. Mullens disagrees with. (Again, partisanship).

Two: Those early writers of science fiction adapted to their own ends the literary conventions and narrative methods then existing, and only as the field developed and evolved in the twentieth century has it created its own conventions and methods. Don Wollheim's chapter on plausibility in his excellent book [The Universe Makers] gives a good example of what I mean here.

Three: That while the literary form acts as a continuum, no two generations of writers will respond in exactly the same way, even if the basic plot material and themes are the same, because each generation must seek its own idiom to express the personal dreams and fears of its individual writers and of its societies.

Three examples of what I've said. The editors of 333, a bibliography of the science fantasy novel (published in 1953, I acknowledge) say that the strange and fascinating allure that archeology holds for us is magnified a hundredfold in the lost race novel. But they excluded the lost race novel from science fiction, which they divided into three categories dealing with the physical sciences, the mental or psychological sciences, and the sociological sciences. Now if science fiction is concerned with the impact of science upon the individual in society, as every major voice in the field has said at one time or another, that must

include the impact of science upon the literary imagination; and if archeology is a science, then why is not the lost race a part of the science fiction field - unless we are using a more restrictive criterion to determine what is or is not SF?

Two: Jack Williamson revised "The Metal Man", first published in 1928, when he wanted to include it in the collection Pandora's Box. In letters to me he said that the primary revision was an updating of the scientific jargon so the story would not be dated.

Three: Both A. E. Van Vogt and Jim Ballard have dealt with the theme of a space voyage to Centaurus; yet how different are "Far Centaurus" and "Thirteen for Centaurus."

Recently Jack Williamson wrote that science fiction is about to change. I think we all agree, and look forward to the changes that must be made. Yet we have seemed not to notice that literature changes. I submit that no full evaluation of the genre - Alexei's new paradigm - can be developed without a perspective of the genre as a whole. With this in mind, I would suggest that the major difficulties facing the evaluation and recognition of science fiction stem from two interrelated problems. One of them is not entirely of SF's own doing, but both are ideologically loaded; perhaps they help to explain the various reactions to the current mode of SF, including reaction to the New Wave.

The seeming isolation and neglect imposed on SF, perhaps in the U.S. particularly, has come in large part from the essentially anti-scientific stance taken by the literary establishment, among others, early in this century when both realism/naturalism - what is now called the mainstream of fiction - and science fiction were daring innovations. By the turn of the century the so-called 'new science' with its philosophical implications of determinism had shaken, if not destroyed, the value systems upon which the literary establishment had long been based. It recoiled from the vision of man in a meaningless universe, and because of the depth of its emotion and despair it also recoiled from the new types of fiction. It was especially easy to do this with the new scientific romance which celebrated science and technology. The reaction is typified as late as 1939, when in writing of the pessimism of science fiction and of the catastrophe motif in particular, Bernard de Voto exclaimed: "It is as if a race drifting hopelessly to destruction found itself able to drift more tranquilly by knowing the inevitability of such disasters on this world and others." ["Doom Beyond Jupiter", Harpers, September 1939.]

Not until the 1950's and 1960's, when the anti-utopian motif seemed to move science fiction closer to an anti-scientific stance, did popular and academic critics turn their serious attention to the genre. This in itself is ironic. As I have suggested, literary realism and science fiction were twin responses to the new science, and both were incomprehensible to most of the critics of the early period. The two differed, of course. Socially conscious and infused with the pessimistic philosophy, realism/naturalism saw man as a helpless victim of social, economic, biological, and psychological forces deriving from his own make-up and from the society created by the new technology, with its resulting industrialization that had by World War I already become "the single greatest determining factor in all phases of American life" (1927).

On the other hand, despite its early glimpses of dystopia, the bulk of science fiction pursued ultimate weapons, ultimate energies, and ultimate metals that would produce an earthly paradise. By the 1930's and 40's, the much-maligned space opera with all its alien hordes bent upon ravishing the nearest space girl (at least on the covers of the pulp magazines) envisioned a galactic empire - a galactic paradise in which man and his machines were triumphant because they had followed the spirit of science where it had led them. From the beginning, science fiction has been infused with a sense of wonder, as Arthur C. Clarke and countless others have called it; yet this optimism (Don Wollheim is the most recent to assert the essential tone of science fiction is optimistic) simply intensified the isolation of science fiction from the mainstream of 20th century literature. And this philosophic difference - optimism or pessimism in the face of a seemingly meaningless universe stripped of many of its traditional values - seems to remain or has become perhaps one of the crucial factors dividing SF enthusiasts into several camps, each with its own concept of subject matter, function, and method.

At the MLA [Modern Language Association] Forum in 1968, this difference led Isaac Asimov to declare that man might yet triumph and spread through the galaxy and beyond. It led to Lester del Rey's cri de coeur that the New Wave is "naturalism transferred to science fiction where it doesn't fit very well." His remark drew the loudest applause of any. This inherited optimism, this celebration of science and technology, leads directly to that maze of complex problems at the heart of science fiction criticism at present, which have caused Alexei Panshin to call for a new paradigm and have precipitated the continuing debate as to whether or not SF is a literature of prophecy.

Elsewhere I have suggested that at least in the critical theories behind them, both realism/naturalism and science fiction trap themselves in similar cul-de-sacs. In essence, critical realism insisted that the function of the novel was to make you understand the real world through "a faithful effigy to it". Such critics as Howell spoke of truth to life and of showing life as it is. Even when a later generation garbed itself in Freudian dress and spoke of psychological realism, many of its advocates thought that they were simulating Man's everyday world, his everyday experience and that in doing this they dealt directly with

a singular reality. They mistook the word for the object. The intellectual milieu of the period had deprived them of a mythic framework. In desperation they turned to a literal representationalism that trapped them in the here and now, whether they emphasized the external world or the workings of their character's mind. Only those who somehow transcended that literalism - and note how important Jung and Freud and anthropology have become to modern fiction - only those who somehow escape that literalism, escaped the cul-de-sac.

In similar manner the central critical tradition (the central critical tradition - not the only one, by any means) of science fiction asserts that SF must deal with probability, plausibility and extrapolate "from inventions which are logical outgrowths of those currently in use or logically developed from currently accepted theories." As a result, that theory would restrict science fiction to a narrowly linear reality which is merely an extension of today. The continuing debate on SF as a literature of prophecy and, more recently, as forward-looking myth, occurs in an attempt to add dimension to that literalism, that cul-de-sac.

It seems to me that the whole argument is misdirected because it would explain and justify SF's function in terms of science rather than fiction. It seems to be the old didactic debate about literature all over again, and if science fiction is a gently garbed essay on the content of science, then I think, perhaps, I'd better ask Bob Silverberg where a literature major goes. What I am suggesting is that what I call the probability/plausibility delusion has never proved an adequate criterion by which to determine what science fiction is. We all know a legion of stories that have broken all the rules and are regarded as fine science fiction. We know the problems it creates for the individual author. If I recall correctly Sprague de Camp would not use the faster-than-light space drive because he did not believe that it was possible/probable. And what does one do with the stories of time travel, alternate universes, to say nothing of the lost race novels? What do we do with these stories? I do not think I am beating a dead horse. Benjamin Appel (I enjoyed the pictures in his books as well as some of the quotations from science fiction) said something to this extent: "If science fiction is not prophecy, then the problem of science fiction criticism becomes one of discovering what it is in such a manner as to account for all that we have been calling SF."

Moreover, the central issues occur again and again in SF criticism and may be seen in three areas: One: The insistence that some other or additional criteria must be found to judge SF; those we use in judging any other fiction are not adequate. Tony Boucher did much to lessen the focus on this point.

Two: The insistence that although SF may be fantasy or seem fantastic, it is solidly based in realism. The plausibility of the world a writer has imagined and created is a problem to any writer. That is why some critics howled so loudly at the worlds of Dos Passos, Steinbeck, and Norman Mailer, to cite but a few instances. The critics did not want to believe that those imagined worlds could be accepted as models of the one we all share. In terms of science fiction, Clifford Simak spoke wisely in 1953 when he said that "deprived of the ready-made tailored-to-order world of the realistic novel, the science fiction writer had to give particular attention to details of his imagined world in order to banish the skepticism of his readers regarding alien concepts and unfamiliar background". In short, to promote his reader's willing suspension of disbelief, the SF writer had to provide a rich texture to his created world.

Three: Debate upon prophecy and probability continues. I've already cited Blish's reprimands of Bradbury and Aldiss. In the introduction to Analog 3 again, John Campbell wrote that "the major problem of science fiction is to predict the probable consequences of certain suggested changes in the technological systems by which man lives". Earlier, in one of the first articles to mention the term "speculative fiction", Robert Heinlein wrote that "while any given SF story might seem extremely fantastic in content, it is not fantasy - it is legitimate and often tightly reasoned speculation about the possibilities of the real world."

Note the key words - legitimate, reason, real world. As late as 1963, Isaac Asimov in the Bulletin of Atomic Scientists echoed the view when he said that SF was concerned with the world that will develop as a result of changes in science and technology. Jack Williamson spoke of change resulting from science and technology. If prediction/prophecy is the essential feature that identifies SF, and if the imagined world is one based upon probability and realism of detail and background, then such novels as Sinclair Lewis' It Can't Happen Here and the more recent Seven Days in May and the Tashkent Incident should be accepted as science fiction. If they are not, then we become embroiled in a non-literary, ideological battle involving the celebration of science and technology and our personal optimism and pessimism. If this is true, no wonder the dystopian mood and the New Wave still shock and have so severely shocked some people.

But perhaps, after all, the emphasis upon probability is only a convention by which some of the writers ease the willing suspension of disbelief in their readers. No fiction reproduces or projects reality. I'll go along with the term speculative fiction or speculative fantasy if you wish, but all novels speculate - even Dickens, Hardy, Dreiser, among the best of them. At its finest, fiction creates richly textured worlds like Dune that provide a stage for actions and characters that inform us about this world. (See Bob Parkinson's article in the next Extrapolation

on Dune.) On the one hand, fiction moves toward myth by dramatizing the actions of characters like Beowolf, Arthur, The Last and First Men, or the inhabitants of the Foundation Trilogy or the Legion of Space. And those actions incarnate the values of the author and of his society. At the other extreme, fiction can examine minutely the actions of a moment and the workings of a human mind - from Joyce's Ulysses to Faulkner's Benjie to Aldiss' Colin Charteris. In between, anything is possible, including Ringworld and Tower of Glass. But always fiction tries to simulate the texture and quality of human experience so that it may say something obliquely, indirectly, metaphorically, mythically - choose your word - and come out fighting about the human condition. At its best it attempts to gain the symbolic, the mythic level. Let us stop apologizing for science fiction's supposed lack of literary quality - whatever in hell that is - and for its publication at one time in magazine form. In doing so we forget many of the great Victorian and twentieth century novels, from Dickens to Hemingway's Farewell To Arms, were first published in popular magazines. Instead, recognize that after four generations science fiction makes up a substantial body of literature. If we examine it as literature, we may well find that it has most vividly recorded the impact of science upon the human imagination and that it has served and will continue to serve as the best vehicle to express the dreams and fears that we share of the human condition in the twentieth century.

[Applause.]

The Next Five Years in Science Fiction

Panel with Clifford Simak, James Gunn, Bob Shaw, and Poul Anderson

TONY LEWIS:

Ladies and gentlemen, I'd like to welcome you to the final panel of the day, which is an extrapolation, "Science Fiction - The Next Five Years." We'll try a slightly different format. We're going to show a film first, a short film from the University of Kansas Science Fiction Film Series.[1] After that, our panel is going to use this film as a kick-off point for their discussion of the topic. I'd like to introduce to you the panel here. It's to be chaired by our Guest of Honor, Clifford Simak; also on the panel is Bob Shaw, recipient of the special fund to bring him over here from Northern Ireland; James Gunn, the president of the Science Fiction Writers of America; and Poul Anderson, science fiction writer par excellence. Now if we can have the screen lowered, we'll start with the movie section of our event.

> [Harlan Ellison - author of many science fiction books and hundreds of short stories, editor of the controversial Dangerous Visions and its sequels, and a major spokesman for the "New Wave" in science fiction, conducts a seminar on NEW DIRECTIONS IN SCIENCE FICTION. Ellison describes science fiction as a street fiction, a fiction of the people, with a mission and a message.]

CLIFFORD SIMAK:

We have heard Harlan's testimony; it's in and will be considered. I am inclined to think that he talked about only one facet of science fiction; I think there are many others. I'm not entirely convinced by what he says. Let us, however, turn to some other men who may have something further to say. I'm terribly glad that I'm chairing this session, because a chairman doesn't have to talk. He doesn't have to have any opinions or know anything about the subject. He just has to call on the experts, and I'm surrounded by them. I think I'd ask Jim Gunn to go ahead and say what he thinks science fiction may be like in the next five years.

JAMES GUNN:

Obviously we begin at a disadvantage, since who can compete with a Harlan Ellison who is fifteen feet tall? [Laughter.] It's hard enough when he's only five, five.

This film is being used and will be used as a film to react to in science fiction courses, and I think from the response of the audience today that we did create some reactions. I know when I have used it in my own classroom at the University of Kansas it's been a good discussion starter. We might begin by mentioning some of the things in the film that we either agree with or disagree with. One of Harlan's statements that I agreed with was that there is a growing together of the mainstream and science fiction. We are seeing dozens of mainstream writers who are attempting to write science fiction of various sorts. They are writing their own kind of science fiction in their own way. They are using what they wish out of the science fiction canon. They are making up some things, discarding other things, but they have turned to science fiction as a source of inspiration, perhaps because their own work in the mainstream has seemed to come to a blind alley.

Similarly, I think we are finding increasingly a number of science fiction writers whose audience is spreading out beyond the immediate science fiction readership into what might be called that audience for the mainstream. And one of the phenomena of our times, for instance, is in the college bookstores where the best selling book may not be a book by some mainstream author like Harold Robbins, but Heinlein's

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[1]Harlan Ellison on NEW DIRECTIONS IN SCIENCE FICTION was produced by James Gunn for the Extramural Independent Study Center, Division of Continuing Education, The University of Kansas. It may be rented or purchased, along with a dozen other science fiction lecture films, from the Audio Visual Center, The University of Kansas, Lawrence, Kansas 66045.

Bob Shaw, James Gunn, Clifford Simak, and Poul Anderson

Stranger in a Strange Land or Frank Herbert's Dune. These books are reaching broader audiences and it seems to me this is all to the good for science fiction writers who wish to stay writing solely for a science fiction audience, or for those who choose to write for a broader audience, because those people who read Stranger in a Strange Land and Dune, who may not know anything about science fiction, well may be enticed into exploring further into this mysterious world of ours which is unknown to millions of readers, and may find there something that fascinates them just as much or even more. And with that I think I would like to hear somebody else's voice.

BOB SHAW:

Well, I'm trying out a word or two, and hope everybody can penetrate my Irish accent. In a climate where everybody is liberal and radical I'd like to be perhaps a bit more liberal and a bit more radical and suggest that some of the conventional stuff in science fiction is still worth our attention and still worth doing and should not be scrapped. To my mind, science fiction must develop and is developing. But the word develop does not mean completely throwing away what you've got; it means retaining the best of what you've got - this is the way engineers approach it - and adding on extra bits which are superior features. I would say that nobody likes to think of science fiction as being escapist literature, yet when you get down to it, escaping isn't all that bad. There's a lot of things about the world today that people do like to escape from and some people like to smoke a peculiar kind of weed and escape for an hour or two. I still think that there is a place for escaping from the world, through the kind of science fiction which has given a lot of people a great deal of pleasure over the last four or five decades. That's all I want to contribute at this stage.

POUL ANDERSON:

Well I think mainly I will express disagreement with Harlan's thesis. With all due respect for Harlan Ellison - and that is a considerable amount of respect - I think, well, just as so many of the younger generation think that they have discovered love and world peace and even sex all by themselves, Harlan seems to feel that the fact that science fiction has some contemporary relevance is something new. I refer you clear back to H. G. Wells, at least, Rudyard Kipling, other founders of the field, or to come a little closer, the stories being written in the 1930's and 40's by people like Clifford Simak, Robert Heinlein - directly concerned in science fiction terms with the real world. Surely the older readers among you remember the spate of atomic doom stories that there were shortly after Hiroshima. Remember stories like Pohl and Kornbluth's classic Space Merchants. You know, this relevance we've always had with us, and very good, say I. We certainly should.

Likewise, science fiction has certainly been reenergized by the appearance of new writers. However, Harlan himself is scarcely a new writer anymore. In fact, most of those I name have actually been around with us for quite a while - ten years or so. They're getting to be old hands themselves. But they certainly have brought in some new insights, some new literary techniques. John Brunner, of course, is a very good example. Fine, that's a great thing, it's good for all of us. But again, it always kept being done. Our Guest of Honor, Clifford Simak, for example, has always been a very fine stylist as well as a fine story teller, and for that matter, contemporary science fiction of any kind where it comes to real depth psychological insight has yet to catch up with what Karel Capek of Czechoslovakia was doing back in the 30's. For that matter, I don't see any particular distinction between New Wave, Old Wave. In fact, most of the alleged New Wavers deny being part of any such thing - Zelazny, Delany, say, Ellison himself, so on down the line. The best of them are also telling stories - damn good stories. There's action that goes from here to there, as should be the case in stories.

So my feeling is that while science fiction has lately been refreshed and benefited by the appearance of a wave of new talent, there's been no radical change in it, except, oh, certain things that personally I find unreadable - you know, little magazine type stuff - but what the hell, it's not compulsory to read it. For them as likes it, it's fine. I think the basic science fiction continues to be what it always has been and merely, we hope, somewhat improved, somewhat liberated from old taboos - Harlan's quite right about that. And I trust we will continue to improve, continue to remain relevant to the real world.

CLIFFORD SIMAK:

If the chairman may be allowed to speak a few words. It seems to me that we certainly have gained in the last few years because of some of the writers that Harlan has been talking about and some of the work that Harlan himself has done. Like Bob, I don't think we should scrap what is old, but we should grab on to what is new and try to make it a part of us. I think that science fiction, as a matter of fact, or perhaps a much better word would be imaginative fiction, is in a better situation today than it has ever been because the avenues have been broadened. That the old has been preserved is evidenced very well in Niven's Ringworld. I was terribly glad to see that story published, because that's the old solid science fiction that John Campbell used to talk about, and written in a thoroughly modern manner, and it means that we have not gone away from our roots.

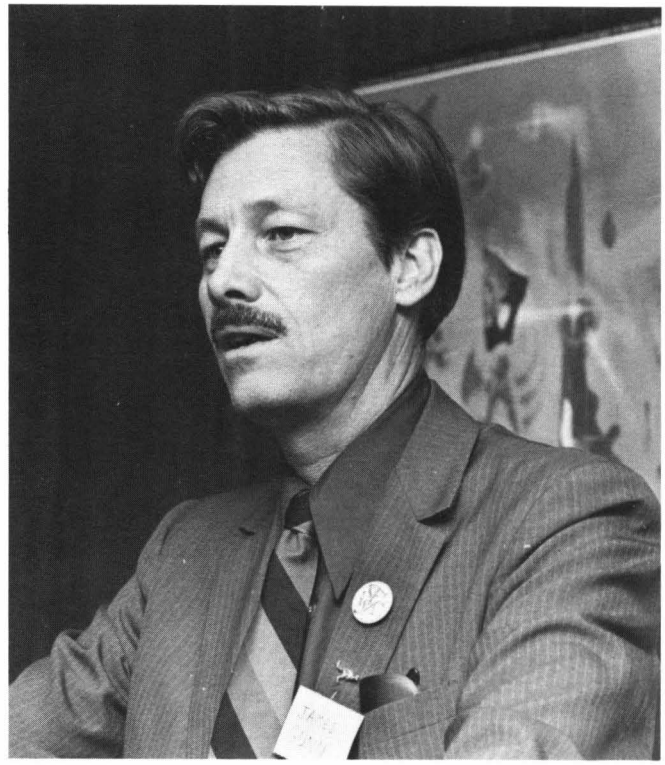
I think that the fact that many of us have been - indiscriminately, perhaps - mixing fantasy and science to produce a new hybrid kind of story may have some effect on the field. I hope it does. I think that's the ideal answer to good story telling. If you can make a man believe in scientific impossibility or improbability why not team it up with a fantastic improbability and create what we might call a modern fairy story? This is my contribution - the way I feel about it. It's not very instructive. It's a gut feeling rather than a discernible feeling.

I think perhaps that we can go around once more with everybody having something to say and then we can have questions from the floor.

JAMES GUNN:

I just have a brief additional comment to make, that I agree with the other panelists, that I feel the direction of science fiction in the next five years will be evolutionary and not revolutionary, that the best writing will incorporate the best techniques in telling the kinds of stories that have always been told in science fiction, which means that they will be told, I think, better and better and hopefully will find more and more readers. The big problem in the next five years, I think, will not be the quality of the fiction, it'll be the problem of distribution, that is, getting the books out where the people who would like to read them, would buy them, can find them to buy and to read. This is a mechanical solution, not an artistic one, and I hope for the good of all of us, those of us

James Gunn
(Photo by Jay Kay Klein)



who write and sell science fiction as well as those of us who buy and read science fiction, that we find a solution to it, because I think we have an excellent prognosis for the future. Science fiction is better than ever, from my view, more promising than ever, and I look for great things.

BOB SHAW:

Perhaps I might sound a little negative in my comments about the Harlan film we've just seen, and this is possibly because of an experience I had recently as a writer. My books have been selling in the States and I generally pick up hardcover sales in Britain afterwards. And the last book I did, I'd read a lot about the need for better characterization and more believable human beings in science fiction books, so I resolved that the next one I did I'd really give it everything that a mainstream novelist would give a book in terms of development of characters and filling in realistic background and make a real book of it. And I think I must have succeeded to some extent because Avon have just published this particular book, The Ground Zero Man it's called. When it went to my usual hardcover publisher in England I got a letter back from the director in which he said, quite simply, by no stretch of the imagination could this book be called science fiction, although it was set in the future and dealt with a lot of highly scientific fictional ideas, he said it couldn't be science fiction, so, as far as I can tell, I am not going to get an English publication for this particular book. This has given me the idea that perhaps I should get a bit further out into space and make a bit more money in doing it.

Just a final comment. I was a bit reluctant to appear on this panel, partly because I don't enjoy public speaking, but also because I hadn't one single idea about what was going to happen to science fiction in the next five years, [Laughter.] which is supposed to be the general topic. But while we were sitting here talking about it, it occurred to me that possibly one benefit for science fiction in the next five years may be the imminent ending of the Apollo moon program. I think there are only two more exploration flights planned and then, as far as we know it, we could reach a stage where there isn't any more money left for anybody to get to the moon in the way that we have become accustomed to seeing them doing it. So this could put us back in a situation that science fiction was in in the old days when we had the backyard spaceship and if somebody wanted to go to the moon they built something in the backyard and flew it up there, and then it was all pretty human and a bit fantastic and a bit exciting. So if we have stopped going to the moon the hundred-billion-dollar way, perhaps the next time somebody goes after Apollo 16 it will be a backyard space ship powered by some method we haven't thought of yet.

I would suggest that a good repulsive energy to propel a ship might be to get a bunch of very keen New Wave science fiction writers and fans, put them in a space ship, and on the ground below it put a large picture of Hugo Gernsback, [Laughter.] and suddenly uncover it and possibly the ship will take off at ten times the speed of light - I don't know. Thank you. [Applause.]

POUL ANDERSON:

A question, Bob, if you please. When was your first published story? What year?

BOB SHAW:

1951.

POUL ANDERSON:

Ah yes. You see, we think of Bob Shaw as certainly being among these very good newcomers who have revitalized the field. But you know, 1951 - twenty years! Of course it's only recently, I believe, that you've really begun to appear with any great frequency, am I right? Say within the last ten years or so.

BOB SHAW:

This is correct. When I started I wrote about six stories all in a bunch and I sold them all, but I didn't like them. In fact, I secretly despised the editors who accepted them. [Laughter.] I decided then that I would take a few years off from writing and study the inhabitants of Sol III and come back to the field then, and this, I think, has paid off for me.

POUL ANDERSON:

You see, I wanted to bring this up because I had a point to make, or re-emphasize - I mentioned it last time around - that these writers we think of as the new writers are actually not so new anymore. They're settling down to become the reliable old hands. They, too, are becoming mainstays. The Simaks, the Heinleins, the Gunns, are being joined by the Shaws, the Zelaznys, the Delanys, the Ellisons. Well fine, we would certainly not want to lose them. But thinking back over the history of science fiction, I have the distinct impression that there are these periods where for several years you get new writers exploding like novas all over the place. Think back to the Campbell golden era when Simak first began appearing regularly, when Heinlein did, Asimov, Van Vogt, the giants of that age, and then with the Boucher, McComas, and Gold renaissance a new race of giants appeared and some of the older ones like, say, Theodore Sturgeon suddenly gained stature. Sturgeon had always been a damn good writer, but all of a sudden, about 1950 or so, he became the extraordinary one that he is. Then again we went into slack era

Poul Anderson

where science fiction was not all dull and repetitive, but it certainly had that tendency, and then with these newer writers I've just got through mentioning we had another era of brilliance.

Now I don't want to be too pessimistic, but just from this bit of history I would suggest that every so often we need new blood. The old blood begins to get a little tired; we start imitating each other too much and getting a little bored with the whole game. Then somebody new comes up and gives us a whole fresh slant on it and even the old-timers get excited. For example, Fritz Leiber has been around practically since the Ark came to land. Fritz Leiber also has become one of the leading creative innovative writers at age 60, or whatever his age happens to be right now. And I would not venture to speak for him, but it just looks as if he also has drawn inspiration from this example. So I'd just like to ask where is our next generation coming from? Surely some of you out there, some of you younger people sitting out there are going to be the the ones that will give us the next shot in the arm. I hope so.

CLIFFORD SIMAK:

I hope so too. The field is bigger than it ever has been; there's room for everybody. Come on in! I think the one thing that we may lose sight of is that when we talk about a Heinlein story we must realize that Bob Heinlein over the years evolved as a writer, that he was a different writer ten years after he first started then he was when he was starting, and five years after that he was changing. I think that every writer changes. The old writer does not stand still; he is evolving as well as the ideas in the field. We need that sort of evolution in writing or we will stand still, and in fact we could go backward, and we need the ferment of young ideas and young people in it to keep it going.

Thank you.

[Applause.]

The Uses of the Future

Dialog between Frederik Pohl and Dr. Sidney Feinleib

TONY LEWIS:

This panel is on "The Uses of the Future" and we have two men here who are estimably suited to discuss this topic. On my left we have Frederik Pohl, a science fiction writer, former science fiction editor of If and Galaxy, who tells me he has just finished writing three new science fiction stories which should see publication soon, and is now working on a new novel in collaboration with Jack Williamson. On my right, Dr. Sidney Feinleib, who is a consultant for Arthur D. Little; he didn't wish me to say anything more about him because he has some things he wants to say for himself. I'll leave you in the capable hands of these two gentlemen. Thank you. [Applause.]

FREDERIK POHL:

What I'm going to talk about today is the uses of science fiction. Not the pleasure factor - we all know that it's a great titillator of the senses because we know that's what turned us on in the first place - but it does have some uses, and in some ways they're uses that cannot be duplicated in any other way that I know. There are people who use it for teaching science, for example - the Russians are very big on that. It's a way of making political points, as people like George Orwell and H. G. Wells and anybody you like as far back as Thomas More - even before, I've found. But it is also, in my opinion, probably the best way of trying to form some useful idea of what the future may hold in store for all of us and its impact on the people who will inhabit it including ourselves and our descendants.

It is the use of science fiction as a tool for investigating the future for fun and profit that I plan to talk about. One of the things that is wrong with being a science fiction writer is that there are too many outsiders horning into our territory. I don't want to upset Dr. Feinleib, but I have been deeply depressed by the number of occupants of think tanks like the Rand Corporation, the Hudson Institute, and the Institute for the Future, who have been doing what is essentially writing science fiction stories except that they leave out the girl interest and the sex and the plot. [Laughter.] They call them different things - they call them Delphic studies or cost-effectiveness analyses or relevance-tree studies or morphological mapping, or any of those things, but you and I both know that what they're doing is writing science fiction, and I, for one, resent it.

I would like to show that even though these newcomers have been stealing some of our best ideas, we can still do the basic job of describing the future better than anybody else. I don't mean to try to say that science fiction in general, all science fiction, is useful as a source of reliable advance information about the future. I don't mean to say that most science fiction or all science fiction is good for anything at all. There's a lot among it that's not really worth a great deal of effort. Sturgeon's Law is applicable to science fiction - "Ninety percent of everything is crud". I sometimes think that he had his percentage too low, but in among the crud there is some very valuable stuff.

The kind of science fiction that I want to talk about is the kind that makes statements about the future that have some bearing on what we do today. Now there are a lot of words that have been used to describe statements about the future. They can be called prophecies or predictions or forecasts or projections - any number of words. The words are used pretty interchangeably, and I'm not going to try to define which is which, but I would like to point out that there are at least two separate classes of statements about the future. One of them, for the purposes of this discussion, I will call predictions, and the other I'll call projections.

A prediction is a statement about some future event or phenomenon. For instance, I might say (and in fact I do say and you can write it down and check me out on it), "At some time in the next million years the Earth will be visited by creatures from another planet." I call this a prediction as against a projection. Another statement I might make is that over the next few years the Earth's population will increase,

which is clearly a projection because that's what's been going on all along. We could stop it if we wanted to I suppose, but the process by which this statement is going to come true is already well visible to everybody.

It's true that predictions, too, are the result of processes. They just happen to be processes that aren't accessible to us. I'm quite sure that right now on Aldebaran-9 some green-skinned nine-legged creature is trying to persuade his R&D director to finance an Orion-type spaceship to cruise to Sol and visit us. But we don't know who he is, we know nothing about the process, it's not under our control, and when it happens - when that process intersects ours - it will come from outside without warning. Therefore, I call that sort of event a prediction.

Now if we look at statements about the future in the light of this distinction, you can see right away that a lot of things that look like predictions are not - they're trend extrapolations. If I say to you that you're going to die, that's a trend extrapolation and a projection. I can't prove it; I can only say that the odds go that way because out of the 50 billion or so people who have lived, 46 and a half billion have died and the rest of us aren't looking too good anyway. [Laughter.] So that's the way we expect to go. It could happen otherwise - we can interfere with the trend. If Robert Ettinger has his way we can be heaved into the deep freeze immediately on death to be thawed out and started up again at some future time. Possibly we won't die, or as he said, if we do, it will only be a momentary inconvenience and needn't be fatal. But this sort of statement is a statement about existing events; it's not a prediction in the sense that it deals with things that we cannot anticipate. It says that something is going on now that will have a certain consequence, namely death.

Then there are a lot of things that are disguised to look like predictions which are, in fact, not even statements about the future at all. You pick up your copy of your weekly stock market guide and it says, "I predict that next Tuesday when Alpha Ralpha Industries issues its quarterly earning statement, it's going to show a helluva big loss". Well, this is a prediction only because the fellow who wrote it has already seen the earnings statement. He got an advance copy because that's what he hired his spies to do and the only future event is that it will be made public at some future time.

In almost the same sense, if you had a good test for determining the sex of the baby your wife - or close friend - is about to have, [Laughter.] she might possibly go to the doctor, he might take a sample of whatever body fluids turn him on, and he'd inject them into a frog, and he'd cut it open and study the entrails and say, "Ah Hah! I predict that on June 10 you will have a boy", but actually the only reason he can predict that it's going to be a boy is that it's already a boy; it just happens not to be accessible for viewing so he can't tell without the frog. This is not a statement about a future event; it's a statement about something that has happened already, but we just don't know about it yet.

And most statements about the future that are usually called useful are of this general kind. They describe ongoing processes or things that have already happened - we just haven't found out about it - and they only describe what will happen in this process at some future date. It doesn't mean that they are bad things; they can be good things, they can even make very good science fiction, and as guides to action they can be of considerable use. In fact, the study of the future can be of great use, even when it not only doesn't really tell you anything about the future, but doesn't purport to.

There's a means of investigating future events called war-gaming; it's widely practised by all sorts of people with a lot of stars on their shoulders. The Germans happened to be war-gaming an invasion of Normandy the day it occurred. It didn't help them a lot - they lost it - but they were war-gaming it and they predicted pretty well what would happen. The Japanese war-gamed all of 1941 before they bombed Pearl Harbor; it didn't help them much either, but they did attempt to make predictions on it. Most nations which maintain defense establishments do maintain war-gaming institutes of some sort to try to predict what will happen under various circumstances.

The CIA had a great triumph in this respect one time, and I mention it because it hasn't had all that many great triumphs but this was a good one. [Laughter.] They were predicting the possible trend of events in a possible invasion of a Middle Eastern country and they set up a war game or political military game in which the good side, namely us, were the Blues and the bad side, for some reason, they called the Reds, [Laughter.] and they assigned American officers to take the part of commanding general of the Blues and commanding general of the Reds, and the commanding general of the Blues turned up with a big problem that no one had anticipated. The problem was that he had all these jet airplanes and there were no local supplies of jet fuel to power them. He didn't really know how he was going to get along with the resources at hand. Simultaneously, the other American officer, who had been given the job of being commanding general of the Red team, decided that a good thing to do was to cause as much civil disturbance as possible and one way of doing that was setting fire to as many public buildings as possible. In order to set fire to the public buildings, he said we will use these huge stocks of domestic kerosene that they have stashed all over the city and start bonfires, which was the first clue the commander of the Blue team had that there were these stocks. (He'd been told like everybody else, but he hadn't thought of oil lamp fuel in the

same connection as jet fuel.) Thereupon he took the information that had been available to him, but hadn't been accessible to him until it turned up in this war game, and won the battle. They didn't actually fight it with flesh and blood people - I don't know how it would have come out - but on paper we won it and it was a triumph for the CIA.

Now I wandered a good distance from science fiction, which usually goes a good deal further afield in space or time than this sort of example. The difference between a statement about the future that you might expect to find in Amazing Stories and a statement about the future you might expect to find in one of those blue-bound or plastic-bound Arthur D. Little survey things they issue, is that the science fiction statement is not meant to come true, not meant to come true for anybody including the person who makes it. Any science fiction writer worth his salt is capable of writing twenty different stories each one of which contradicts the other wholly. But this, too, is a useful kind of prediction. It can be used as cautionary science fiction. I speak of this because it's the kind of science fiction I like best and the kind I write most often - stories like The Space Merchants and "The Tunnel Under the World" and The Age of the Pussyfoot. They're not meant to tell what is going to happen; they're only meant to tell you that these things may happen if you don't watch out and if you want to avoid them you'd better start doing something about it right now.

But a prediction doesn't have to come true, or even to be cautionary, to be a good prediction. I'll give you an illustration of a prediction I made myself - it didn't work out, but it's still a good prediction - and I made it on the basis of some very good information from some people who are much better qualified than I and it had to do with the development of artificial intelligences - computers that would be smarter than smart human beings. I had to investigate this for something I was doing about ten years ago and it turned out there were three or four lines of investigation and all looked sort of interesting. At the Rand Corporation they had run a Delphi study about the future in 1962, one of the questions which was, "At what date in the future do you expect to see the development of computers which are capable of scoring 150 or better on a standard IQ test". And after they went through the Delphic procedure and got the consensus they look for, the date turned out to be some time in the mid-1980's.

At the same time, I talked to Marvin Minsky, who may be around here somewhere, and he made a statement which, translated into slightly different terms, seemed to mean that he felt that computers became able to do things about twice as hard every two years - they doubled their capacity about every two years. Now if the potential of a computer doubles every two years, we don't evolve that rapidly, so that sooner or later the computers have to catch up with us. If you double every two years, that's the same as multiplying by a thousand over a period of twenty years, and for other reasons which have to do with the number of neurons in the brain, and the number of connections in a computer, and the reaction speed of both kinds of cells, it seemed to me that a brain was probably a thousand times as complex as a computer and that therefore this line of reasoning, too, indicated that around the mid-1980's computers would be smarter than genius-level human beings. Now these were two good lines of reasoning and there were a couple of others that were almost as good, or seemed so to me, and they all came out to about this same figure - a really great brain around maybe 1985 - and so I think that was a very good prediction with one little technical flaw - namely that we're about halfway there now and there is no sign of this happening.

Now the fact that the prediction may not be appearing to come true may appear to the layman as if there's something wrong with the prediction. I prefer to think that the prediction wasn't wrong; it's the world that's wrong. [Laughter.] And I think this is what a good prediction can do. It can show you not what is going to happen but what can happen if you want it to. I think I know why we don't have these what Pat Gunkle calls sesqui-intelligent AI's one and a half times as smart as you and me, right now or in the drawing boards, and that is because nobody saw any particular use for them. I mean, if you did have a computer that was a great deal smarter than you, it's hard to know what you would get from it. You couldn't get the right answers until you knew the right questions and I don't know what you'd ask it except maybe for permission to leave the room [Laughter.] and whether it would answer you anyhow, because if it's all that smart why would it bother with us? At any rate, nobody appears to be interested in building them, and that's why I think we haven't gone that way.

What science fiction can do very well is to show us what we can have if we want it and we may then ourselves decide whether we want it or not. What science fiction does is to give us a catalogue - a Sears Roebuck catalogue - of possible futures from which we choose the ones we want, try to avoid the ones we don't want, and off we go. Now, the problem of how we guard against the catastrophes that science fiction may show, or how we encourage the utopias that science fiction may offer us is not directly one of predicting the future. That is a quite different art, and purely by chance I happen to have with me the cover of my newest book which explains this all to you. It's called Practical Politics. It tells how you can use the political system to do what you like. Due to an enormous oversight on the part of my publisher, Ian Ballantine, we don't have 10,000 copies of it in the huckster room, which I was hoping to have with the science fiction, or with the other science fiction, but

I'm sure that if you go up to him after the proceedings and give him $1.25 and your name and address he may not send you a copy of the book, but he'll be at least $1.25 better off and that may convince him to print more copies. [Laughter.] Besides, maybe he'll split with me. I think I'll let Dr. Feinleib tell you about what Arthur D. Little is using with real science fiction writers in a real situation, and then after that we'll have a question period and you can ask all the questions you want - the easy ones at me and the hard ones at Dr. Feinleib. Thank you.
[Applause.]

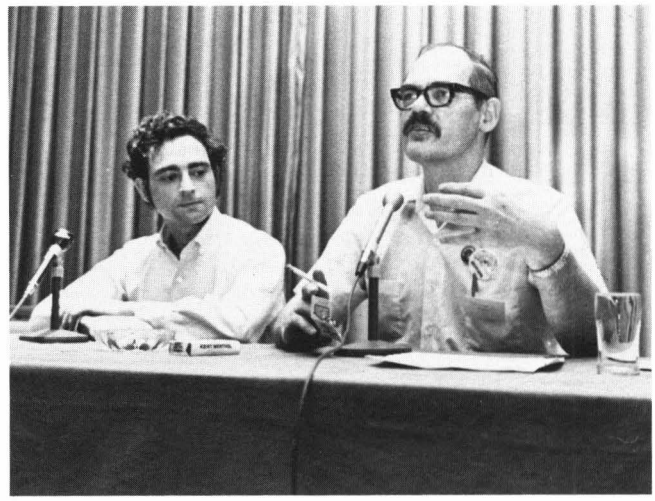
DR. SIDNEY FEINLEIB:

Listening to Fred's opening comments, I'm reminded of the anecdote where recently several women were brought into night court in Boston for loitering and the judge said to the first woman, "My dear, what is your occupation?" She said, "Oh, I'm a seamstress." He said, "Very nice - ten days." He calls up the next gal and says, "What is your occupation?" and she says, "I'm also a seamstress." He says, "Sure you are - ten days." Calls up the third gal and says, "What's your occupation?" and she says, "Oh, I'm a prostitute." He said, "Oh? How's business?" "Lousy what with all these seamstresses around." I'm beginning to feel like one of the seamstresses in relation to the science fiction writers who are the pros. [Groans and scattered applause.]

As is the situation with consultants, most of my clients are worrying about the future mostly from an economic point of view of staying in business, and my job is to try to help them in planning their future, planning their businesses. The first step we take is to assume certain objectives in their planning program - what they want to make or what kind of market they want to reach - and the other assumption that we make is a certain scenario of the future. Whether this is an intentional role that we play or not, I don't know. I don't know whether it's an intentional thing in planning businesses or business strategy, but nevertheless you have to make some assumptions about the future.

At the present time I'm conducting a large study in technological forecasting which is a reasonably rational approach to planning for some of these companies. But we quickly ran into the problem that Fred pointed out, that there are a large number of scenarios of the future and who knows what the future has in store for us? I'm not even going to ask the question: do we want to really know what the future has in store for fear that it may not be interesting any more? But nevertheless, we have an infinite number of possibilities of the future and you have to make some decisions at some point. Where do you begin?

One way that you begin has been started by the government, many governments, and you have groups such as the Futurables in France, you have in the United States this November something called the Commission for the Year 2000. You had the same sort of commission several years ago which was run under Daniel Bell at Columbia University with thirty very important, influential scientists, engineers, etc. What do we do? We're stuck. You don't have all the answers; you don't know which scenarios to choose; you don't even know whether you're choosing the right people in these scenarios.



Sidney Feinleib and Frederik Pohl
(Photo by Jay Kay Klein)

From a business or government point of view you may have a specific project in mind, you may have a NASA program, you want to build a space shuttle, something like that, and so you have a definite objective. But when you start off in another area such as in television or video cassettes or something else of that type, you don't know what the situation will be in the future. You don't know whether the people will want such a device, so you ask the question: Who needs something? The consumers come over to you and say, "Hey fella, why don't you make a video cassette for me; I need that". That isn't what happens. You create a situation or scenario of the future saying that with a given number of assumptions the market will develop somehow or another.

And this is what we are doing as part of our program. We are attempting Delphic forecasts, morphological forecasts, trend analyses, all the glamorous, very rational approaches toward looking at the future and looking at technology, but this was inadequate, and so I've had to scrape the bottom of the barrel and I hired science fiction writers to also write scenarios of the future and I'm not sure whether the results were any more satisfactory than the results that I had in conducting fifteen luncheons with the secretaries at our company. Their imaginations were quite good. Maybe they were the experts in the area

of the office of the future or the home office of the future - I don't know. So who's the expert?

Traditionally, we thought that the science fiction writers had a monopoly on being able to view the future and certainly there's a lot of imagination there, much of which is not funnelled in the right direction, much of which is dependent upon extrapolation of just mechanical things - looking at technology and extrapolating into the future or doing your blue-sky thinking about that. But even that's not enough. Science fiction, having the word "science" in it, may be a detriment to the field of science fiction because a lot of our future problems are not necessarily technology or science-related; they're people related.

And even from a business point of view, we don't know how much to include as to the people problems of the future - how people will react, how new equipment will affect people - but we have to begin somewhere and this is where we begin. So I'm in agreement with Fred in some respects. We're a bunch of amateurs coming to an area where until now there are a lot of professionals, but I'm quite willing to compromise, if you will allow me, and try to combine both the experience of the professional forecasters, namely science fiction writers, and the inexperience of the people who have to make a living at this, and if you have any advice how I could run this thing any better I'd be very happy to listen. Thank you.

FREDERIK POHL:

I don't actually have any advice; I'd like to make a comment, though. You used the term "rational forecasting" a little bit before, and I've had a little bit of experience with rational forecasting - a certain amount of lecturing and consultancy to management groups from time to time - and the usual procedure was that they'd start out by saying, "We want to get ready for change". And what it usually turned out to be was that they wanted to avoid change until they absolutely had to, because, of course, there are rational reasons for this. Reason tells us that as things are going pretty well, let's not change anything, let's not rock the boat. Our balance sheets tell us that we have this enormous investment in capital expense for the things we've already got and if we come up with something brand new that's going to obsolete them, what are we going to do with the plant we have already built? So most planning and most forecasting, it seems to me, is rather too limited and too self-centered to be very effective.

I think that the Institute for the Future attempted to do something they called cross-impact matrix analysis where they attempted to follow trends in certain specific industries, and social problems, so on, and at the same time throw in factors every now and then that would knock everything loose and see what came of the impact of these external events on the trends they were following. Of course, that only works if you happen to have some advance information on what the external events are going to be. And if you have some advance information on what the effects will be on the process you are following, you don't really need the analysis very much, because you have already got it in your head.

I think that is what's more interesting. This is what I said earlier, and I hate to say it again because I don't want to seem ungracious, but it is really more fun and more productive to read a science fiction story than to read an estimate of the future on a rational basis.

DR. SIDNEY FEINLEIB:

I agree - it probably is a lot more fun. Nevertheless, you have to make decisions about how the world is going to be and you would like to be able to think ahead using the inputs of "rational" people, people in business (I don't know if they're so rational), science fiction writers, people who have more imagination. Maybe combine the two. We don't know the future. Nobody can know the future, not even the science fiction writers. Maybe some science fiction writers think they do know the future better than other people, I don't know. But certainly there's a great source of imagination over there which could be brought into play, which may be of some value, not to business but to the society in general. I don't know how to bring that into happening.

FREDERIK POHL:

That's the applications technology which is one of the things I was talking about in the book Practical Politics that I mentioned. Really, there is no good way of applying knowledge about the future that I'm aware of. Businesses generally tend to be conservative. (I don't mean politically - conservative in terms of what they're doing, for the reasons I mentioned before.) Government tends to be conservative for other reasons. I heard a talk by one of the people from NASA a couple of months ago, and someone charged him with failing to plan more than ten years ahead on what NASA was going to do, and he said that wasn't an oversight, it wasn't inadvertent, we didn't dare plan any further ahead. If you go further ahead than that, your opponents will simply use it as an excuse to beat you over the head. They'll say you're wild-eyed visionaries and shouldn't be given the money for tomorrow, much less the money for ten years ahead, and I suppose this is true. And because it is true, I don't think that there is any good way now known to me for applying even an accurate prediction of the future if one were available. I think that the advantage of science fiction is that it can show you the things that might happen and possibly in there there's some notion you can glean. How you tell your clients what to do on the basis of this, I don't know.

I keep reading marvellous science fiction stories that aren't in science fiction magazines. There was

one in The New York Times the other day. Some astronomer had suggested that a comet might hit the earth and he thought about what might happen if it did. Of course that's an old science fiction idea; H. G. Wells used it, and what happened when his comet hit the Earth was that we all got to be better people. But this fellow in The New York Times said it wouldn't be quite like that. The first thing that would happen is that there would be a helluva big bang, and the second thing that would happen would be an awful lot of damage from the force of the blow itself, and the third thing, the destruction of the earth's magnetic field or reversal of it, probably with the loss of the Van Allan belt, probably with the penetration of a lot more ionizing radiation to the surface of the earth, maybe with the extinction of all vertebrates entirely. And then a little bit later, as the methane from the comet mixed with the air, you'd have a marvellous pyrotechnical display. And this is a marvellous science fiction story. I enjoyed it more than the last issue of Amazing. But I don't see how you can put something like this into a projection for a client.

DR. SIDNEY FEINLEIB:

Projection isn't the objective here. My objective is the same as yours, to have people look at a collection of alternative futures. How far in advance, I don't know. I'll give you an example of a problem that arose just barely after the turn of the century. Namely, who would have predicted the introduction and the widespread scale of automobiles in the United States? And even if you did, would you then have started training people how to drive cars at an early age, at the age of two, so that by the time 1920 came around they would all be able to adequately handle vehicles? Well I don't know. It just sort of evolved, and it evolved very quickly. I don't think that even if they knew the future, that the information would have been useful fifteen years in advance.

FREDERIK POHL:

You're right. You're absolutely right. As a matter of fact, I wrote a story about that. It's never been published but I'll tell you the story anyway. Please don't steal it because it hasn't been published yet. It has to do with somebody who was employed by a large buggywhip manufacturer in 1900 who was thinking of retooling the manufacture of automobiles because he had enough sense to know that automobiles were technologically possible and would be a much better way to travel around than a horse and buggy. He employed his equivalent of the local think tank to predict the future of the automobile and his thinkers came back and said the trouble with the automobile is that it's a rather tricky mechanical device. This means, first of all, that the average citizen will not be able to operate it. They'll have to hire a chauffeur, and as the availability of chauffeurs is limited, it will be purely for the very rich - they'll have to have personal service. Second, they require roads and there are not enough roads for them. They'll be limited to the big cities and maybe some very flat beaches and desert areas, which means that the total productive capacity that you could expect for automobiles would be of the order of five or six thousand cars a year, which means they'd all have to be hand-done and, again, would cost a great deal, and this is a pretty good prediction based on their knowledge available in 1900. It doesn't allow for some social inventions. It anticipates all the physical inventions, but it didn't anticipate the social invention of the installment plan, for example, which made it possible for us to buy them whether we can afford them or not. [Laughter.] I don't know how you can work both the social and physical factors into a statement.

DR. SIDNEY FEINLEIB:

Nevertheless, we have to go ahead. I think that's the problem of a government, of an industry, of the United Nations, of a person in his own life. He has to still go ahead. He doesn't know what the future has in store. The personal life of a science fiction writer I don't think is vastly different than a rational normal human being.

FREDERIK POHL:

If you show me a rational normal human being, I'll tell you.

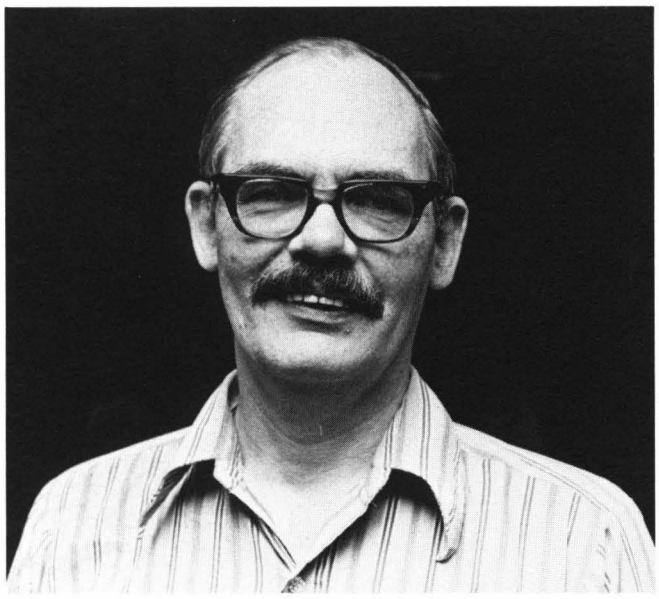
DR. SIDNEY FEINLEIB:

Well, maybe I wouldn't want to. I certainly wouldn't want to be one.

What do we do? How do you look at the future? Do you just sit down and read all the scenarios, all the science fiction stories? I'm not attacking science fiction. In fact, I'm using it as effectively as I think it can be used from my point of view, in a very practical approach. Maybe the people involved in the Commission for the Year 2000 aren't writers of science fiction, but I think they're science fiction people in this kind of blue-sky thinking, of looking at alternatives that are not always pleasant, and yet alternatives which are not a trend extrapolation from just the technical information you have at the present time. I think science fiction writers, by and large, maybe have been too involved with just the technical problems of the science part of the science fiction. Maybe there's a new role that science fiction writers can play if they eliminate the word "science" in some of the fiction. Maybe the technology has outrun itself already. Maybe we're stuck on this technology and science fiction writers have to get into the human problem a little bit more.

FREDERIK POHL:

I think they've always been in the human problem I think that what science fiction has done has been to



Frederik Pohl
(Photo by Jay Kay Klein)

show the impact of technology on people, rather than really to show what is going to be the technology. We make all sorts of claims for science fiction; how it predicted everything there was. They're not really very true. We predicted an awful lot that didn't happen, too; we don't ever talk about that.

DR. SIDNEY FEINLEIB:
How do you sort that out?

FREDERIK POHL:
It's not that a science fiction story can show you what is going to happen. They say to you: If this happens, here's what you'll like about it and here's what's going to bite you.

DR. SIDNEY FEINLEIB:
What I'm looking for is a new role for science fiction and that's a very practical one, but how do you get people to read the science fiction? How do you get them to use it in some way which will affect other people's lives? You can't force anybody to read. I know you'd love to have a larger audience for your books. You get a small kickback on each copy that's sold and you wish everyone would buy one...

FREDERIK POHL:
They call it a royalty.

DR. SIDNEY FEINLEIB:
I beg your pardon. But what do you do? If you have all of these alternatives then maybe you're inundated with what is now being called the information explosion. There's just too much information, too many scenarios of the future, too many possibilities. How do you incorporate it into something on which you can take a definite action?

FREDERIK POHL:
Probably if I knew the answer to that, Sidney, I'd open an Arthur D. Little company of my own. I don't really know the answer. I don't know how you can persuade people to look at the future and most people prefer not to. They have a sort of fear that it's going to be unpleasant.

DR. SIDNEY FEINLEIB:
Perhaps we'll have that, too, when we get old and gray and lose our hair.

FREDERIK POHL:
But science fiction is at least a sugar-coated way of doing it. It gives you a chance to think of the future as some disaster that's going to happen to somebody else in the pages of a magazine. So that you can approach it dispassionately and consider it logically and unemotionally, except as your emotions are engaged by the story.

DR. SIDNEY FEINLEIB:
Maybe we can have the audience give their reaction on how science fiction can play an active role in guiding governments.

QUESTION: [Inaudible.]

FREDERIK POHL:
You reassure me as far as the prediction is concerned; I don't know if you reassure me about the future itself. I've seen some of these computer programs where the computer talks to you. MIT had one five or six years ago about an "analysis session" with a computer. You sit down on the couch (you have to sit up because you have to run the teletype) and you type out "I am unhappy", and the computer types back, "Why are you unhappy?" because it has responded to the code word "unhappy". And if you say "Because my mother didn't love me", it says "What are your attitudes toward your mother?", because it's responding to the code word "mother". In other words, there's not a great deal of sentience there, it's just that it's picking up certain codes. And you can do this.

You can, in fact, program computers to do all sorts of things badly. They write bad music, they write poor poetry, they paint poor paintings, and so on. And presumably, sooner or later, they'll do better, and I have a little vision - I had it this morning while I was listening to Isaac. If this sesqui-intelligent AI comes along, I can imagine a computer with sideburns and a little paunch and 115 books to its credit sitting down and writing the "Three Laws of

Humanics" [Laughter and applause.] and it's not impossible and it may be in the future. I really don't think it's going to happen by the mid-1980's, which was my estimate ten years ago.

QUESTION: [Inaudible.]

DR. SIDNEY FEINLEIB:

It's called the government. I think governments have a problem of self-fulfilling prophecy, where they envision a certain future which they think is for the good of their country, whether you're a Germany under Hitler, or a country under Stalin, or an American under Nixon or something, you do have certain problems of self-fulfilling prophecy. I don't know. I agree with Fred, definitely, that people don't want to change as fast as maybe I'd like to see them change. Maybe the word change deserves to be redefined. Change for its own sake has no moral value or ethical value as far as I'm concerned, but things do change and we have to somehow or other prepare for the change and I don't know how to do that.
[Comment from audience.]

FREDERIK POHL:

It's rather clear that many prophecies are self-fulfilling. When the Delphic study that I talked about before - the Rand one in 1962 and 1963 - was done, the segment of the inquiry that checked out best was the one about the space program, because what people were doing were reporting what had already been decided in the space program. There are many cases where a prediction of a thing also leads to people saying, well, as long as we can do it let's do it, or if someone predicts we can do it, that would be a good thing to do. This is, of course, the reason why we had men on the moon. When John Kennedy was inaugurated, somebody said we could put men on the moon and he said, can we do it while I'm still in office? They said yes, so he said let's go ahead and do it. It turned out to be not that way for reasons beyond his control, but that was the plan.

I've heard of a lot of interesting examples of self-fulfilling prophecies, or prophecies which helped by their existence to bring themselves into fact in a somewhat different way. I heard of one a couple of months ago. H. G. Wells wrote a novel, The World Set Free, about atomic energy. A little kid named Leo Szilard read it and said, "By gosh! I think I'm going to try to make atomic energy real," and, by gosh, he went ahead and did, having read the science fiction story. And this sort of thing worries me, from time to time.

DR. SIDNEY FEINLEIB:

You need a source of imagination somewhere and I think this is the useful function of science fiction. I'm not only looking at the entertainment value, I'm looking for how people may be influenced, either directly or indirectly, by things they've read, and I maintain that science fiction has not only an entertainment value, but a real value, and I think that is necessary to bring in more imaginative people. But who are the imaginative people? Do you rate them on the number of sales of books?

FREDERIK POHL:

No. As a matter of fact, it's very hard to rate the usefulness of a science fiction writer in any way that I know. Some of the most innovative and creative people I don't think say much to us here and now. Cordwainer Smith wrote beautiful stories, but they were all ten thousand years in the future and what they have to do with what might happen to us tomorrow, I'm not sure. They're exercises in colorful, entertaining, dramatic, moving writing but they're not the same sort of thing as Hugo Gernsback used to do with Ralph 124C41+.

QUESTION: [Inaudible.]

DR. SIDNEY FEINLEIB:

Unfortunately, there is a financial problem. But in this case we did put six science fiction writers on the staff, at least temporarily.

FREDERIK POHL:

May I just say one thing before anyone else does, because I have the microphone and I can talk louder. I think that you're going about it the wrong way, Sidney, I honestly do. I think that the attempt to apply science fiction to practical problems is doomed to failure. And I speak in the position of somebody who's being asked to do this from time to time. I think that if you really want to spend your money productively, you should subsidize more science fiction magazines. [Applause.]

DR. SIDNEY FEINLEIB:

Well, I'll tell you. I'll make a promise right now that any surplus profits that we have here, I will direct the Arthur D. Little management to donate it to the charity of your choice.

QUESTION: [Inaudible.]

DR. SIDNEY FEINLEIB:

I agree. I think there are always the problems of "legislating" - whether on a national basis or in a given company or something like that - or making a sinecure for a single individual who then looks after his own welfare and plays the game of just protecting his own interests, in that case. Perhaps if it were a little bit more competitive the imaginations will still be very active.

FREDERIK POHL:

I think every major corporation should have a science fiction writer in residence.

DR. SIDNEY FEINLEIB:

In residence. I think they should also have a poet-in-residence, an artist-in-residence, a dancer-in-residence, and a few other people. [Applause.]

FREDERIK POHL:

Actually, there is a tendency that way. There is sort of a surplus leisure-time productivity in corporations.

DR. SIDNEY FEINLEIB:

Well, we do have a warm spot in our hearts for science fiction writers. You know, [Noreascon Committee member] Sue Lewis is an employee of Arthur D. Little, and a few other very imaginative people, I hope.

FREDERIK POHL:

Some of them write science fiction.

DR. SIDNEY FEINLEIB:

And some of it we get paid for.

QUESTION: [Inaudible.]

DR. SIDNEY FEINLEIB:

I don't know. I don't know what the role of fantasy - personal fantasy - is involved in a science fiction writer's life. I don't think we can generalize. Some science fiction writers certainly like to be in the limelight and others prefer to be in the garret, but I think you find that true in any profession.

FREDERIK POHL:

It's not possible to create a great deal as a member of a committee. But what a science fiction writer can do after he's spent his time in the garret eating his crusts of bread and watching the rats play in the wainscoting, is he can then sit down in an interdisciplinary sort of thing and talk fairly sensibly - many of us can, at any rate. I've seen this sort of thing go on with science fiction writers interacting with what you call sane, normal people, like a scientist. Bob Heinlein has been involved with a couple of studies at the Hudson Institute; Arthur Clarke and Isaac and I and a few others have been involved in other such studies and they seem to have worked out pretty well.

DR. SIDNEY FEINLEIB:

Have they been productive?

FREDERIK POHL:

As productive as any others, at least. It's hard to say; it's hard to evaluate.

QUESTION: [Inaudible.]

FREDERIK POHL:

I think you've said what I think - that the problem is not with science fiction, but with the social sciences themselves. It's not the writer's problem. What you say I generally agree with, then.

DR. SIDNEY FEINLEIB:

I do, too, and this is why I'm hoping that perhaps you can have social-science-fiction writers and maybe get away from the technology part a little bit. [Comment from audience.]

FREDERIK POHL:

I think I've heard of those stories, yes.

QUESTION: [Inaudible.]

DR. SIDNEY FEINLEIB:

Well, do we want a self-fulfilling prophecy again?

[Comment from audience.]

Would you prefer that we have a two-way television system where everybody's opinion is continuously polled, so that all day long you sit in front of your television set and someone gets on and says, "What do you think of the following situation?" and you press a little button that says "I like it" or "I don't like it"? Do you want to run the world by consensus? I don't know.

[Comment from audience.]

How much planning? I mean, if we took Germany from 1935 to 1944, there was a lot of planning. In the United States we have a great deal of planning. Planning itself is the same thing. Change, planning, progress, all of these nice little catchwords, I think, are very popular but have their own pitfalls.

[Comment from audience.]

I think the approach that we're coming to now is not looking at a specific future scenario, but is to look at what are the results of that kind of future. I think the problem is now going in a different fashion, rather than just planning for an end goal with intermediate steps. People got hurt in the Five-Year Plans of the Russian Government over the past twenty or thirty years. The end goals were so admirable that it didn't matter that large numbers of people lived and died during that period just for that final goal. I think it's the process of getting there that's important.

FREDERIK POHL:

I think there's a problem about running the world on the basis of consensus, and that is that most people don't know enough to make a decision on most questions. There was a discussion here a little while ago on the merits of MHD versus solar power.

[Technology for a Livable Earth.] You could very well have a national referendum right now asking 200 million people which they preferred and you might get an answer. How useful that answer would be, I don't know.

QUESTION: [Whether we think there is a real distinction between speculations about the immediate future and speculations about the distant future.]

FREDERIK POHL:

There's no difference in kind, but there's a difference in importance to people who are living now, and there's a difference in people's emotional attitudes about them. If you try to get through Congress a bill providing for exploration of Alpha Centauri, I guarantee it's never going to get off the ground. Robert Enzmann, down the block here in Cambridge, says that he can build a ship that can go to Alpha Centauri within five years. I have no possible hope that anyone's even going to give him the money to buy the blueprints for it.

We have time for about three more questions or comments.

QUESTION: [Inaudible.]

DR. SIDNEY FEINLEIB:

Well, in this particular instance, the results were very much the same as the scenarios that were written by the secretaries and the technical staff. Which doesn't mean that they were not helpful - I think they were very, very helpful. I don't know the cause of this. I don't know whether or not the prediction of a twenty-year future has reached the popular press at such an early stage. It's been in Life magazine and Time magazine about CATV and two-way television sets and information explosion and international trade problems and all of these subjects and environmental problems - those sorts of things - they've all been in the press at such a high frequency and density that perhaps the science fiction writers were just as much influenced as anybody else as to what they produced. I don't think there was any conscious effort on our part to evaluate it. It was one more input and it just sort of supported all the other inputs.

FREDERIK POHL:

I'd like to make a suggestion, if you do anything like that again, Sidney. If you want to get science fiction writers to discuss intelligently the future of offices or whatever, what you do is take ten thousand dollars or so - which I suppose is in the approximate range of what you have in mind - and you hire someone for about a thousand dollars to get five or six writers to write stories about them - stories about offices of the future - and you put them together in a book and you give them to all your clients to read, and besides having a better input of information for you, you also have about 5,000 books that you can then give away as Christmas presents.

DR. SIDNEY FEINLEIB:

This is precisely what we did. We have a total of about forty scenarios, six of them by science fiction writers, some by engineers, computer people, psychologists, sociologists, psychiatrists, and people of different occupations, and that's precisely what we were doing. If you'll send us your job application....

QUESTION: [Does wishful thinking effect the imagination of a science fiction writer looking into the far future?]

FREDERIK POHL:

Of course it does. Everybody likes to think that the world sooner or later is going to go the way he wants it to. It doesn't have exactly the same effect on the sort of anticipation or projection that people use as a guide to planning, because they have an advantage over a science fiction writer. When a science fiction writer writes his story about the year 1995, it gets in print in 1971 and stays in print all the way through. When a business organization makes a projection for 1995, they revise it every six months and by 1994 it's usually pretty accurate.

QUESTION: [Inaudible.]

DR. SIDNEY FEINLEIB:

Back to this particular study - we have 14 companies, all of whom have submitted their own scenarios. These are written by the engineers and managers in the particular companies that are going to actually - whether you like it or not - have an effect on your life, on my life, whether I like it or not. And so to balance this, we are using the science fiction writer; it isn't a mutually exclusive thing. We're having the clients themselves, who are very narrow-minded (at least we assume that, but they end up not being as narrow-minded as I would have thought them to be) and the science fiction writers, who are very broad-minded and who are not quite as broad-minded as I had expected them to be, and our own staff of people who hopefully would sit back on our backsides and smugly judge or compile all of these things. But nevertheless, I think we had a very fair distribution of inputs, both from the people who are involved in living with these things - the people in the companies - and those who are not involved at all - namely the science fiction writers - so hopefully this was an attempt to balance the two.

FREDERIK POHL:

I'd like to make one comment about getting people in an industry to make predictions or proposals

about the future of the industry. A few years ago I spent a weekend with a management planning session and one of the other persons called in to talk to them was the former head of Saginaw Gear Company, a subdivision of General Motors in charge of transmissions. I was younger and a little more eager than I am now - not as hard-bitten and cynical - and I talked very gung-ho about the necessity for thinking ahead and planning and he talked about the necessity for watching the current balance sheet. He had said something which gave me an opening, so I said "How about what you said before, when you admitted that you had held an option on the automatic transmission patents for six years, paying a fee every year, and let them go to save money the year before you decided to use them, whereupon you had to buy them back for a half a million dollars or so", and he said "Well, that's an exact proof of my point of view. We had the option on 400 different patents and we let them all go, and we bought one back for a half a million but we saved two million."

I guess that's it. Thank you very much.

DR. SIDNEY FEINLEIB:

Thank you very much.

[Applause.]

The Role of the Artist in Science Fiction

Panel with Frank Kelly Freas, Karel Thole, Jack Gaughan, Eddie Jones, and John Schoenherr

STEW BROWNSTEIN:
Ladies and gentlemen, the current panel is "The Role of the Artist in SF" and from my right...

JACK GAUGHAN:
In descending order...

STEW BROWNSTEIN:
We'll start in the middle and descend outwards in each direction. The moderator of the panel is Frank Kelly Freas...

FRANK KELLY FREAS:
Now he tells me! [Laughter.]

STEW BROWNSTEIN:
...(I had to pick one and he was sitting in the middle), one of the all-time great illustrators in the field. On either side of him, the gentleman with the small beard is Eddie Jones; the other gentleman with the beard is John Schoenherr. Jack Gaughan is sitting at the far end, and the gentleman from Italy, Karel Thole, who does virtually all the covers for the Italian science fiction magazine Urania. They will talk about art in SF or whatever else they want to talk about.

JACK GAUGHAN:
We got this moderator over there. [Points.]

FRANK KELLY FREAS:
I think we're about to trade seats. How do you moderate a discussion of science fiction art when nobody has yet quite defined what science fiction art is? I can tell you of one case who (at least for the moment) will remain nameless, who has had me in his files for twenty years as a fantasy illustrator and would never consider giving me science fiction to do. So how do we define our area of work to distinguish it from whatever else? Karel Thole, do you run into anything of this sort of problem?

KAREL THOLE:
Can anybody tell me what's art?

STEW BROWNSTEIN:
I would like to interrupt this for a minute. Some of these people have been very dry for very long. So we intend to provide them with some refreshments and then you can watch them get crocked up here.

JACK GAUGHAN:
[Sings.] Mine eyes have seen the glory of the coming of the ...

[Refreshments served to artists.]

JACK GAUGHAN:
What are these obscene things?

STEW BROWNSTEIN:
Just in case you want to know, it's all Jack's idea.

JACK GAUGHAN:
That's a Jewish occupation? What is this? Do you know what a tiki is? There are three tikis and there's an orchid floating in it, gasping for breath [Laughter.] which, I'm sure, he won't be alone in a little while. Excuse me... why two straws? Where's Stew?

FRANK KELLY FREAS:
It's so you can share it with your neighbor.

JACK GAUGHAN:
To get back to the serious business... [Laughter.]
Mr. Thole, Mr. Thole - if I remember correctly that's the way the name is pronounced - pronounce your name for us.

KAREL THOLE:

Thole (TOW-LEH). You can remember me as the man of these round things.[1]

JACK GAUGHAN:

My dear sir, I assure you, none of us will ever forget you. Some of us are sweating.

FRANK KELLY FREAS:

Some of us might like to. [Laughter.] We're glad you're working in Italy, to be perfectly truthful about it. You frighten me.

EDDIE JONES:

It's frightening to me because I work in Germany; Italy isn't very far away.

KAREL THOLE:

Now, don't come over too often, because I'm forgetting to work. I think if we met anywhere in Italy there would be a disaster. I mean, going on with just what happens now. All these days I'm eating too much, I'm drinking too much, I'm smoking too much, I'm talking too much, I'm getting too little sleep, so I am happy at last, after four days, that this is over and I can go back. Well, I'm not used to it, you see.

JACK GAUGHAN:

Well, you see, all us Johnny Carson fans are.

KAREL THOLE:

What I said before: Who can tell me what's art? I think it's one of the most devaluated words, actually. We can leave art out and the job we have to do is doing covers or illustrations for science fiction. I think there's a very narrow relation between art and science fiction, only I wouldn't call it art. It's sort of craftsmanship. You get a job to do and this job has to answer certain restrictions. As far as you can do a good job within these restrictions, I think you are successful.

EDDIE JONES:

Well, we've all needed a way to express ourselves and we've all chosen science fiction or allied art to do this, and this is our version of why we do it. We do it because we like doing it. It also pays.

KAREL THOLE:

To me, it's a sort of a hobby. It's not actually a way of earning your money; it remains a hobby.

FRANK KELLY FREAS:

Of course I have personally always felt that one of the greatest advantages of science fiction as a field for the artist is that it's one of the few commercial fields in which an artist can work and not specialize to the point of idiocy.

JACK GAUGHAN:

I couldn't agree more, Kelly. Excuse me, but I really couldn't.

FRANK KELLY FREAS:

The thing that happens to you, of course, in almost any other area of publication is that you become identified as a "Western illustrator" or a "detective story illustrator" or something of this sort and you never get any variety to do. The only way you break out of it is to change your name, grow a beard, and paint a whole new portfolio and go to people who never saw you before.

JACK GAUGHAN:

When did you grow your beard, Kelly? You had a beard for a while, didn't you?

FRANK KELLY FREAS:

I worked the other way; I shaved it off.

JACK GAUGHAN:

I'm listening to Mr. Thole's very cultured European point of view and I'm embarrassed that I (and perhaps we, but mostly I) tend to look at the reason science fiction art exists as science fiction is because there are certain categories of publishing. Very definite categories. You may have heard this before, but they exist. There are nurse novels and they are Nurse Novels. There are Gothic novels (misnamed), "The Light in the Window Novel". There's Western, and there's Science Fiction, and perhaps a few others depending on the nature of the times, depending on the nature of the market (the market being the reader). I tend to think of it in marketing terms.

I remember one of the most accurate and embarrassing things said about me was in a biography in St. Louis. They said I was the most commercial. Heh heh heh... Alex Eisenstein out there. (Go sit on your money. He doesn't have any anymore, I'm sure.) But we are all - I won't say in the business to make a living - but it's necessary, for heaven's sake, for one to eat, and if you have a family, for the rest of them to eat, so you involve yourself in commercial enterprises, and therefore you involve yourself in these other commercial enterprises, which are imposed upon you by publishers. This is not a severe or a cruel imposition, it's a fact of life...in America. Now I don't know too much about Italy, and I know nothing, being of Irish

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[1]The format of his cover paintings for Urania is generally circular.

descent, about this alien and impossible country, England, but we do, therefore, have to work in these specialties. I think Kelly, Jack Schoenherr, here. (We call him Little Jack or Hairy Jack - I'm Big Jack because of the nature of my stomach.) We're all competent (one hopes) professionals and we're all capable of doing Gothic novels or Westerns. For heaven's sake, I can find out what a horse looks like!

FRANK KELLY FREAS:

Every once in a while the tendency sneaks into our science fiction, I've been told.

JACK GAUGHAN:

Well, now, that's another thing. Remind me to bring that up, in case I forget - of why we're in science fiction. But because we have a natural proclivity towards science fiction, we tend to work that way. We like it, damn it, and there are various long involved reasons for this, and a lot of it has to do with you sitting out there. Most of it has to do with you, actually.

The original question you brought up, Kelly, was: Why is science fiction art? It is because people read it and it is because it's published as such. Science fiction art on covers (that's a qualifying statement, "art on covers") is designed to make a book look like a science fiction book. It should not look like a nurse novel, though it might help. [Laughter.]

FRANK KELLY FREAS:

There is a point here that perhaps we ought to clarify. We've all talked about it amongst ourselves and yet I am astonished at the impression I have of how few people realize that we as science fiction fans, as science fiction readers, have very little effect on the type of art that is done. The people who affect the art that you get are not science fiction readers. They're the guys who are running for the 5:18, grab the magazine or the book off the stand as they go, and naturally they're not even interested, they are caught. What the cover is doesn't matter a damn so long as it gets the book off the stands and into their hands. If the editor of this line of magazines or books is fortunate enough and smart enough to sneak a good science fiction cover past the circulation department, he has performed a minor miracle.

JACK GAUGHAN:

One of the reasons science fiction exists is that science fiction books are sold. As a matter of fact, it's the reason.

FRANK KELLY FREAS:

Yup. Great big red letters: SOLD.

Frank Kelly Freas
(Photo by James R. Saklad)

JACK GAUGHAN:

Therefore we are - the only phrase that comes to mind is "at the mercy of", and that sounds a little pitiless. We are in the business of selling books, and not to make it sound too commercial, we're in here because we love it. I know damned well Frank Kelly Freas can make a hell of a lot better living in another field, but I doubt that he would have as much fun. Is that true?

FRANK KELLY FREAS:

This is true enough. In fact, I would suggest that if a man wants to retain his sanity, he can't possibly confine himself to making a living in science fiction. Most of you have probably read Tofler's Future Shock. Can you imagine the situation that we as illustrators get into as we become absorbed in a story, build up a world, create the illustrations that describe that world, and then have to break the whole thing down to start in on the next one? Now

there were a few years when I did this and I worked myself right into a hole. Now I do as great a variety of work as I can do and I find that it's much more successful because I get out of the shock effect of one universe after another - bam! bam! bam! bam! - and can slide out of it into something that remains the same all the time, like medical illustration or religious illustration or even portraits. They don't change from one job to another. But our science fiction problems change with every job. Jack Schoenherr, here, has run into an interesting situation along this line I think we should hear more about. (In your handling of the animals as well as the aliens.)

JOHN SCHOENHERR:

Well, my three hats cover science fiction, basically animal illustration, and children's books, where they all tend to overlap, but I find that basically animal portraiture is the most stable end of the whole business. This is something I keep returning to and it creeps into science fiction, where I happen to like doing extraterrestrial animals. But there you get the variety that you don't get in the other thing. The stability of the other counteracts the need for incessant change. When we do science fiction illustrations, we're not illustrating our own universes, we're illustrating the author's universe, and every story is by a different author.

FRANK KELLY FREAS:

How do you find this problem works out for you, Eddie? Do you find a great deal of shift, or are you running pretty much in the same line?

EDDIE JONES:

Well, the problem in England and in Germany is that one can never do the type of illustration one wants to do. To make a living at science fiction illustration in England, you have got to do as you're told. You can never do the type of illustration you want to do or you'll become a pauper. You'll be a starving artist living in a garret. I do other things than science fiction - obviously, I've got to. I do military uniforms, I do a lot of prints of military uniforms, but I still go back to science fiction because I love it. In Germany, too. I do a lot of work in Germany. Most of my work is done in Germany and I can not do what I want to do; I'm told what I have to do. But, I'm in it to make money. That's basically my problem.

FRANK KELLY FREAS:

That's the problem for all of us. Frankly, I think I am very fortunate...

JACK GAUGHAN:

Excuse me. Excuse me. I'm not upstaging anybody, but I have a problem. I can't hear us talking. I'm going to sit down here [in the audience] if you don't mind. Can I have one of those chairs? You could get another one. Thank you.

EDDIE JONES:

Welcome to the Jack Gaughan show, folks.

JACK GAUGHAN:

You touch that drink, I'll break your arm!

FRANK KELLY FREAS:

There's another point I'd like to bring up here. I think Mr. Thole can give us some insight into this. I have often expressed the opinion that the best way to lead the reader into the science fiction author's world is to establish very firmly a realistic base which grasps him solidly. He reacts to it on a simple normal emotional level and all of a sudden he finds himself wandering off into a fantasy world without ever realizing quite where the shift was made. And in looking at Mr. Thole's work, I have the feeling that he plans it this way very much. Am I right?

KAREL THOLE:

No. [Laughter.] I have the same problem Eddie has. I actually never read science fiction. I haven't read any of the books I did the covers for, and I did about three hundred.

JACK GAUGHAN:

Oh, I wish I could do that!

KAREL THOLE:

Well, that's only a practical problem, because the Italian editor gets just one copy of the American edition and this goes immediately to the translator. I get only a sheet of paper with about fifteen or twenty lines on it, in which they are telling me in a few words what it is all about and what they should like to see on the cover, and I have to start from that. To make it a bit mysterious I take a piece of black paper, and I'm starting from black paper because black paper is space. You never know what you could meet in this black space. And I am putting on a spotlight every now and then, which means I'm starting to do things on the black paper. Well, every now and then it's even a surprise to me what is coming out.

JACK GAUGHAN:

Mr. Thole! (Excuse me, Kelly. Question from the audience here.) Why do you do science fiction instead of pretty ladies pointing at refrigerators or cars, you know what I mean - more commercial considerations? You obviously have a bent in that direction. You obviously like it.

KAREL THOLE:

Well, the science fiction that I do is only part of all the things I do. Let's say it's only about one third. I mostly do romantic illustrations for eighteenth century stories in weeklies and I'm doing scraper boards for publicity and I'm doing black and white illustrations for children's books. We have to make a living, just as Eddie said.

JACK GAUGHAN:

I have the sneaking suspicion that you just plain like it, as well.

KAREL THOLE:

What I try to do is to make such a difference between the way you're working on these different subjects that nobody ever can see it's from the same hand. Not that I do this intentionally, but I think they are completely different things. I even do portraits, but it would be very funny if one of the portraits I did of a girl came out with four hands with sixteen fingers, or something like that, you see.

EDDIE JONES:

Well, how did you come into science fiction illustration?

KAREL THOLE:

Well, by sheer chance. I went to Italy to make a new living with my family and then I met Mondadori and they saw my things I did earlier in Holland. They said, "We like your work. Actually, we haven't anything to do for you, but we think in the near future we can get you something to do." And then, just after a few months, I met her again and she said, "Oh, we have a job for you." "What is it?" "Well, see me in a few days in my office", and I went over there and she said, "We have this science fiction series and the actual artist who always did the covers is leaving us and we tried some of our own artists and they seemed not to get in it. Would you try?" I said, "Well, let me try." That was the start of it.

EDDIE JONES:

Well, after seeing your work, this is very hard to believe, because I think most of the people on the panel, or some of them anyway, came into science fiction illustration through fandom or through science fiction conventions, or some kindred thing.

JACK GAUGHAN:

Or drinking societies.

EDDIE JONES:

The only reason I'm doing science fiction illustration is because I came into science fiction through fandom many, many years ago (too many that I care to remember - it was a long time ago) and I found that I liked the people, I liked the fiction, and I was doing illustrations of other sorts, and why not go into science fiction? I can now express my feeling for the literature. Science fiction artists cannot make a living by doing science fiction art alone, but we <u>like</u> it.

FRANK KELLY FREAS:

How did you actually make the first shift into the science fiction field, Jack?

JOHN SCHOENHERR:

Well, actually, science fiction was my first illustration. It was the old Ziff-Davis - level <u>Amazing</u> and <u>Fantastic</u>, and this was the first work I could get when I was out of college.

FRANK KELLY FREAS:

I'll be damned!

JOHN SCHOENHERR:

I'd been reading it for about five or six years.

FRANK KELLY FREAS:

This is the thing I was wondering about. Apparently, with the exception of Mr. Thole, we all began reading science fiction before we started illustrating it. Did you ever read any of it before, or were you interested in it before you started illustrating?

KAREL THOLE:

No, it was after I started doing the covers. Perhaps I have read three books of science fiction.

FRANK KELLY FREAS:

That is one phenomenon that I have run into rarely, and I think we run into it as rarely as we do because the type of editor who is able to pick out the particular bit of a story which captures the spirit of the story and can assign a specific job by giving you a paragraph to read is a rare individual, indeed. I think I've run into about two or three of them in the years I've been working. This means that a large part of the work is done for you and you can concentrate simply on doing as good a drawing or as good a painting as you can possibly do. But those of us who started off as fans tend to get hung up in the story to begin with because half of the fun is getting to read the story before anybody else does, right? [Laughter.]

JACK GAUGHAN:

Let me ask you a question. Going back to why any of us got into science fiction, you say it's because we like to read it. Was any of it because we

happened to like to see some of those old illustrations as well? That's a question; I'm not argumentative at all.

FRANK KELLY FREAS:

I don't know how influential this would have been. I do remember when I was very small I was much taken by the Petty girls and I copied Petty girls, but I didn't copy science fiction illustrations, so I don't know how influential that was.

JACK GAUGHAN:

You mean you didn't put any bubbles in front of the ... [Laughter.] How about you over there? [To John Schoenherr.]

JOHN SCHOENHERR:

Well, I got into Analog a bit and then I fell in love with Edd Cartier - his pictures, anyway.

JACK GAUGHAN:

Would you like to rephrase that?

JOHN SCHOENHERR:

I found that I enjoyed the stories illustrated by Edd Cartier more than I enjoyed the stories illustrated by anyone else and I came into it wanting to do about as well, but the only pictures I had to show editors were some Westerns and some other things and just sort of fell into it.

JACK GAUGHAN:

How did you get interested in animals? Is there some relationship between them and science fiction fans? [Laughter.]

FRANK KELLY FREAS:

He likes hairy things.

JOHN SCHOENHERR:

I like hairy things.

JACK GAUGHAN:

I can see that.

FRANK KELLY FREAS:

I think it might be of some value at this point since we don't know particularly what you people would like to find out, if we took some questions from the floor - that's assuming we can hear you. Are there any questions that you would like to ask?

QUESTION: [Inaudible.]

JOHN SCHOENHERR:

Well, they mess them up thoroughly.

FRANK KELLY FREAS:

At the very least. You may have observed one interesting little phenomenon which is extremely painful to the artist who has beaten his brains out trying to get exactly the right relationship of color tones, and he picks up a magazine from a newsstand over here, and another from a newsstand over here, and one from a newsstand over here, and this one is saturated with blue and this one is saturated with yellow and this one's all black. You just can't imagine what modern printing can do to the original until you happen to get the two things side by side. It used to be that we could figure on about a 20 or 25% drop-off in intensity of color when the thing was reproduced. This is no longer true. The technology of printing has improved to a point where they can destroy practically anything we can paint. [Laughter.]

JACK GAUGHAN:

Kelly, on this same subject, if I may. Again I'm usurping some of your function.

FRANK KELLY FREAS:

By all means, do.

JACK GAUGHAN:

Apologies from the shanty Irish to the lace curtain Irish. How many art directors do any of us know - we know a lot of art directors in the paperback field, particularly - who ever read the books? How many do you know who ever showed up at a convention?

FRANK KELLY FREAS:

I know very few art directors who are the least bit interested in science fiction.

JACK GAUGHAN:

What is the function of an art director, therefore?

FRANK KELLY FREAS:

Essentially, in our particular field, the art director's primary function is to keep the artist out of the editor's hair and to act as a production man.

JACK GAUGHAN:

Who makes the decision on the artwork ultimately? (This is still in answer to the lady's question.)

FRANK KELLY FREAS:

I don't know how it works in too many of the other magazines, but, for instance, in Analog there was no question about who made the decisions. It was John W. Campbell. I should make the point right here: there have been lots of times when I

disagreed violently with John's choice in a particular cover, or with the way he thought it should be done in comparison to the way I thought it should be done. Now entirely aside from the point that any reasonable businessman will assume that the customer is always right, it turned out that most of the time he was right because he knew what was required. Now, how many art directors are you likely to find who know what our field needs?

JACK GAUGHAN:

I'm not condemning any art directors (God help us, I should slit my throat first, Frank), but I could name a few I'd like to condemn. Have you noticed that, first of all, they're not involved with the nature of the story - they could care less. When you do a cover, when John Schoenherr does a cover, when Eddie Jones, when Karel does a cover, you have no control over the type layout. [Murmurs of agreement.] What an utterly helpless position! And this man who is more or less a terrific manager, who's never even read the book, can literally affect the nature of what you've spent two, three, weeks on. You find that amusing?

FRANK KELLY FREAS:

Actually, this, to me, is a relatively minor problem because my bete noire is the circulation department. Of course this is a purely private gripe from my standpoint. I hate to have our whole field dependent on people who care nothing about what we are doing except in terms of a set of sales figures, which really, in the end, don't mean much. Street and Smith, over a period of fifteen years or more, ran survey after survey to determine the relationship between actual newsstand sales and the nature of the covers they were running. In all of this time they found no correlation whatsoever.

JOHN SCHOENHERR:

But they keep trying to foist it on us.

FRANK KELLY FREAS:

There you are. Are there any more questions?

QUESTION: [About who is responsible for the type on covers.]

FRANK KELLY FREAS:

We have different problems here. I personally allow an area. I think of it. I leave a space for it. Sometimes they use it.

JACK GAUGHAN:

May I follow that up just briefly? Dealing with some publishers, I like to make type layouts. All of us, I think, up here are familiar with type. That is rare in an illustrator. You have to admit it. Eyebrows go up - he doesn't have to admit it. I've made a false statement?

FRANK KELLY FREAS:

I think any commercial artist has got to include a knowledge of type and layout as part of his basic equipment. I assume that we have some fan artists and editors listening to us, and one of the things that I think should be made very clear is that there are technical problems that you can't escape and...

JACK GAUGHAN:

One of them I wanted to bring up (Oh, I'm going to step on your lines, too) is that for a certain publisher, who shall remain nameless, [Laughter.] you're often given a manuscript that says, "Space War" - nice title, nice short title - and it ends up being "The Moons of the Brass Brassiere" - or something like that, and therefore your type layout is utterly worthless.

FRANK KELLY FREAS:

The ones that used to really flip me were the ones who would put...oh, let's say I had designed a cover with a nice blue-green color harmony throughout and some monster would come along and slap in an orange panel covered with type right over the most important part of the picture. (Unless there happened to be a girl in the picture - it would never go over the girl.)

JACK GAUGHAN:

Incidently, I might suggest that this panel arrangement be set up - not with me sitting down in front - but this is a hell of an interesting thing for me. It might be an idea to file away for some of you people.

But Hugos. You have a Hugo, don't you? Do you have a Hugo? I remembered that you had this weird doorstop when I went out to your house.

FRANK KELLY FREAS:

I believe I've got one or two somewhere.

JACK GAUGHAN:

Now, when an author wins a Hugo... Can you hear me? That's why I moved down here, honest to God, because I couldn't hear a thing that was said up there. Can you hear me at all?

FRANK KELLY FREAS:

Mushily, but I can hear you.

JACK GAUGHAN:

And I'm still sober, so that's your problem - that's the acoustic problem.

When an author wins a Hugo, which is presented by this convention, the publisher has inherited,

if he prints that author's work, a marketable commodity. He says in a star, "Hugo Winner!" Right? How many Hugos do you have?

FRANK KELLY FREAS:

I never found that it made any particular difference.

JACK GAUGHAN:

It makes a difference in this respect. Did you ever see anybody put a name on a cover that says, "Kelly Freas, Hugo Winner!"?

FRANK KELLY FREAS:

I feel fortunate if they give credit to Kelly Freas for doing the cover. [Laughter.]

JACK GAUGHAN:

I think it's unfortunate that these publishers - this may be out of the province of this panel - are able to take advantage of this convention and increase their sales by saying "Hugo Winner" on the thing without recognizing the fact that we presented it.

FRANK KELLY FREAS:

That's a problem that never actually occurred to me as being a problem. It's an interesting angle, but I really doubt whether it would increase the sales of any book or magazine to say that the cover was done by a Hugo winner. I'm not at all sure that it makes that much difference to the guy who picks the cover off the stands.

JACK GAUGHAN:

No, I don't want it on the cover, as such, like you would have "Jack Vance, Hugo Winner!", but if you walk up to an art director and he says to you, "What experience have you had?" and you say, "Well, you know, I've got four or five Hugos, six or seven. I don't know..."

FRANK KELLY FREAS:

And he says, what's a Hugo?

JACK GAUGHAN:

Right!

FRANK KELLY FREAS:

That's better than what used to happen. It wasn't very many years ago when you walked into him and he said, "What do you do?" and you said, "Science fiction" and he said, "What the hell is science fiction?" At least we've escaped that one.

QUESTION:

[To Karel Thole.] I found your work, which I enjoyed very much, reminiscent of the Belgian surrealist school. Have you got anything to say about that - about surrealism relating to illustration these days?

KAREL THOLE:

If you want it or not, you're always influenced by anything which is of some particular interest. Nobody could work never being influenced by anybody. Only you could do this intentionally or unintentionally. Mainly, this happened unintentionally, because you have your own personality and if you see a thing which is especially very striking...I suppose you mean, for instance, Delveaux, or am I wrong? [Comment from questioner.] Well, there are other ones. Somebody who lived some centuries ago - Hieronymus Bosch. I think he was perhaps the first science fiction painter ever in existence, and he did such a marvelous job that I never can get over that. Then you get, for instance, Giorgio de Chirico, who is still alive. He himself says of his own work that he is the most important living painter alive, which I never would say for myself. And then you have the French Magritte and the original German painter, Max Ernst, which I particularly admire for his inventiveness of what he does with paint and with space. You can't evade these influences; only, if you are being influenced, try to remain or to keep in your painting with your own taste, your own interpretation of what you are doing. In the meantime, you don't need to forget the other ones. But you will always be influenced.

EDDIE JONES:

Without being asked, can I answer this question as well? As the youngest member on this panel, I'm influenced by Kelly Freas, John Schoenherr, Jack Gaughan, and Karel Thole.

FRANK KELLY FREAS:

That was a sneaky thing to say.

KAREL THOLE:

Perhaps I'd never have started doing science fiction covers if I had never seen before - what's your name?

FRANK KELLY FREAS:

I was noticing...I imagine that Mr. Thole would deny this violently, but I have a feeling that one of the pleasures that he gets out of the particular type of work he has shown us is the opportunity to indulge a very basic and very rich sense of the truly beautiful. I make a point of this because I am fascinated with his ability to take the gruesome, the horrible, the appalling, and make it gorgeous. This is something that, I think, is essential in the presentation of fantasy in any of its variety of forms, but up until I saw his work, I was beginning to think that I was out on a limb all by myself. I don't pre-

tend to be able to express the desire for beauty that I feel in myself the way I think he has succeeded in doing it, but I'm awfully happy to see that someone else is doing it.

KAREL THOLE:

The only thing I can say is that, perhaps, in a really secret way, we are a little bit sadists, and every now and then this comes out in a painting, which is our way of saying things. Mainly, I have to be very careful, because the Italians are continuously telling me... For instance, I don't know if you saw these two paintings - one has a title, it's called "Bride #91". Well, the illustration on the left was printed. The illustration on the right was the first thing I delivered only on this famous fifteen lines: "We want a bride. She must be very ugly, and she hasn't actually a mouth, but where the mouth is, there is a very enormous-looking flower. And she must be horrible." I did that. When I delivered, they told me immediately, "Mr. Thole, you know we can't print this." I said, "You told me to do this." "Yes, but not so horrible." Well, is there any difference between horrible and horrible? "Couldn't you lower the veil and change a bit the ugliness of the eyes?" I said, "No, I prefer to do another cover." So that's why there are two things. But I am not doing this always.

There's another problem. I heard you talking about art directors. Actually, in Italy, an art director doesn't exist. Of course, there are a few art directors, but they don't have any responsibility. They're only just one half-way station between the artist and the big boss, because in Italy the situation is still so that he who is paying has to tell you what you have to do.

JACK GAUGHAN:

That's evidently a universal condition. I'm glad to know it's not unique to us [Laughter.] ... Americans.

QUESTION:

Just as a matter of curiosity. Among current books that are published - paperbacks - what percentage of these books carry the name of the artist who did the title of the work? I know among the Ace series, now very often you will find the names of this year's Hugo award winning artists, but very few of them, I notice, do carry the names of the cover artists.

FRANK KELLY FREAS:

Up until recently, almost no paperbacks carried the name of the artist. It's only been in the last few years. Perhaps somebody can clarify this for me - I had an impression that up to perhaps seven or eight years ago there was no desire on the

Bride #91, by Karel Thole
(Photo by Jay Kay Klein)

part of the artist to be identified, particularly, and I think the reason for this was an effort by the artist to work in different fields without being pinned down, without being over-specialized. It's nowadays we're reaching a point where we like to have a little bit of credit and occasionally we get it.

JACK GAUGHAN:

I think you're quite right, but some of the reason for that was, I think, in the old days - and that's not that long ago - I know what you're talking about - there were a lot of illustrators - painters - who did not want their names on those covers, and I think at that time some of that was that they were embarrassed by science fiction.

FRANK KELLY FREAS:

That could very well be the case. There was a period when lots of artists had no objection to doing Westerns or detectives or anything like that, but it's not that long ago that science fiction was definitely not respectable - I mean, you had to be a nut!

JACK GAUGHAN:

Pardon the expression - everybody has to bring this up soonor or later - I might as well be the villain. It was, at that time, to those people, "that Buck Rogers stuff".

FRANK KELLY FREAS:

Yup, exactly! Now if it was that Buck Rogers stuff, well, now's the time - everybody loves it.

Imagine, science fiction - the most forward-looking field in literature - being subject to a wave of nostalgia, for God's sake! [Laughter.]

Any more questions? The man with the hat. Come on up so everyone can year you - come on up to the mike.

QUESTION:

I would particularly like to ask Kelly Freas and this drunken Irishman behind me: Most of the discussion so far seems to be over cover illustration and I would like to hear some discussion about the mechanics of interior illustration. One notices that when interior illustrations are drawn, they're generally spaced about - let's say in a novelette they're about twenty-five pages apart and this is great for layout, but how do the artists feel about having to draw for a particular scene so that it fits into the particular page layout of a magazine, rather than for a particular part of the novel or novelette that they're illustrating that turns them on as artists?

FRANK KELLY FREAS:

This, to me, is murder, so I'll let Jack Schoenherr take this one.

JACK GAUGHAN:

Kelly, wait a minute. Just one quick short remark. Grateful for the work, right?

JOHN SCHOENHERR:

So far with magazine illustrations, they generally tend to stick them in where you say to stick them in and work layout around it.

QUESTION:

You don't have a problem with two particular scenes that come, perhaps, two or three pages apart, that you really would like to illustrate, and then maybe nothing for about thirty-five or forty pages?

JOHN SCHOENHERR:

You try to space them evenly through the whole story, and considering that there are certain scenes that are illustratable, you can use a criterion of spacing as one of the reasons for doing a particular scene or another.

FRANK KELLY FREAS:

You do it - most assuredly you do it - but you don't always like it. There have been many times when I have killed what I thought would be an excellent illustration simply because it didn't fit into the spacing of the story, and, as Jack says, you are using the spacing through the story as one of your bases for the choice of what to illustrate.

JOHN SCHOENHERR:

At least when you have a spacing problem, you have the option of choosing the best of the two scenes in conflict to illustrate, but eventually, you know, you could end up with a giant comic book.

FRANK KELLY FREAS:

[Laughs.] Sometimes the impulse is to do exactly that. This is one of the things that made it often a little easier to work for Analog, because we were frequently given the option of doing as few or as many illustrations as we chose to do for a given story. Now this meant that you might get two; you might get six. But believe it or not, there are times when you would rather do the extra work than leave something out that you feel belongs there.

JOHN SCHOENHERR:

This is true of magazines that do the layouts after they get the art. I don't know how others work, such as what this drunken Irishman works for.

JACK GAUGHAN:

Not yet! The drink's up there; I'm down here.

JOHN SCHOENHERR:

Your orchid is turning black.

QUESTION:

Mr. Freas, in your tribute to Mr. Campbell in Locus, you mentioned "digging the science fiction out of the science fiction story". Could you go into this?

FRANK KELLY FREAS:

I'm not exactly sure whether we're thinking of the same thing when I say "digging the...". What I'm driving at is how do I become an expert in cryogenics or radio astronomy when this is the basis of the story? And it would be a hell of a lot better if I could find somebody who was a real expert who could also draw me some pictures. But fortunately I have wide acquaintance amongst scientists and technical types who are always happy to come in and advise me on these things, and it may end up with a couple of hours on the telephone, or something like that, and usually I am able to check the working drawings with my technical friends before I actually go into the final job. If there is a choice to be made, I generally sacrifice esthetic values, let's say, to the illustrative and scientific values. Sometimes I do it reluctantly, but I usually do it.

JOHN SCHOENHERR:

There's an additional impetus in that, at least in our case, John Campbell wouldn't buy the illustrations that were not science fiction in a science fiction story.

JACK GAUGHAN:

Now, again, to expound on that, this is something that we've all run into. Suppose your science fiction story consists of - oh - something that takes place in the future and the essential action is two guys shaking hands.

FRANK KELLY FREAS:

Oh brother!

JACK GAUGHAN:

What do you do? I know what I'd do. You know what you'd do. Let's tell them. I think that's partly what he's asking. Then what do you do?

FRANK KELLY FREAS:

Why do you think I invented so many kookie costumes? [Laughter.]

You know, we run into another thing every once in a while - and I think it's less of a problem, perhaps, for the sword and sorcery people, but how in the devil do you get a science fiction illustration for a story like "The Yngling"[2] or "[But] Mainly by Cunning",[2] where all of your background, all of your action, is straight out of medieval Europe, that if anything that you visualize is historical adventure, and the only science fiction element in it is the psi element that you can't illustrate anyway? This sort of thing drives the circulation department absolutely mad. They hate it.

QUESTION:

You mentioned that when you take an illustration, when the cover comes out it sometimes is very bad. Now my question is: Do you have any control over what the covers are or how they should look, or do you exercise any choices in your drawings so that the covers look a certain way or another way? I mean, how much effect can you have on the covers, as we see them. I've seen your paintings in the auction here, and I've seen the covers of Analog, and I agree - your paintings are not the covers, and my regret is I'd like to see the covers reflect the paintings more. Is there anything you can do to change it, or is there anything that can be done?

FRANK KELLY FREAS:

Up to a point, there's a great deal that can be done. One of the things that is customarily done - and this is part of the standard equipment of any commercial artist - is the restricted palette. You confine yourself very, very strictly to colors which you know can be reproduced adequately by the printer's inks, which are red, yellow, blue, and black. Or, in your terms, I should say a sort of magenta, a turquoise, and a lemon yellow. These four colors printed together are the total range that we have to work with. Anything that can't be reproduced from that - forget it. But beyond that, we have very little control, and that is not because of the technology - they're quite capable of doing it - but it is because of the labor problem that turns up in every field nowadays. They're doing it fast; they're doing it with relatively expensive help. You don't get fine art printing as you would like to have.

One more question, and I think we'll have to call it off.

QUESTION:

Why don't you change over to a photographic system of reproduction rather than a printing system?

FRANK KELLY FREAS:

That would be a problem for the publisher, and I wouldn't be surprised if within the next ten years we will find this being used more and more. [Comment from audience.] I think she's referring more to the Type-C print and the new color Xerox - 3-M's new process.

JACK GAUGHAN:

Excuse me, Kelly. I got to take over your function, here, but we've run out of time. Right?

TONY LEWIS:

Right. I'd like to thank all you people who participated on the panel. (Take your drinks with you.)
[Applause.]

JOHN SCHOENHERR:

[Off mike.] Would you like some?

SECOND VOICE:

[Off mike.] What is it?

JOHN SCHOENHERR:

[Off mike.] Try it! Try it! This is an unused straw. It's delicious!

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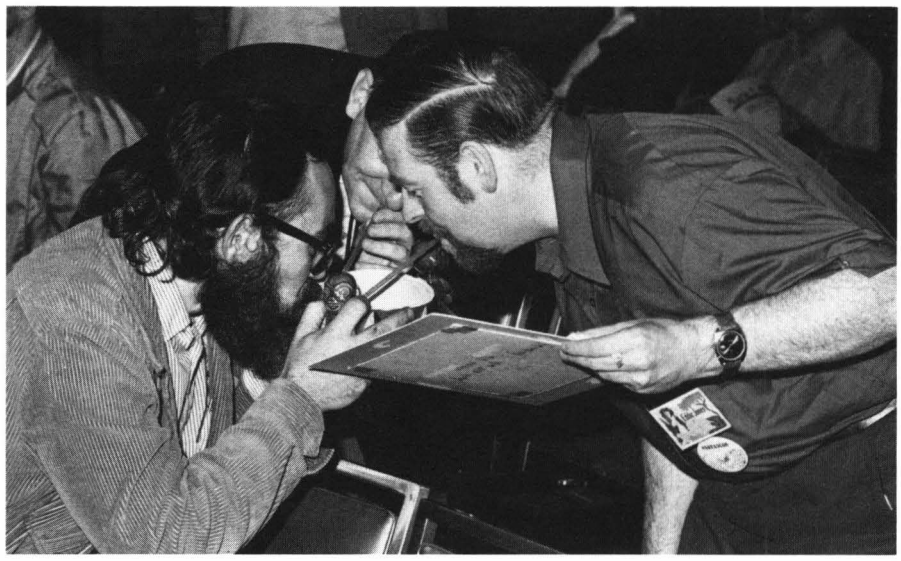
[2]By John Dalmas, Analog, Oct.-Nov. 69 and May 70.

...and then there were three - John Schoenherr, Jack Gaughan, and Eddie Jones (Photos by James R. Saklad)



The Banquet

Toastmaster: Robert Silverberg

Fresh Melon
Broiled Scrod, lemon butter
or
Veal Cutlet, Cordon Bleu
Green Beans Amandine
Potatoes au Gratin
Lettuce and Tomato Salad, vinaigrette
Ice Cream Roll with Chocolate Sauce

TONY LEWIS:

Ladies and gentlemen, members of the 29th World Science Fiction Convention, I should like at this time to present to you the Toastmaster for the Hugo Awards Banquet, Bob Silverberg. [Applause.]

ROBERT SILVERBERG:

Welcome, welcome all of you to the Awards Banquet of the Twenty-Ninth (or whatever) World Science Fiction Convention, the Noreascon - or the Satyricon, as I've heard some of you calling it - [Laughter.] held here in the Boston Sheraton, better known as the Tower of Grass. [Laughter, applause and groans.] It's a great pleasure for me to be up here once again; it's now three years since the last time I presided over one of these affairs. In 1968, I had the rather sombre pleasure of officiating at the longest banquet [Giggles.] in the history of science fiction conventions at the Baycon; it ran something like five days... [Laughter.] It wasn't my fault, but things did get out of hand. I figure that I do owe you some time back from the Baycon and therefore will proceed now to award the Hugos and then we can get along to partying. [Cheers and applause.] In the first category: Best Typeface... [Laughter.] Should I save them, Tony? ... Oh, give them out to the people who deserve them! [Laughter.]

How many of you were at the Baycon, anyway? Let's see some hands. You remember all the troubles we had that night? It was 97 degrees - outside the hotel; 137 in the halls of the Claremont. We had a Gothic Baroque Romanesque room in which to ... [Laughter.] There were these pillars. [Laughter.] The people at that table and that table could see the dais; the people at that table and that table could hear. [Laughter.] The rest of you were out in a vague haze of purple smoke and now and then I would call for a round of applause just so I could be sure you were still there. [Laughter.] Many of you weren't. [Laughter.]

That was three years ago - three years of great changes. Some of us now have more hair, [Laughter.] some have less, some have both more and less. [Laughter.] Things happen very quickly in the science fiction world and three years is really several eons. This is a microcosm in which you can become a grand old man at 35, a dirty old man at 40, [Laughter and applause.] and in fandom, you can become an elder god at 23, apparently. [Laughter.] The new generations tumble one past the other as quickly as possible. The critics are quick to acclaim a new Brunner, a new Silverberg... [Laughter.] I hope those terms are meant more fondly than the new Nixon we're always hearing about. [Laughter and applause.]

Anyway, I'm back up here tonight. The lights are brighter, the air is clearer, the world is stranger, and we're going to have ourselves a banquet - a short one, a crisp one. It won't be anything like that other one. That was a weird convention, the Baycon, wasn't it? This isn't a weird convention; this is a slick convention - that's a whole different concept.

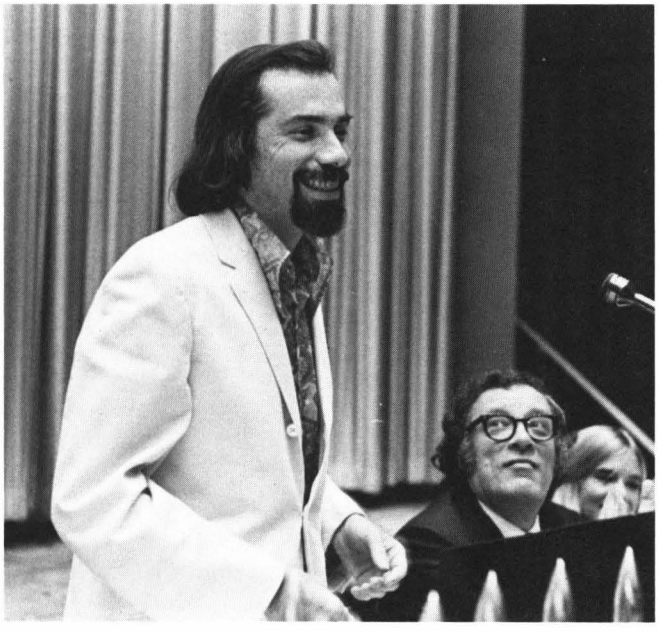
Up here on the dais with me are a bunch of people whose names you're probably wondering about. Some of them helped to make this convention what it is. Some of them tried their damndest to keep it from becoming what it is. [Laughter.] In any case, I will identify them to you. I ask you not to applaud individual names because that would be invidious and Isaac, in particular, would be very unhappy. [Laughter.] But let me tell you briefly who we have here. At the end we have Mario Bosnyak, the mad Yugoslavian, our TAFF delegate. Next to him, Stew Brownstein, the Chief of PIGS. Amy Brownstein,

who is a lady related to him by marriage. [Comment from audience.] Stand up? Okay, let's stand up. Mario, on your feet. You can remain standing as long as you're capable. [Laughter.] Harry Warner, Jr., our Fan Guest of Honor. [Applause.] No applause, please! Please! No applause. The fact that these people are Guests of Honor is irrelevant. [Laughter.] Clifford D. Simak, our Pro Guest of Honor. [Applause.] Robyn Asimov. [Applause.] Uh... [Laughter and applause.] Isaac Asimov, the sensuous Doctor "A". [Laughter.] On my right, we have Barbara Silverberg, [Applause.] Tony Lewis, [Applause.] Suford Lewis, [Applause.] Bob Shaw of Northern Ireland, [Applause.] Linda Desmond, [Applause.] and Bill Desmond. [Applause.] Well, I told you not to applaud and you did anyway, so now you can't. [Applause.]

We have a bunch of other names to call off. They are less distinguished, I suppose, than that of the Good Doctor here, but they are very important cogs in this immense wheel, and it is a matter of credit where credit is due. Since there are 283 of these people, I really hope you won't applaud for each one this time. But I am going to call them off and I'd like each one to stand up and we'll give them a good round afterwards. These are the other committee members, who have helped in the Noreascon: Karen Blank and Selina Lovett of the Registration Desk; Jean Berman of the Discussion Group business (I don't believe she's here); Marsha Elkin and Bjo Trimble of the Art Show; (Are all of you folks standing up as your names are called? Many of them are in distant realms.) Bob Wiener, who ran the Kinetic Katalog; Dick Harter, of the Alien Environment Room; Jack Chalker and Ed Wood, the auctioneers; (We're going to auction them later, folks.) Tom Whitmore; Brian Burley; Dave Anderson; Paul Galvin; Morris Keeson; Leslie Turek; Phil Jacobs; Anne B'Rells; Kurt Lanza; Elaine and Craig Franklin; Al and Linda Kent. Now, all of these people, whose names are probably unfamiliar to 93% of you, were out there sweating since 1947 to put the Noreascon together and let us give them their moment of glory now. [Applause.]

I think also, while we are handing out the egoboo now, we ought to give some attention to this tremendous hotel - this astonishing place where the funniest things happen. This afternoon there was some major colossal breakdown in the equipment here and Suford went looking for the man in charge to get him to fix it, and after half an hour of searching she realized why she couldn't find him - he had come in to listen to the program. [Laughter.] It's that kind of hotel. Let's hear it for the Sheraton. [Cheers and applause.]

The Noreascon Awards Banquet



Toastmaster Robert Silverberg
(Photo by Jay Kay Klein)

We've got a lot of other people here that I am not going to introduce because there are too many of them and I can't pronounce their names, but it is, I think, significant that we have such a marvellous international representation here. Last year the convention was in Germany and of course we had people from all over Europe coming to it, but here we are in the remote old United States and we have a sprinkling of Belgians and French and Japanese and delegates from the Afghanistani Science Fiction League and the usual numbers of Britishers and Poles, and we have Mario and Ara, the mad Spaniard... It's a marvelous thing to see all of these people flocking in from overseas. [Shout from audience: Australians!] Australians? [Applause.] You may wonder why I left the Australians out. Last night, down at the pool, I found myself in the Australian party and they gave me something called Australian beer [Laughter.] with either a walrus or a wombat on the can - I don't know which it was - but it blotted out my mind.

In case you're wondering, incidentally, why I've chosen to conduct the banquet in Romanian, John Brunner last year did such a good job running it in German that I thought I would top him by studying an even stranger foreign language, and I see that all of you must have been studying Romanian, too, and my hat is off to you. I understand that Cliff Simak will deliver his speech tonight in Portuguese and Harry Warner is planning to speak in Pushtu. [Laughter.] Brunner, incidentally, who conducted that banquet so elegantly in German last year, is here, and as always I'm glad to see him. A curious bond links us two. I explained all this at the Baycon - how in his leaner years he was sometimes called the British Robert Silverberg.

Did you all enjoy your dinner tonight? [Mixed response.] How many of you had scrod? Now I'm not going to make the usual and obvious joke about scrod - the pluperfect business, which is the first thing you hear when you land in Boston. As a matter of fact, those of you who had scrod tonight did not, in fact, eat scrod; what you had was swordfish, [Laughter.] as originally announced some months ago before the mercury scare. It happens that Tony, acting on behalf of the hotel, bought up a really big lot of swordfish very cheap [Laughter.] and kept it on ice since last December, [Laughter.] sold it to the hotel commissary under the guise of scrod (at a whopping profit), but I'm happy to say that the profit from the sale of this scrod will entirely be donated to the Clarion Science Fiction Writers Workshop! [Laughter and applause.] (For the benefit of those of you who are attending their first Worldcon, that's a very complicated inside joke. [Laughter.] Ask the fellow sitting next to you about it later on.)

First Fandom Award

ROBERT SILVERBERG:

We have a number of responsibilities at the banquet tonight and not all of them are fun and games. During the year past, a number of very important members of our little world have left us, and as customary, we want to mention the names of at least a few. There was a necrology in the program booklet and you all, I suppose, have seen the names of the departed. Three of them were quite important. Virgil Finlay, the great artist; August Derleth, the Lovecraftian, the founder of Arkham House; and John Campbell of Analog, all left us during this year. Now I will not call for the customary moment of silence, because, since John Campbell is involved in this, I can't think of anything more alien to the spirit of John Campbell than a moment of silence. [Laughter.] There was a man who loved talk and who would really resent the squelching of talk in sentiment and mourning. Instead, I want to call Lester del Rey up here. [Laughter and applause.] I'd like Lester to speak for a few minutes about John Campbell and to give the First Fandom Award for this year's convention. Lester?

LESTER DEL REY:

It's not a moment of joy; it's not a moment of real sadness, either, let me assure you. We are dealing with a man who more completely lived the life he chose for himself than almost any other man I

can think of. That is why it is not a moment of sadness. It wasn't for him; it is for us. We've lost a great deal - but we also have gained a great deal. I have only one regret of any great size to bring to you tonight; I have a number of good things to say.

John decided to do something that at the time was totally and absolutely impossible. No man could live off science fiction when he decided to - in the dim dark days of 1928, '29, and '30, when a story paid a quarter of a cent a word, sometimes five years after the ending of a suit. (And that's not a joke either; that was true, then.) Nevertheless, he decided to live off science fiction. He struggled for a few years, and in struggling he had some innovations. Some of you may have forgotten that John Campbell was the first permanent science columnist of a science fiction magazine. Until he became editor, for eighteen months as I remember it, every issue of Astounding Stories at the time ran one of John's science articles. This was pioneering. He took the hard science space opera so far that, really, to discuss it further is ridiculous because at the end of the first set of Arcot, Wade, and Morey stories the entire universe was subject to any change that the three heroes wanted to make in it at any volition of theirs. They could create and destroy at will, and it was done on the basis of what was at the time considered a science. This was hard thinking.

At the time when those were coming out in the magazines, John was already working on an entirely separate career as Don Stuart. One man's work had already been accomplished; two years had passed, three, maybe four years had passed, and John Campbell decided that that wasn't enough and he began another man's work as Don A. Stuart. That is still with us in all our anthologies. From 1930 until 1937 (although the last story was written a little later to fill a deadline that he had to make when somebody disappointed him in bringing in a lead story for Unknown), during less than ten years, he established two separate careers as a writer and began a career as an absolutely amazing editor. As an editor he did something as impossible as the idea of living off science fiction. He made it possible for a great many of the rest of us to live off science fiction, because he brought to science fiction an attitude and an insight which refused to leave it forever in a ghetto. Through what he could teach and show and inspire from writers and from readers, it became a literature that more than the displaced social person of the time - which most of us as fans were - could appreciate and would buy.

And if you will remember the early dim days when books were brought out for the first time, when we began to see more than very small specialty houses publishing science fiction, the books were such things as Slan from the pages of Astounding Science Fiction. For the first four or five years most of the books, almost all of them, in fact, were either stories that had appeared in Astounding Science Fiction or had been meant for Astounding Science Fiction. This is how we got into the bookstores. This is what led us into the paperbacks. This is what made the 1939 World Science Fiction Convention, consisting of very few fans, into what we are seeing tonight. And this is what gave us, in a period of what seems to be failing outlets - less magazines than before - actually the largest outlet for science fiction we have ever seen.

John Campbell made the field. Let me put it this way: If any other single person, with the possible exception of Hugo Gernsback (who did it by accident to some extent), if any other man were taken away from science fiction, it would be hurt a little bit, perhaps. Doc Smith - yes, we would have lost space opera, but there were others beginning toward that. If Heinlein were withdrawn, it would be a big gap in our ranks. If Asimov were gone (I'm going to avoid the obvious thing), a little of our roof would be missing. There would be a number of gaps, but it would still be essentially the same. Remove John W. Campbell, and you would find that science fiction died as a small and insignificant pulp field some time during the period of the great paper shortages and the following loss of the pulp magazines. It died mourned by a handful of advocates. That would have been its fate. One man and one man alone managed to save us from the death of every other category of pulp fiction because he wouldn't accept us as a category.

I think it is a very strange thing - and this is the only thing I really am bitter about - I think it is a very strange thing that a few days ago when I looked on the bookstands there was not one single volume available of John W. Campbell or Don A. Stuart stories. I think our publishers and our editors had better do just a little thinking. True, those stories were published in hard covers at the very beginning of publication. (Most of them were, not all of them. There were some that never did get such publication and they were just as worthy as others.) All of the Edward Elmer Smith stories are available, and I'm glad of that. I assure you that the early John Campbell stories were just as exciting. They are not in publication because they were seized so quickly by some of the specialty publishers. Then the hardcover publishers would not touch them because they'd already come out in small editions. And then because they had sold very small amounts, as is necessary for those small specialty editions, apparently they were overlooked by most of the paperback houses. There have been a couple of paperback editions; I understand there's one more coming out.

But if we want to give John the one tribute that would be meaningful to him, I think it is that we should at least read again what he helped to teach us. I would like to see a little pressure for the republication of

those stories, because I know that an awful lot of people would like them and readers who have not read them would have a hell of a good time. The Don Stuart stories were the New Wave of their day and the John Campbell stories were the peak of the Old Wave of their day, and only once did the twain every really meet, and that was in his works.
[Pause.]

Now First Fandom - an organization which was known and appreciated by John, who in his heart necessarily had to be a First Fan - quite a while before his death voted to give him the award tonight. I consider myself very privileged to give it, and even though it is posthumously given, I don't think John would have felt that this many people having a good time was any loss to anything, because he enjoyed people having a good time. I am also fortunate in the fact that a very dearly beloved daughter of John's - one beloved as I know, perhaps even better than she knows - is here to receive it. This will be given after I read the brief inscription on it.

First Fandom presents this, as I know, after a great deal of very serious discussion, with a great deal of admiration and genuine love for the man to whom it was originally meant to be given. "First Fandom Hall of Fame Award presented to John W. Campbell, 29th World Science Fiction Convention, Boston, Massachusetts, September 1971". The dedication is: "Through his writing and his superb editorship he was instrumental in raising the level of science fiction from gimmickry and space adventure to an adult and enduring literature."

Philinda Campbell Hammond, this is a proud moment for me.
[Prolonged applause.]

PHILINDA CAMPBELL HAMMOND:

Thank you. My father lived for science fiction, and all I can say - were he only here to receive this. Thank you. [Applause.]

Philinda Campbell Hammond accepts the First Fandom Award on behalf of her father, John W. Campbell, Jr.
(Photo by Jay Kay Klein)

ROBERT SILVERBERG:

I have been asked to announce the establishment of the John W. Campbell Memorial Fund at MIT for sponsorship of basic scientific research. G. Harry Stine, whom some of you may know from the pages of Analog, is the head of this fund; contributions to it are tax-deductible; and the address, I'm told, will be in the next issue of Locus. This, I think, would be the most tangible way of remembering this great man who has gone from us, even more tangible, perhaps, than subscribing to Analog, and the fund will welcome contributions from those of you whose lives were shaped and transformed by the work of John Campbell. I had a few snappy John Campbell jokes to tell at this banquet, because I always would tell a few John Campbell jokes. John was a big target, and a good target and a great sport, but let's not tell them. It's too bad he's not here to hear them.

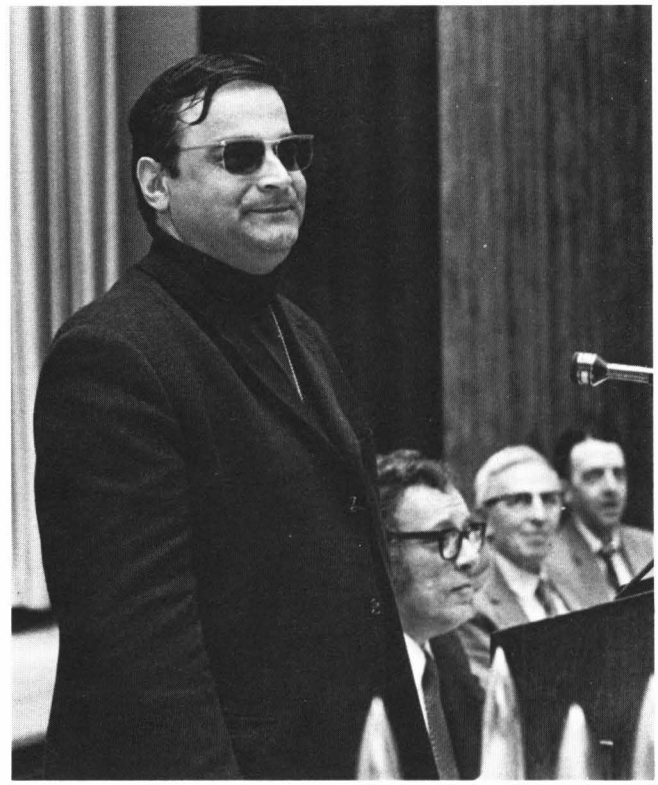
TAFF Delegate
Mario Bosnyak

ROBERT SILVERBERG:

We have a lot of other stuff to do tonight, most of it more cheerful in ... Excuse me ... I have here a special announcement from Convention Chairman Dr. Lewis. The income from the sale of all possessions taken from your rooms during the banquet [Laughter.] will be donated to the Clarion Science Fiction Writer's Conference. [Laughter and applause.]

We have among us in this great polyglot delegation of foreigners that has descended on us tonight, we have one official foreigner and he's as polyglot as can be. He's our TAFF delegate - Transatlantic Fan Fund. This, you know, is a kind of reverse Lend Lease that brings us the refuse of the Old World now and then. [Laughter.] This time around, the sweep of the wave has brought us a German resident who is Italian, I believe, by citizenship, and part Yugoslavian and part Mongol by ancestry, [Laughter.] one Mario Bosnyak.

I first met Mario at the St. Louis convention of 1969, when he came equipped with several bottles of a strange green substance [Laughter.] and inveigled some of us up to his room and said, "You vote for Heicon - Ve give you Verguzz!" (Verguzz was the green substance.) I had some and was immediately transformed into Harlan Ellison [Laughter.] for about ten minutes and let me tell you, that was a bummer! [Laughter.] Mario was one of the guiding spirits of last year's Heidelberg science fiction convention and, as though in reparations for that, he's come back this year as our TAFF delegate. Mario, come up here and greet the assemblage. [Applause.]



TAFF Delegate Mario Bosnyak
(Photo by Jay Kay Klein)

MARIO BOSNYAK:

I didn't know that I was supposed to speak tonight, and I lost my few words the first day of the convention and I think at that moment I say the most important to everybody of you and I think there are much more important items going on tonight instead of holding silly speech. I would only repeat my deep thanks to everybody of you who made this possible and I would also like to ask you, everybody, you and your friends, for the next TAFF race to vote - no matter for who - but vote, and in this way show your enthusiasm for this beautiful organization. I myself am the administrator for Europe for two years, and I will do my best to get more and more votes over there.

There is only one thing I would like to say. This is a gorgeous convention. This is a beautiful hotel and it was a pleasure for me to enjoy these days and I'm very sad that tomorrow evening everything will go to end. I would like again to express my thanks to Tony and his charming wife, and Stew and his charming wife, to all who helped to make it so beautiful. It is really sad to go away. Thank you so much. [Applause.]

ROBERT SILVERBERG:

Thank you Mario. A man of few words. Not so much a polyglot as a miniglot tonight.

Bob Shaw Fund

ROBERT SILVERBERG:

We have another alien among us. You know, TAFF is a kind of formal tradition in the science fiction convention. There's a TAFF race every year; it's an elective honor. Very competitive people get petitions up and all of that. Well, aside from the TAFF, there is now and then a kind of private subscription project to bring over some selected species representative from another land who either doesn't have the courage to run for TAFF, or who is ineligible for reasons of health. They did one of those this year - they brought over a man from Northern Ireland, name of Shaw, Bob Shaw, who is sort of a part time science fiction fan from the eofannish era and has now deviated into writing science fiction. He has this notion of "slow glass" which made a couple of pretty good stories that some of you may remember. Bob Shaw was imported, duty-free, by a supplementary non-TAFF TAFF and he, of course, was the only candidate in the Bob Shaw fund, although I understand that occasionally he would wake up at four in the morning in a cold sweat saying, "What if I lose the Bob Shaw fund?" [Laughter.] Anyway, he's that big man with the beard. I'd like Bob Shaw to come up and say a word or two now. [Applause.]

Bob Shaw

BOB SHAW:

Thank you. I don't want to bore everybody to death slowly with a long speech, so I'm going to bore you to death quickly with a short speech. I've enjoyed this trip tremendously. The only thing I had slight reservations about in advance was that people told me that science fiction fans don't drink very much at conventions anymore. [Laughter.] Well, I don't know about the science fiction fans, but there's somebody around here putting it away. We had a little party in my room last night and as far as I can see we used up a case of Scotch, and this morning I suffered a bit. I was all right after I had my usual breakfast of two lightly poached aspirins. [Laughter.]

I should say something about the method by which I was able to make this very long and very enjoyable trip from Ireland. Actually, I entered science fiction fandom for purely selfish reasons - I simply wanted to enjoy myself and I liked writing and I've been having a great time for the last twenty years giving odd little pieces to science fiction magazines. I think it's a great tribute to the generosity of people like, well, American fandom in general, and people like Arnie and Joyce Katz and Rich Brown and Colleen, that they should even consider the idea that I should have been rewarded for enjoying myself. It just doesn't seem quite right, but I'd like to thank them in particular and everybody else for enabling me to come here and have such a good time. Thank you. [Applause.]

ROBERT SILVERBERG:

He has a lovely accent, doesn't he? It's very contagious. The first time I encountered the Belfast accent, it was 1957 at the London Convention where Walt Willis and James White were sitting in the corner murmuring in that lilting, rising inflection kind of tongue, and it was weeks before I shook it. Shaw, actually, doesn't speak that way. He has a thick British accent, like Brunner's Cheapside, but because he was expected to behave like a Northern Irish fan, he spent weeks being coached by James White and Walt Willis, and I think they did a marvellous job. [Applause.]

Pat Terry Award

ROBERT SILVERBERG:

It's time to begin shovelling out some of the awards that we propose to hand out tonight. (Not Hugos - they're still hours away!) [Laughter.] We have a brand new one for openers tonight. It's the Pat Terry Award for Humor in Science Fiction. Pat

Terry was the Australian octogenarian with a robust sense of humor who went to his eternal reward some time back. Gordon R. Dickson, a man of jolly humor, will, if he is able to manage it, advance to the podium to present the first[1] annual Pat Terry Award for Humor in Science Fiction. [Applause.]

GORDON DICKSON:

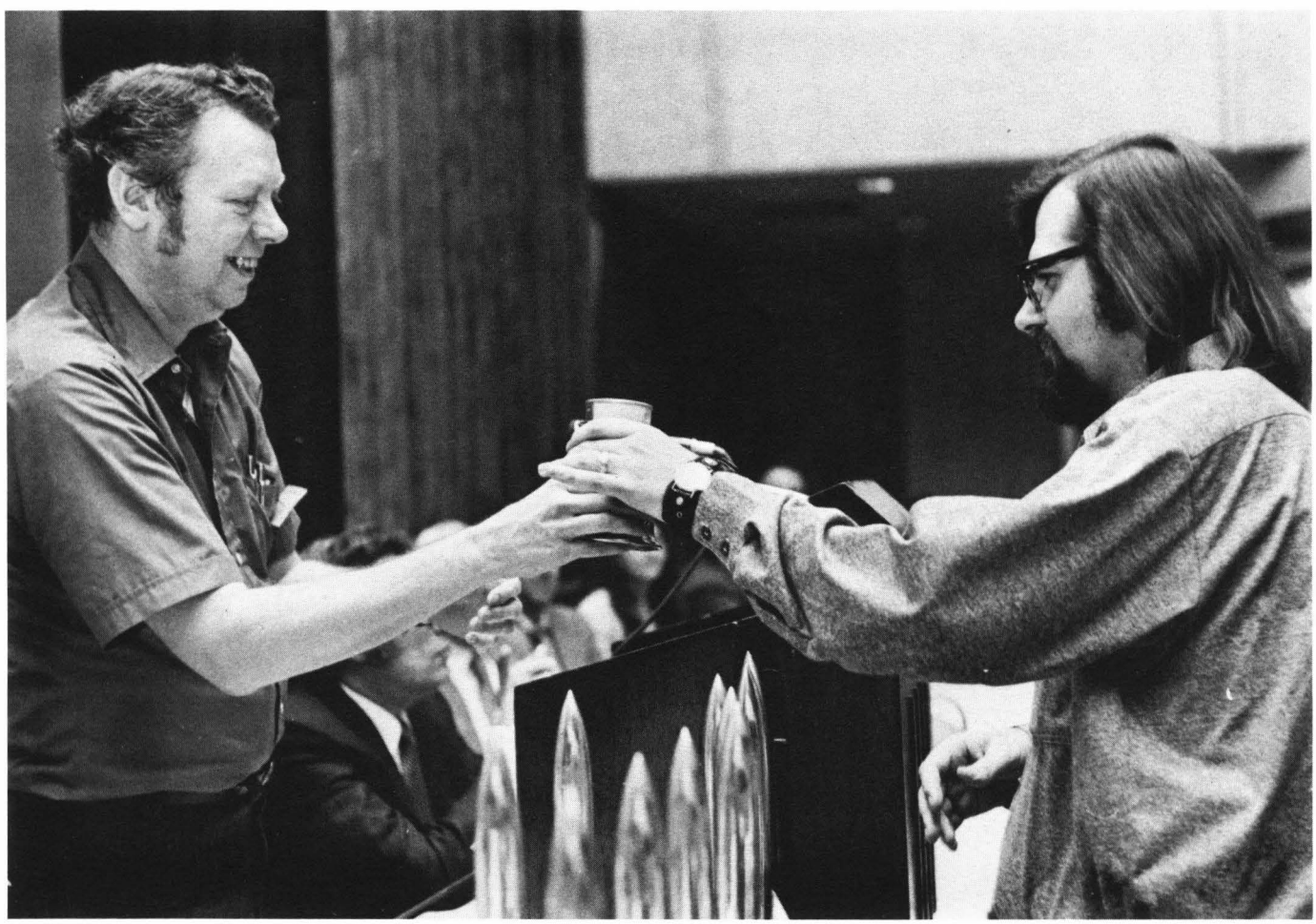
I'm very pleased about this particular award. It goes to a man whose writing I like, it's named in honor of a man I liked very much, and more than that, I think we need an award for humor. Now this particular one was - you can see - it's in the shape of a pewter mug - the inscription's on it - and there's a can of Australian beer to go with it. (The kind Bob was talking about.)

Well, I'll tell you a little bit how it came about, first. The Sydney Science Fiction Foundation are the people who got together on the idea of giving this award in the first place, and it was given last year to John Sladek for Mechasm or The Reproductive System, as it was titled in this country. And this year it'll be going to ... well, I'll give you that a little later.

What I want to do is tell you a little bit about Pat Terry, very briefly. A very remarkable man. As Bob said, he was in his eighties when he died, and he had been paralysed completely in his early seventies, and for eleven years he was confined to a bed unable to move - people had to move him. They tried an experimental operation on him and got the nerves in his legs to working again, and in his early eighties, after being bed-ridden for eleven years, he got up and taught himself to walk again - not only to walk, but to get out of the place where he lived he had to climb two flights of stairs to the street and then walk some distance from there to the Post Office which he went to regularly. He was a man whose humor never quit. He did something I've never seen any other living human being do: he could write letters with an Irish

[1]Actually, this was the second annual Pat Terry Award.

Gordon Dickson presents the Pat Terry Award to Terry Carr, accepting on behalf of Ron Goulart (Photo by Jay Kay Klein)



Forrest Ackerman
(Photo by Jay Kay Klein)

accent. [Laughter.] Now I can't describe how this is done - maybe we'll have a letter on display sometime so you can see one.

At any rate, this year the award goes to Ron Goulart for After Things Fell Apart and it will be accepted by Terry Carr who was the editor for that book. [Applause.] Terry wants to mention that this novel is also nominated for an award for the Mystery Writers of America.

TERRY CARR:

I thank you all.

ROBERT SILVERBERG:

Gordy left the notes to his speech up here. Let's look through it to see if there's anything incriminating. That's not even in English! [Laughter.] The next award has been cancelled by popular demand. [Applause.] It was the Abbie Hoffman Award for Social Relevance. [Laughter and applause.] We were going to give it to Harlan, but he couldn't make it.

Big Heart Award

ROBERT SILVERBERG:

We do a number each year called the Big Heart Award. Kind of a soft and tender interlude in this otherwise bleak and cynical operation. A man named Ackerman who lives out in the earthquake zone operates the Big Heart Award and since Forry didn't quite disappear into the San Andreas fault this year, he's making his way slowly and painfully to the dais and will now award the 1971 Big Heart Award. [Applause.]

FORREST ACKERMAN:

There are a number of fans here this evening who probably, in prowling the huckster rooms in the last few days, have picked up a book by the late E. Everett Evans called Food for Demons. (The title, incidentally, doesn't refer to the banquet we have just enjoyed.) [Laughter.] There are those among you who will remember E. Everett Evans not only as a science fiction author whose work you've enjoyed, such as The Man of Many Minds, and Alien Minds, and The Planet Mappers, but Johnny Millard, for instance - a survivor here from the Second World Science Fiction Convention thirty years ago in 1940 - I know will have good reason to remember E. Everett Evans. I look out - I see other faces to whom this gentleman was very generous as a fan. There is Walt Liebscher, Sam Moskowitz, Don Wollheim.

Well, we lost Ev about a dozen years ago, and he had such a big heart that we decided we never wanted to quite forget his generosity, and we looked about for people who themselves have operated in the Evans syndrome. It doesn't matter whether you're a pro or a fan. Sometimes it has been a mixture, such as Bob Bloch who was the very first recipient. Later on, Bob Tucker. On the distaff side, there is Bjo Trimble - you've all seen her giving generously of her time at this convention and know for years past how she's worked on the Art Show. Recently we had a winner who's right here at our table this evening in Harry Warner, Jr. We have been international; Walter Ernsting of Austria won the Big Heart Award several years ago. We have even gone behind the Iron Curtain to Herbert Haeussler.

This evening we're going to honor a gentleman who has been a good Samaritan to many of us in the past. Anytime there's been anything from a bleeding hangnail to incipient Twonk's disease, I would say that the good doctor was there. We've honored other good doctors, notably Dr. Keller, in the past. I'm sorry that this particular Big Heart Award winner isn't with us, but I would like, at this time, to call forward to accept it on his behalf one of his very good friends, Lou Tabakow, to whom I will present the E. Everett Evans Memorial Award of 1971 for our good Samaritan science fiction doctor, C. L. Barrett. [Applause.]

LOU TABAKOW:

On behalf of Doc Barrett and his numerous friends in fandom, it gives me a great deal of pleasure and personal satisfaction to accept for him this honor. Thank you. [Applause.]

Guests of Honor: Clifford D. Simak (Professional) and Harry Warner, Jr. (Fan)
(Photo by Jay Kay Klein)

BOB SILVERBERG:

It is a pity that Doc Barrett couldn't make it here tonight. Lou, those malpractice suits are almost cleared up now, aren't they?

Let's do a few Hugos now. Not this year's Hugos, though - we'll do the 1954 Hugos. [Laughter.] Those of you who study your program book really closely will notice that the 1954 Science Fiction Convention forgot to award Hugos. That's true; I'm not putting you on. There's a man reading his booklet right down there and it says, "1954: No Award". I'm not sure how this happened. It was out in San Francisco - they were having a lot of trouble with earthquakes that year and I guess they just were distracted at a critical moment, so a few of us got together and we decided to award the 1954 Hugos tonight. [Laughter and applause.] They all go to Harlan, but he isn't here. [Laughter.] Okay, we'll mail them to him.

Let's do some Guests of Honor now. I was a Guest of Honor last year at this time - at Heidelberg. I was one of numerous Guests of Honor, but I like to think that I was the Guest of Honor because, after all, that's the way things are. And now that I've had both experiences, here at the summit of the science fiction world - Toastmaster and Guest of Honor - you work harder being Toastmaster because the Guest of Honor only talks for fifteen minutes if he is Lester del Rey, or an hour and three quarters if he's Phil Farmer, [Laughter.] but it's all one speech and he's done; whereas the Toastmaster is sitting here scribbling notes and checking his watch and doing all kinds of funny things. On the other hand, if you are Toastmaster, although you don't get the magnificent baroque 14th century suite that I had at Heidelberg, you do get a seat at the banquet.

I had a funny experience last year at Heidelberg. There were three Guests of Honor, actually, Ted Tubb and Dr. Herbert Franke and myself. I don't know where Tubb went, but the Frankes and Barbara and myself sat around the main hotel of the thirty hostelrys that the Heicon ran, tippling a bit before banquet time and telling ourselves very smugly that since we were Guests of Honor we could show up at the very last minute because we would have seats on the dais, just as these guys down here have. And I think the banquet was called for 7:30, and about 8:00 the Frankes and Silverbergs went down to the Heidelberg Castle, Schloss Heidelberg, where the banquet was being held (it makes this place look like a five and ten - a magnificent pile of ruins with a few rooms open), and we made our way through the battlements and across the embrasures and down the portcullis and all the rest, and got to the place where the ticket-taker was. Of

course, we had no tickets - we were Guests of Honor. (They don't give you banquet tickets or anything like that - you're just supposed to show up and accept the homage.) So they wouldn't let us in. [Laughter.] And I speak relatively little German, Dr. Franke somewhat more, [Laughter.] and he expostulated for a while about how here we're Ehrengasten and we were being shut out of the place. It didn't do any good. I think finally what we had to do was to yell loudly until Elliot Shorter came out and took this doorkeeper and shook him a bit. [Laughter and applause.]

Anyway, we got into the hall, which was also quite a trip, because it was fourteen stories down into the catacombs of Heidelberg. You pass the Heidelberg Tun, which is a great wine cask roughly the size of Isaac Asimov. [Laughter.] There's a staircase down the side of it, you know. We got past this and eventually we came to the place where the banquet was being held and peered in and here were thirteen thousand convention attendees busy hacking away at their saurbraten, and nobody had waited for us. We thought that was very strange. We peered in very timidly, and Dr. Franke and I looked for the dais where we assumed the empty seats would be, and through some curious phenomenon there was no dais, [Laughter.] there were no seats for the Guests of Honor, and they found camp stools for us in the back. They threw us scraps now and then. [Laughter.]

Fan Guest of Honor
Harry Warner, Jr.

ROBERT SILVERBERG:

But Guest of Honor is Guest of Honor, no matter how they treat 'em. This year I understand they're doing things a little better. We may hear about it from the Guests of Honor. The first one of them is the Fan Guest of Honor. Strictly speaking, he is a professional of sorts, since he writes for a living. Every day he writes the Hagerstown Times-Herald-Journal-Express, which is their newspaper. It's 32 pages. He starts page one with the national news, the rapes, the weather forecast and all the rest, and continues right through to the sports and the financial stuff on page 32. Then he goes home and writes letters of comment to fanzines. [Laughter.] He's also written some science fiction stories - although not lately - and had them professionally published, even as many others of us.

He has the reputation in fandom of being rather a nice guy - sweet, gentle, something of a trial for a Toastmaster like myself, whose style depends on a certain sharpness of approach. But I've done a lot of research on Harry Warner, and I can tell you that none of it's true. [Laughter.] Sam Moskowitz filled me in on all the details: [Laughter.] the strange sexual practices - the whips and chains; [Laughter.] the youthful membership in the Communist Party, not quite repented; [Laughter.] the thefts of Frank R. Paul illustrations from the primitive auctions of the World Conventions of the late 1920's. He's really had a checkered career and he's been fooling us all lately. Sam is now working on the definitive biography of Harry Warner and as soon as he clears it with his lawyer it will be published in the next issue of Science Fiction Plus. [Laughter.] Harry Warner, Fan Guest of Honor; a really important figure in the history of science fiction fandom; a man who has published one fanzine continuously through the Fantasy Amateur Press Association since, I think, 1941 or 1942; who prior to that, published another fanzine that is considered one of the greats, Spaceways; who has provided historical continuity through his monumental history of fandom from 1912 through 1922, All Our Yesterdays - he's working on later volumes now - Harry Warner, Jr. [Applause.]

HARRY WARNER, JR.:

Bob Silverberg has learned to do two things in the last ten years. He's learned to write some tremendous science fiction stories and he's learned to tell some tremendous lies about me. [Laughter.] This is not going to be a very long talk. If you read Bob Tucker's introduction to All Our Yesterdays, you know that I'm not much of a talker, and there's another reason for making it a short talk. I'm directing it only to part of the people in this room - just to the people who want the nation to continue its space program.

If the comments I have been reading in fanzines are a good indicator, not more than perhaps 50 or 60% of all fans and professionals are solidly behind continued exploration of space. But I think that group could have a major impact on the nation's future course. We thought we were on the threshold of space travel a decade ago when the first orbital missions were flown. Now it's obvious that we've come to a crossroads before we are very far past that threshold. As things now stand, the United States won't be continuing to explore the Moon systematically, or setting up a permanent colony there, or training astronauts for the first human landing on Mars, for many, many years to come.

If we do limit the space program to experiments and orbit around Earth, one of two things will happen, either of which would be bad. All humanity might stay cooped up on one planet until pollution, or catastrophe, or war makes the planet uninhabitable. Or another nation might go ahead with a space program of its own, and move so far ahead in technology that the establishment of this nation will suddenly become panicky and belligerent over its number two status.

Harry Warner, Jr.
(Photo by Jay Kay Klein)

I think a time for a decision on space may be at hand. A national election occurs next year; peace could come in Vietnam before the election. A lot of decisions about national policies, such as space travel, could come up in the months just ahead. If only half the people in fandom and prodom want us to keep on going into space, and if they express their opinion in the right ways, it might have an impact on national policy. I doubt if half of all the people in fandom gave a damn about Star Trek, but those who cared were responsible, in part, for keeping an imaginary spaceship going for another year or two. About 10% of all the professional people in science fiction were responsible for turning a specialized kind of fiction for boys into a significant branch of adult literature. I'd like to see if pros and fans who back the nation's space program can keep it going.

Most lobbyists for space flight are directly interested in making money out of it. Science fiction people are interested in space, not for personal gain, but because it's so closely bound up with their main interests. You can write to your Congressman, or you could publish a fanzine favoring an all-out space program, or you could simply talk up space on street corners. Just remember, two summers ago most of us got pretty badly worked up when we saw Man take his first step on the surface of the Moon. It's quite possible that next year we'll see Man take his last step on the Moon for a generation or two. I'd like to see science fiction people do what they can to prevent that from happening. Thank you. [Applause.]

ROBERT SILVERBERG:

Harry, we thank you for that somewhat sombre but important reminder. We have here for you, so that you do not let this occasion slip your mind, a flat Hugo of sorts. It's a glittering plaque that says, "Harry Warner, Jr. / Fan Guest of Honor / Noreascon / 1971". [Applause.] I would have gone on now to the 1932 Hugos, but the voting's not finished.

Pro Guest of Honor
Clifford D. Simak

ROBERT SILVERBERG:

The other Guest of Honor, Clifford D. Simak. This is really a tough business tonight, giving me two guys like this to introduce, because Clifford D. Simak is the Harry Warner, Jr., of prodom. [Laughter.] I mean, he's a benevolent man, he exudes goodness and the milk of human kindness, and it is really a challenge to say something unkind or even barbed about Cliff Simak. I'm going to try. [Laughter.] He's also a newspaper man. He works for the Minneapolis Bugle, which is published in a limited hectographed edition in St. Paul. [Laughter.] He is the silage and sorghums columnist.

A few years ago, Barbara and I were out in the Twin Cities and we called on Cliff's office, saw him in his function as journalist. He was off in the corner there pushing computer buttons and making things dance and hop, and he showed us how a great city newspaper is run. It's all done by mirrors, with lies and imagination. And then we went out to dinner and Cliff told us anecdotes about editors he has dealt with in his nearly forty years as a science fiction writer and, pals, I just can't repeat those stories - not in front of a mixed audience.

You think Cliff Simak is saintly, don't you? You think he is a sweet, kindly ... Well, let me tell you. Behind this facade of mild humanitarian benevolence there lurks - well - an Asimov in disguise. [Laughter and applause.] A grey-haired, beaming Ellison hammering to get out. [Laughter.] I mean, don't take him at face value. When he writes those kindly old stories that begin with a line like "Sam Jones was sitting on his front porch in a wheelchair", beware, because there's a barb in the tail of the story somewhere. It's not as folksy as it sounds.

Cliff Simak began writing science fiction somewhere around the time Isaac reached puberty and has continued ever since, picking up acclaim and Hugos and a great deal of money along the way. A book called City, which is probably out of print now because that's the way things happen in this business, is one of the undying classics of science fiction. If any list of

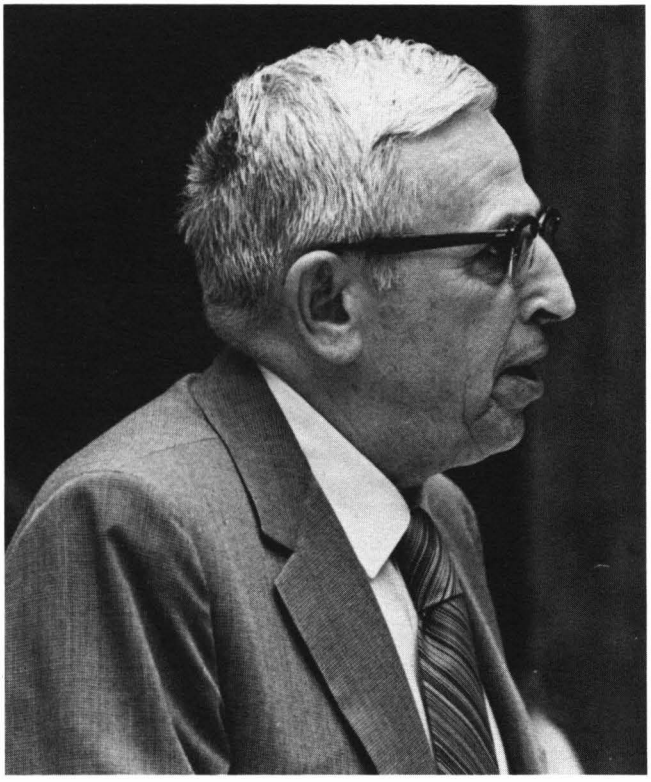
the twenty science fiction novels were drawn up, it would have to have City on it. He wrote a bunch of other stuff, too. Maybe you've read it. According to the checklist in the program booklet, most of that is out of print, too. I think Cliff should have a long talk with his publishers.

Although he does date as a writer from the Gernsback era, believe it or not, he is one of those rare birds who has managed to stay with it, to evolve, to remain active and alert and still a cherished contributor to science fiction here in his fourth or fifth decade among us as a writer, and, long overdue, he has been chosen tonight as our Professional Guest of Honor. Clifford D. Simak. [Applause.]

CLIFFORD SIMAK:

Thank you Bob, for all the nice things you said about me. Mr. and Mrs. Lewis, Mr. and Mrs. Silverberg, Mr. Warner, distinguished guests and members of the committee, ladies and gentlemen. I am deeply appreciative of the honor of standing here tonight. Thank you for having me. Kay is not with me - she couldn't make the trip. I talked with her just a few hours ago and she asked me to extend her most affectionate greetings. Here with me, however, are two young people. Some of you have met them; I hope that before the convention is over they will have the opportunity to indeed meet others of you. I am very proud of them and would like to introduce them. They're over here to my right.

Clifford D. Simak
(Photo by Jay Kay Klein)



My daughter, Shelly Ellen, is a junior at the University of Minnesota where she's majoring in English literature and journalism. Next year she will be in England for a summer of study at Trinity College, Oxford. During the past two summers she has worked in the society department of the Minneapolis Star and Tribune. No man could ask for a finer daughter than she. [Applause.]

My son, Richard Scott, graduated a year ago as a chemical engineer from the University of Minnesota and was one of the fortunate ones who found a job. [Laughter and applause.] He is working in government research and development here in the East. Again, no man could ask for a finer son. I believe the one thing I can say, and with utmost sincerity, that would please him most, is that I believe he is a damn fine engineer. [Applause.]

Of late years, there have been some derogatory things said of science fiction. Tonight, I propose to say some decent things about it. And in speaking of science fiction, I should emphasize, perhaps, that under the heading I also include fantasy, sword and sorcery, and any other category into which the field may be splintered.

I have heard it said that science fiction has lost its sense of wonder; that too many bad stories are being written; that much of it is unreadable. I think that people who say these things may be basing their judgments on too shallow a perspective. In some cases it may be their bias rather than their critical judgment that comes into play. To make such a judgment, it seems to me that we should take the long view, that we should go back to the early thirties and take a closer look at what has happened in our field. Let us go back to the days of the mad scientist, to the time of the bug-eyed monster, to the era of the man-eating plant. From such a position in the past, and looking forward to the present day, I would venture that any fair-minded observer would be willing to admit that we have chalked up some progress.

But, you say, there was a sense of wonder then. I grant you that. We were starry-eyed in those days. It was all so new and wonderful and we were very young. The sense of wonder, my friends, was never in the stories, but only in ourselves. It is we, tired and jaded from having read so much, who have lost the sense of wonder. I have never raised the question, but I would guess that even now the sense of wonder still exists among those young readers who may have been newly introduced to science fiction.

And the bad stories - what about those, you ask? Aside from the fact that whether a story is bad or good is a matter of personal taste and critical judgment, and applying only a crude rule-of-thumb criteria, if you look back to the beginning of modern science fiction, you will realize there have always been bad

stories. I am quite willing to admit that I have written more than my fair share of them. There isn't a writer here tonight who hasn't a few stories to his credit that he'd be happy to forget. Science fiction, in this wise, is no different than any other type of fiction. If you don't believe me, read some of Faulkner's early efforts, and some of Hemingway's, not to mention Fitzgerald and many others. I would hazard a guess that if a panel of competent critics were to make a survey of science fiction through the years, they would find far more praiseworthy pieces of fiction writing in the last few years than in any previous period, and that does not exclude the so-called Golden Age of science fiction.

And when you get around to those unreadable stories, you must not lose sight of the fact that whether a story is readable or unreadable depends entirely upon the person reading it. This is an extremely nebulous area in which to make a judgment. I will mention no names or titles, for I should be ashamed to, but I must confess that for me there are certain stories that are unreadable. The horrible thing about this is that some of them have been critically acclaimed as masterpieces. No doubt they are, but I still can't read them. [Laughter.] And yet, I consider that it would be impudent and perhaps even a little stupid of me to go about proclaiming them as unreadable.

Aside from all of this, I see many hopeful signs for science fiction, and I think that they should not be overlooked. The number of new writers who have entered the field in recent years gives me considerable hope that the old tradition forged back in the thirties and forties will not only be carried on, but enriched and strengthened. This gives me more satisfaction than I can possibly express, for it means that something that oldtimers like Edmund Hamilton and Jack Williamson and many others helped to build will rise to greater heights than any of us could have dreamed back in the days of the far beginning. It also makes me think that there must be something viable and vital in the field to attract such talent. The one thing that has been most attractive about science fiction through the years is that it has provided a framework in which a writer can say certain things he wants to say and to a better advantage than in any other form of writing. It is a forum for ideas, and it is essential that it attract new talent if it is to continue in this function.

Another encouraging aspect of recent years is the emergence of a fairly large body of responsible critical assessment. In years past we had only a few critical voices. Today we have a score or more, and as the years go on there is reason to believe this number will grow. I take this to mean that the body of literature we have developed finally has been judged competent of critical notice. For a writing form that had such humble beginnings to achieve such notice may be called a major triumph.

Robert Silverberg and Clifford Simak
(Photo by Jay Kay Klein)

Tied in with this critical assessment has been the acceptance that has been given science fiction in our schools, both at the high school and college level. If our work is adjudged of a value that makes it acceptable in the classroom, we may be well content that it indeed has made some progress.

I regard, also, as hopeful the evidence in the last few years that the field has the capability of responding to evolutionary ferment. When any endeavor, be it literature, politics, economics, engineering, or science, becomes frozen in the status quo beyond which its practitioners fear to move, that endeavor has reached a dead end. I think we have rather recently demonstrated that we have reached no dead end.

A few years ago, there was a great controversy and a fierce outcry over the so-called New Wave writing. I am not entirely sure, even now, I know what the New Wave was or is. I think I know something about it, but probably I fail of complete understanding. I do not think complete understanding is necessary to see what has happened or may still be happening. I may be wrong, but it seems to me that the New Wave has become, or is in the process of becoming, a very important part of science fiction. Our field of writing seems to have had the capacity to absorb and offer a place to this new way of writing, being made the richer for it without in any way being forced to give up the old traditional and basic values. We were faced by change and accepted it and made it a part of us.

In somewhat less spectacular fashion, science fiction in the past has responded to changes, and some

sure instinct in us has always managed to make these changes an improvement while the basic spirit of the literary form was retained. Back in the late thirties, the old format was replaced by more naturalistic writing. Sometime in the middle forties, or thereabouts, we began to write about politics, economics, ethics, and other matters that had not before been given room in the old format, and while these changes stand out sharply in my mind, there were, as the years went on, other changes just as significant. The point is that science fiction has been, and still is, flexible and within that flexibility lies its greatest promise.

There's just one thing further that I would like to say. I say it with all the good will in the world. I am well aware that controversy representing many points of view is a healthy thing. When we no longer hold differing viewpoints, we will tend to become complacent and may no longer care and our field, in consequence, will suffer. But there are times when I am somewhat distressed at the shrillness of some of the controversy. [Applause.] I could wish, for the good of all of us, that discussions might be carried on in a quieter voice and somewhat more reasonably. The field is large and there is room for all of us and for each of our personal viewpoints. There is no overriding urgency for any of us to feel the necessity to convert all the rest of us to our way of thinking.

I know that to many of you tonight my few decent words about science fiction may seem too simplistic. I have stated the obvious, but no one else had seemed about to do it. My affair with science fiction has been a long and devoted one and in recent times I have cringed at some of the things that have been said of it. What I have said here tonight I have felt for a long time badly needed saying. Thank you for listening. [Prolonged applause.]

Barbara and Robert Silverberg admire the Hugo Awards
(Photo by Jay Kay Klein)

ROBERT SILVERBERG:

There's a good man. He's a pretty good writer, too, but we have a lot of good writers. Good men are in shorter supply. He's okay.

As I look around, I see next year's Guest of Honor sitting right down in front of me: Fred Pohl. Fred, would you like to come up and give your Guest of Honor speech? [Laughter and applause.] One of the nice things about your having been Guest of Honor is that normally you don't have to go through it all again. Your speech is done. You sit back there. You're part of history. You let some other oldtimer do the work.

Hugo Awards Presented by Isaac Asimov

ROBERT SILVERBERG:

It's come to that ugly part of the evening now. The moment of truth, the long-drawn-out moment of truth. We're really going to give out the Hugos now. [Applause.] I'm not going to do it, though. Suggestion here: let's skip it and mail them. [Laughter.] They're heavy.

Isaac Asimov is going to hand these things out. What can I say about Isaac Asimov? [Laughter.] What should I say about Isaac Asimov? Mere maliciousness fails me. [Laughter.] I could tell you about his wit, his grace, his charm, his high tenor voice, his way with the women, his profligacy - er, prolificacy. I could read you selected passages from Asimov's Guide to the Bible. [Laughter.] I could outline the plot of the novel with which he thinks he's going to win next year's Hugo.[2] [Laughter.] (He's going to be surprised.) [Laughter.] I haven't read the novel, really, but I thought up the basic idea for it. Seriously, we were sitting around at a convention in New York last January called the Mondocon, and Lester del Rey and I were on a panel, and for some reason, which I don't fully comprehend, I found myself suggesting the worst of all possible ideas for a science fiction story, just for the fun of it. I said, "How about a story about Plutonium-189?" (For those three or four of you who have a scientific education, you'd know that Plutonium-189 is a very difficult con-

[2]Isaac Asimov's novel, The Gods Themselves, did win the Hugo for Best Novel of 1972.

cept to swallow, indeed.) And Isaac, who was sitting in front of me when I tossed off this thing about Plutonium-189, said "Right on, baby, I'm going to do it!", or words to that effect. He said he was going to do it for me, as a matter of fact, for a collection I was editing, and some months later he called me in his best sheepish tone and said, "You know that Plutonium-189 story? Well, it's turning into a novel and I'm afraid I can't let you have it for your collection, so I've written another awful story and you can have that, instead." [Laughter.] He had, indeed, and I did indeed purchase it and it's really not all that bad, even for Isaac. [Laughter.]

But now he's actually gone ahead and written his Plutonium-189 thing. I've seen the manuscript; I've seen the dedication - it's dedicated to me. It's a two page dedication - the only man who gets paid by the word for his dedications. [Laughter.] As I recall the dedication, it's all about what an ignorant bastard that Silverberg is if he thinks there's such a thing as Plutonium-189. Anyway, that's Isaac's new novel and next year at this time - boy will he be sweating. But now the Good Doctor is going to come up here and hand out these silver spaceships to a lot of other people. Isaac?

ISAAC ASIMOV:

Ladies and gentlemen, I think it is a dreadful indictment of the intellectual standards of science fiction that so mediocre an intelligence as Robert Silverberg is one of our leading luminaries. [Laughter.] It was indeed Silverberg who mentioned my fine tenor voice - something I was going to keep a secret - and I think it only fair to utilize it. I have here a limerick which I am going to sing. It goes: [Sings.]

There was a young lady named Marion
Who did bump and did grind and did
carryon.
The result of her pains
Were ill-gotten gains
Which she promptly donated to Clarion.

[Prolonged applause and laughter.]

I would like everyone to remember that after Bob Silverberg had sweated for two hours, the biggest laugh of the evening came ten seconds after I stood up.

But, enough of this sad stuff - we now have sadder stuff. All of which will be photographed and kept for posterity by a delightful eggheaded fellow whom I would like to call to your attention. For more conventions than I care to think of, he has wandered around while all the rest of us were having fun, lecherously hugging his camera to his bosom, carrying it from door to door, kissing it when no one was looking, taking picture after picture after picture for no discernible profit whatever at a great cost - none other than Jay Kay Klein, who has never been introduced before. Jay Kay! [Cheers and applause.]

Alicia Austin - Best Fan Artist

Well, we come to the first category, immediately after the typeface, for Fan Writer. I myself, like Will Rogers, have never met a man I did not like. There are four people, all critics, whom I do not like - I have never met one of them... [Laughter.] ... in person, which is my way of saying that third place winner was none other than Ted Pauls; second place winner was Terry Carr; and in first place, and winning the award, was Richard Geis. [Applause.] Mr. Geis is not here. Bruce Pelz will accept it in all the magnificence of his moustache and beard. Bruce. [Applause.]

BRUCE PELZ:

[To Asimov.] Jealousy will get you nowhere.

On behalf of Dick Geis, I would like to thank all those who voted for him as Best Fan Writer, and sneer at the rest of you. [Laughter.]

ISAAC ASIMOV:

We pass on to the category of Fan Artist. In third place, William Rotsler; in second place, Tim Kirk; and in first place, Alicia Austin [Applause.] who will accept it herself. [Applause.]

ALICIA AUSTIN:
Women's lib forever, right?

ISAAC ASIMOV:
Right!

ALICIA AUSTIN:
Thank you. I can't think of anything else to say except thank you very much. [Applause.]

ISAAC ASIMOV:
Third category is that of Fanzine, which, as near as I can understand, is a term used because those people who write limericks need something to rhyme with benzine. [Groans.] In third place, Energumen, Michael and Susan Glicksohn; in second place, Science Fiction Review, Richard Geis; and in first place, Locus [Applause.] for Dena and Charlie Brown. [Applause.] You will notice, ladies and gentlemen, that it was for Dena and Charles Brown; we follow the usual practice of women first in all cases, therefore it's Dena and Charles. In this day, however, of man's liberation movement, we go further and we have prepared, at a great additional expense, another one for Charles and Dena Brown. [Laughter and applause.] Sightly good mention in Locus, Charlie, huh?

Now for a tricky one. Some of you, perhaps, were at the Nebula Award Banquet. [Laughter.] In the category of Drama, there is No Award. I repeat, No Award.

So far, we have been dealing with fannish activities in which I have no personal interest, you understand. Hugos may come, Hugos may go; I remain indifferent. [Laughter.] We approach, however, the field of professionaldom and you may wonder why it was that Robert Silverberg, renowned for his wit and malice, [Laughter.] who is not ashamed to poke fun at me even though I brought my beautiful daughter for protection, right here on my left. A beautiful daughter, I might say, upon whom Robert Silverberg has for lo these many years been casting lecherous eyes. [Laughter.] Every year he calls me up to say, "How old is she this year?" [Laughter and applause.] You will wonder why it isn't he that's giving out the awards. By a convention as old as the Conventions, a nominee does not hand out awards. Silverberg can hardly ever hand out awards. [Laughter.] More

Charles and Dena Brown - Editors of Locus, Best Fanzine
(Photo by Jay Kay Klein)

Ed Ferman - Editor of Fantasy and Science Fiction, Best Professional Magazine
(Photo by Jay Kay Klein)

Hugos have been handed out by me [Laughter.] than by anyone else in science fiction, despite the fact that I'm well known to be science fiction's greatest writer. [Laughter.] (I don't say so; it's common knowledge.) [Laughter.]

We go on to the category of Professional Magazine, and in third place we have Amazing Stories; in second place, Analog; and in first place, complete with Asimov's science column, Fantasy and Science Fiction. [Applause.] There's Ed Ferman! Keep those issues going - I've got lots of columns.

ED FERMAN:

Thank you. It's always an honor; three times is overwhelming. [Applause.]

ISAAC ASIMOV:

Professional Artist. In third place is Jack Gaughan; in second place is Frank Kelly Freas; and in first place, Leo and Diane Dillon! [Applause.] The award will be accepted by Terry Carr. Uh oh - don't walk away... [Flourishing a second Hugo.] ... Leo and Diane Dillon. Equality of the sexes. We all take showers together regardless.

And now the plot begins to thicken as we cut closer to the bone, for we have to decide on Short Stories. In third place, Gordon Dickson's "Gene Dupers" [Laughter.] or "Jean Duprés"; in second place, R. A. Lafferty, "Continued on Next Rock"; and in first place, Theodore Sturgeon's "Slow Sculpture". [Applause.]

GEORGE CLAYTON JOHNSON:
[Accepting for Theodore Sturgeon.]

Science fiction is a broad field, but we don't have an award for best porno novel, do we? Almost singlehandedly - I'll name three people so you'll see how single it all is - Theodore Sturgeon, Philip Jose Farmer, and Bill Rotsler have introduced sex to science fiction. Theodore Sturgeon got very tired of the hypocrisy that he saw in all of our sexuality and he wrote Venus Plus X and The Silken Swift and many other things. He also wrote Affair with a Green Monkey and things like that and I think that it is very, very smart of us to honor such a giant among us as Theodore Sturgeon. Thank you.

ISAAC ASIMOV:

For Novella. In third place, Harlan Ellison, "The Region Between"; in second place, Clifford Simak, "The Thing in the Stone"; and in first place, Fritz Leiber's "Ill Met in Lankhmar" ... [Applause.] ... accepted by Ed Ferman, the editor of the magazine - complete with science column by Asimov - [Laughter.] in which the story appeared. Ed, you have golden fingers. [Applause.]

We have but one category left. In third place, for Novel, is Robert Silverberg, Tower of Glass; in second place, Poul Anderson, Tau Zero; and, with hatred, in first place, the least unexpected award in recent history, Larry Niven's Ringworld! [Cheers and applause.]

LARRY NIVEN:

Thank you very much. I've promised my wife I was going to give up smoking right after this convention, but I knew what I'd be doing all during this dinner and it's smoking. [Applause.]

ROBERT SILVERBERG:

We have here another funny little thing, a deflated Hugo. It says, "Isaac Asimov". (He's got a couple of Hugos but they were made up for the occasion. This one was, too.) "Isaac Asimov / Awards Presenter / Noreascon / 29th World Science Fiction Convention / 1971", and it really depresses me no end to hand this thing to Isaac Asimov. [Applause.]

ISAAC ASIMOV:

The last word is mine. I, too, have a plaque, a consolation Hugo. It says, "To Robert Silverberg / Toastmaster / Noreascon / 29th World Science Fiction Convention / 1971". Bob, wear it in good health. [Applause.]

ROBERT SILVERBERG:

That just about does it. We have a few final announcements. Registration for the 1969 St. Louiscon will be held in the Exeter Room. [Laughter.] Torcon II, the 1973 Worldcon, which, while we all slumbered, was apparently chosen, although I hear the Dallas people are demanding a recount - registration for the 1973 Worldcon will be open at 11:00 am tomorrow, and it will go on until 2:00 pm somewhere in the twenty-nine floors of this building. I haven't been told where, but if you look hard you may find it.

Well, that concludes our 29th annual banquet on a note of gaiety. And as you go forth to your nightly revels I hope you will feel enlightened, amused, well fed, inspired - I hope you will think only kind thoughts for the Good Doctor, who does his best. Good night to all. That's it. Good night!

Larry Niven - Author of Ringworld, Best Novel
(Photo by Jay Kay Klein)

Appendix 1

The Noreascon Committee

Chairman	Anthony Lewis
Operations and Security	Stew Brownstein
Treasurer and Auctions	Fred Isaacs
Guest of Honor	Clifford D. Simak
Fan Guest of Honor	Harry Warner, Jr.
TAFF Delegate	Mario Bosnyak
Toastmaster	Robert Silverberg
Hugo Presentations	Isaac Asimov
Parliamentarian	Elliot K. Shorter
Business Meeting Chairman	George Scithers
Films	Bill Desmond
Publications	Sue Lewis
Registration	Karen Blank and Selina Lovett
Discussion Groups	Jean Berman
Records	Dave Anderson
Special Interest Groups	Richard Harter
Hucksters Room	Don Lundry
Kinetic Katalog	Robert Wiener
Banquet Sales	Paul Galvin
Art Consultant	Mike Symes
Photographer	Jim Saklad
Masquerade Announcer	George Scithers
Project: Art Show	Bjo Trimble
Art Show East Coast Liaison	Marsha Elkin
Auctioneers	Jack Chalker and Ed Wood

Jacob Bloom
Amy Brownstein
Linda Desmond
Ed Galvin
Gayle Kaplan
Morris Keesan
Judy Krupp
Roy Krupp
Andrew Whyte

Kris Benders
Jerry Boyajian
Ann B'Rells
Brian Burley
Georgine Chacran
Roseanne DiFate
Vincent DiFate
Don Eastlake
Jill Eastlake
Craig Franklin
Elaine Franklin
Hal Harrigan
Wendell Ing
Phil Jacobs
Wendy Joseph
Peggy Kennedy
Alan Kent
Linda Kent
Dave Kyle
Ruth Kyle
Bea Mahaffey
Craig McDonough
Kathei McPherson
Ed Meskys
George Mitchell
Joe Ross
Carol Pruitt
Joel Rubin
Russell Seitz
Barbara Silverberg
Tom Soyer
Wally Stoelting
Harry Stubbs
Jonathan Thomas
Leslie Turek
Dave Vanderwerf
Tom Whitmore
Jo Ann Wood

Appendix 2

Membership Statistics

Total Noreascon Membership: 2078

Eastern US	1255	(60.4%)
Central US	559	(26.9%)
Western US	192	(09.2%)
Overseas	72	(03.5%)

United States		1927
Massachusetts	413	
New York	334	
California	134	
Illinois	115	
Pennsylvania	112	
Michigan	93	
New Jersey	84	
Ohio	73	
Maryland	68	
Connecticut	50	
Missouri	45	
Virginia	38	
Indiana	37	
Minnesota	26	
Rhode Island	26	
Texas	23	
Florida	21	
Wisconsin	19	
Washington	17	
APO	15	
Georgia	15	
Kentucky	15	
District of Columbia	14	
Colorado	13	
New Hampshire	13	
Maine	12	
Louisiana	11	
Tennessee	11	
Iowa	9	
North Carolina	8	
South Carolina	8	
Alabama	7	
Vermont	7	
Kansas	5	
Oklahoma	5	
Delaware	4	
New Mexico	4	
West Virginia	4	
Alaska	3	
Arkansas	2	
Nebraska	2	
North Dakota	2	
Oregon	2	
South Dakota	2	
Hawaii	1	
Idaho	1	
Mississippi	1	
Utah	1	
Wyoming	1	

Canada		79
Ontario	49	
Quebec	10	
New Brunswick	6	
Alberta	5	
British Columbia	3	
Manitoba	3	
Saskatchewan	1	
Nova Scotia	1	
Yukon Territory	1	

Europe		51
Great Britain	15	
Germany	9	
Belgium	6	
France	6	
Netherlands	4	
Sweden	4	
Italy	3	
Spain	2	
Ireland	1	
Romania	1	
Australia		18
Victoria	7	
New South Wales	6	
South Australia	2	
West Australia	2	
Tasmania	1	
Japan		2
Venezuela		1

Appendix 3

Schedule of Events

Thursday, 2 September 1971

10:00 pm	Grand Ballroom	Main Film Program

Friday, 3 September 1971

9:00 am	Gardner Room	Film Program - "The Wheel".
12:00 am	Grand Ballroom	* Introductory Session. Introduction of Notables. Statements by: Chairman Tony Lewis Harry Warner, Jr., Fan GoH Mario Bosnyak, TAFF Bob Shaw Gordon Dickson
1:00 pm	Grand Ballroom	Film - "Talking to Dolphins". (Courtesy of Listening, Inc., Arlington, Mass.)
1:45 pm	Grand Ballroom	* "SF Critics and Reviewers", a panel with Lester del Rey, Dr. Richard Peck, Terry Carr, and Charlie Brown.
2:45 pm	Grand Ballroom	Auction.
4:00 pm	Grand Ballroom	* "The Implications of Genetic Engineering", a panel with Isaac Asimov, Larry Niven, and Dr. Jerome Lettvin (MIT).
4:00 pm	Hampton Room	Georgette Heyer Tea. (Admission by voucher only.)
6:00 pm	Gardner Room B	Discussion Group - SF Films.
8:00 pm	Poolside	Get-acquainted Party.
8:00 pm	Constitution Room	Society for Creative Anachronism Revel. (Open to anyone wearing Medieval or earlier costume.)
8:00 pm	Grand Ballroom	Main Film Program.

Saturday, 4 September 1971

9:00 am	Gardner Room	Film Program - "The Wheel".
10:30 am	Hampton Room	"Atlantis - The Myth and the Reality", a talk by Henry Eichner.
10:30 am	Grand Ballroom	Presentation of the 1973 site by the Toronto Committee.
11:00 am	Clarendon Room	SFWA Business Meeting. (Members only.)
12:00 am	Constitution Room	Burroughs Bibliophiles Dum-Dum with a talk by Johnny Weismuller. (Admission by ticket only.)

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*The text of starred program items appears in the main body of The Noreascon Proceedings.

12:00 am	Grand Ballroom	*	"Current Problems in the Critical Analysis of SF", a series of four papers by Virginia Carew, Thomas Clareson, Alexei Panshin, and Ivor Rogers. (Sponsored by the SF Research Association.)
12:30 pm	Hampton Room		Hyborian Legion Muster. (All are welcome.)
1:45 pm	Grand Ballroom	*	Debate - "Resolved: There Are No Viable Alternative Futures", with Ben Bova and Lester del Rey vs Joe Hensley and Robert Silverberg.
3:00 pm	Grand Ballroom		Auction.
3:45 pm	Grand Ballroom	*	"The Next Five Years in SF", a panel with Clifford Simak, James Gunn, Bob Shaw, and Poul Anderson.
5:30 pm	Hampton Room		First Fandom Meeting. (Members and guests only.)
6:30 pm	Gardner Room		SFWA Cocktail Reception. (Members and guests only.)
7:15 pm	Constitution Room		Masquerade Pre-judging.
8:00 pm	Grand Ballroom		Masquerade. During the Intermission a Ritual of the Order of Saint Fantony will be held.
12:00 pm	Grand Ballroom		Main Film Program.

Sunday, 5 September 1971

10:00 am	Clarendon Room		SF Research Association Bibliographic Meeting. (Open to all interested in SF bibliography, indexing, and related areas.)
10:00 am	Gardner Room		"Famous Fantastic Mystery Writers", a talk by Bob Briney.
10:30 am	Grand Ballroom		Business Meeting.
12:00 am	Gardner Room		Film Program - "The Wheel".
12:00 am	Exeter Room A		NFFF Meeting.
12:00 am	Hampton Room		Discussion Group - SF Film Animation.
12:00 am	Grand Ballroom	*	"Weather Modification", a talk by Dr. Wallace Howell, followed by an informal question-and-answer period.
1:00 pm	Grand Ballroom	*	"The Robot's Place in Society", a dialog between Isaac Asimov and Clifford Simak.
2:00 pm	Grand Ballroom		Auction.
2:30 pm	Grand Ballroom	*	"Technology for a Livable Earth", a panel with Hal Clement, Dr. Richard Rosa (Avco-Everett), Dr. Peter Glaser (Arthur D. Little), and Joe Haldeman.
3:45 pm	Grand Ballroom	*	"The Uses of the Future", a dialog between Frederik Pohl and Dr. Sidney Feinleib (Arthur D. Little).
5:00 pm	Commonwealth Room		First Art Show Bid-Off.
6:30 pm	Constitution Room		Pay bar opens for drinks before, during, and after the banquet.
8:00 pm	Grand Ballroom	*	Hugo Awards Banquet.
12:00 pm	Grand Ballroom		Main Film Program.

Monday, 6 September 1971

9:00 am	Hampton Room		Tolkien Society of America Meeting.
10:00 am	Gardner Room		"The Art of Self-Defense, or How to Live with 10 Tons of SF", a panel with Jo Ann Wood, Chris Moskowitz, Carol Resnick, and Ruth Kyle.
11:00 am	Grand Ballroom	*	"Artificial Intelligence", a talk by Seymour Papert (MIT Artificial Intelligence Lab).
12:00 am	Commonwealth Room		Final Art Show Bid-Off.
1:30 pm	Grand Ballroom	*	"The Urban Universe", a panel with John Brunner, Katherine MacLean, Ben Bova, and Katherine Kurtz.

3:00 pm	Grand Ballroom	* "The Artist in SF", a panel with Jack Gaughan, John Schoenherr, Karel Thole, Frank Kelly Freas, and Eddie Jones.
4:00 pm	Grand Ballroom	Auction.
5:00 pm	Grand Ballroom	Main Film Program.
5:00 pm	Gardner Room	Film Program - "The Wheel".

Discussion Groups

Informal discussion groups were one way for fans to meet and talk to others with similar interests at Noreascon. They bridged the sometimes wide gap between formal program activities and purely social events. The groups met at various times during the convention in con attendees' volunteered hotel rooms; a bulletin board and sign-up sheets were available in the Constitution Foyer. Some of the scheduled discussion groups were:

Saturday

10:00	541	Theodore Sturgeon
11:00	2236	SF Music
11:00	1903	Alternate Universes
11:00	2317	Delany/Zelazny
11:00	?	Hero Pulps Collectors

Sunday

11:00	541	Theodore Sturgeon
11:00	1425	Teaching SF
11:00	(Second floor lobby)	Winemaking
11:30	939	Ursula K. LeGuin
12:00	(Hampton Room)	Stop-Motion Animation Films
12:00	601	SF and Prediction
3:00	2710	Gordon Dickson
3:00	2503	Computers and SF
4:00	1629	Darkover
4:30	1734	SF vs New Wave
5:00	1417	Critics and Criticism
5:00	720	Hero Pulps
5:30	2414	Future Society
6:00	2539	Fantasy
6:00	2236	Firesign Theatre
6:30	(Third floor elevators)	Philip K. Dick

Monday

10:00	1039	SF Art
10:00	1506	European SF
11:00	737	Dragonflight and Dragonquest
2:00	2020	Genetic Engineering

Art Show

The Art Show was on display in the Commonwealth Room according to the following schedule:

Friday	10 am - 9 pm
Saturday	10 am - 7 pm
Sunday	10 am - 6 pm
Monday	10 am - 12 noon

Worlds of Cliff Simak

This was a special section of the Art Show in honor of the Noreascon Guest of Honor, Clifford D. Simak.

Kinetic Katalog

The Kinetic Katalog was a continuous showing of slides of astronomical art, space pictures, pulp covers, and the work of pro and fan artists. It was located in the Kent Room and its hours were the same as those of the Art Show.

Art Exhibition

An exhibition and sale of the works of Jeff Jones and Richard Powers was held in the Jefferson Room and the Clarendon Room.

Hucksters Rooms

Science fiction books, magazines, posters, and other merchandise were on sale in the Berkeley and Fairfax Rooms during the following hours:

Friday	10 am - 6 pm
Saturday	10 am - 6 pm
Sunday	10 am - 6 pm
Monday	10 am - 3 pm

NFFF Hospitality Room

The National Fantasy Fan Federation traditionally provides a room for fans to meet and rest; to renew old friendships and make new ones. This year they were located in Exeter A.

SFWA Office

The Science Fiction Writers of America maintained their headquarters and press room in Exeter B.

Alien Environment Room

The Andover Room was set up as a simulation of an alien environment, with outré lighting and music. Speakers and amplification equipment were kindly lent to us by Acoustic Research, Inc.

Main Film Program

The main film program was presented each evening of the convention, and all night long on Friday, Saturday and Sunday in the Grand Ballroom. The following films were scheduled to be shown:

Features:

History of the SF Film
The Monitors
Three Caballeros
Wizard of Oz
Forbidden Planet
Fun and Fancy Free
Things to Come
Thief of Baghdad
City at the Edge of Forever
When Worlds Collide
War of the Worlds
Conquest of Space
The Time Machine
2001: A Space Odyssey
Ichabod and Mr. Toad
The Day the Earth Stood Still
The Thing
Them

Short Subjects:

Creature from the Black Lagoon
Bride of Frankenstein
It Came from Outer Space
The Incredible Shrinking Man
Etoile De Mer
Star Trek Bloopers
Jasper's Haunted House
And to Think it Happened on Mulberry Street
Jasper's Gay Knighties
Doom of Dracula
Two
Venom and Eternity Trailers
Wolfman
Life and Death of a Hollywood Extra

Serials:

Gene Autry and the Phantom Empire
Captain Celluloid vs the Film Pirates

Cartoons:

Alice the Jailbird
Betty Boop in Blunderland
Beep Beep
Alice Rattled by Rats
Guided Muscle
Dizzy Red Ridinghood
I'll be Glad When You're Dead
Red Hot Mama
Gee Whizzzz
Old Man of the Mountain
Fast and Furry-ous
Highway Runnery
Snow White
Alice's Eggplant
There They Go Go Go
Be Up to Date
To Beep or Not to Beep

The Wheel

The Wheel - a representative sampling of the works of Ray Harryhausen, Willis O'Brien, Marian C. Cooper, and Ernest Schoedsack - was shown continuously during each day of the convention in the Gardner Room.

Features:

Seventh Voyage of Sinbad
Twenty Million Miles to Earth
King Kong
First Men in the Moon
Mighty Joe Young
Mysterious Island
Earth vs the Flying Saucers
It Came From Beneath the Sea

Serials:

Flash Gordon Conquers the Universe
Adventures of Captain Marvel

Appendix 4

The Hugo Awards

NOVEL (694 votes)
1. Ringworld, by Larry Niven - accepted by Larry Niven
2. Tau Zero, by Poul Anderson
3. Tower of Glass, by Robert Silverberg
- Star Light, by Hal Clement
- Year of the Quiet Sun, by Wilson Tucker

NOVELLA (658 votes)
1. Ill Met in Lankhmar, by Fritz Leiber - accepted by Ed Ferman
2. The Thing in the Stone, by Clifford Simak
3. The Region Between, by Harlan Ellison
- Beast Child, by Dean R. Koontz
- The World Outside, by Robert Silverberg

SHORT STORY (658 votes)
1. Slow Sculpture, by Ted Sturgeon - accepted by George Clayton Johnson
2. Continued on Next Rock, by R. A. Lafferty
3. Jean Duprés, by Gordon R. Dickson
- Brillo, by Ben Bova and Harlan Ellison
- In the Queue, by Keith Laumer

DRAMATIC PRESENTATION (685 votes)
No Award

PROFESSIONAL ARTIST (685 votes)
1. Leo and Diane Dillon - accepted by Terry Carr
2. Frank Kelly Freas
3. Jack Gaughan
- Eddie Jones
- Jeff Jones

PROFESSIONAL MAGAZINE (694 votes)
1. Fantasy and Science Fiction - accepted by Ed Ferman
2. Analog
3. Amazing
- Galaxy
- Vision of Tomorrow

FANZINE (631 votes)
1. Locus, edited by Charles and Dena Brown - accepted by Charles and Dena Brown
2. Science Fiction Review, edited by Richard Geis
3. Energumen, edited by Michael and Susan Glicksohn
- Outworlds, edited by Bill and Joan Bowers
- Speculation, edited by Peter Weston

FAN ARTIST (627 votes)

1. Alicia Austin - accepted by Alicia Austin
2. Tim Kirk
3. William Rotsler
- Steve Fabian
- Mike Gilbert

FAN WRITER (567 votes)

1. Richard Geis - accepted by Bruce Pelz
2. Terry Carr
3. Ted Pauls
- Tom Digby
- Elizabeth Fishman

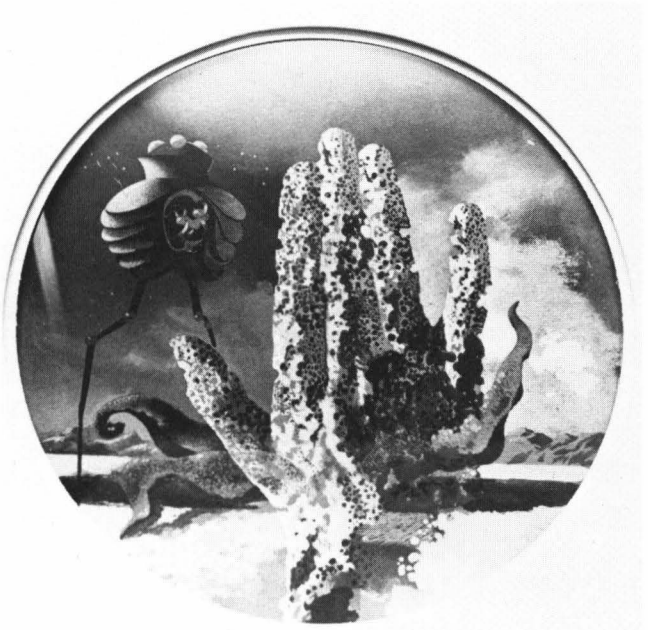
OTHER AWARDS

First Fandom Award, presented by Lester del Rey to John W. Campbell - accepted by his daughter, Philinda Campbell Hammond

Pat Terry Award for Humor in Science Fiction, presented by Gordon Dickson to Ron Goulart for "After Things Fell Apart" - accepted by Terry Carr

E. Everett Evans Memorial Award (Big Heart Award), presented by Forrest J. Ackerman to Dr. C. L. Barrett - accepted by Lou Tabakow

"The City and the Stars", by Karel Thole
(Photo by Jay Kay Klein)



Lining up to buy artwork
(Photo by Jim Saklad)

"Sharyer", by Alicia Austin and George Barr
(Photo by Jay Kay Klein)

"A Case of Conscience", by Karel Thole
(Photo by Jay Kay Klein)

Appendix 5

Art Show Awards

Judges: William Broxon
Jack Gaughan
Peggy Kennedy
John Schoenherr
Karel Thole

SF Illustration:	Vincent DiFate - "A Little Edge"
Fantasy:	Cathy Hill - "Hercules and the Centaur"
Astronomical:	Jacque Wyrs - "Expl. 44000"
Heroic Fantasy:	Alicia Austin - "Age of Dreams"
Cartoon:	Tim Kirk - "Her Ladyship"
Children's Illo:	B. B. Sams - "Terror Forest"
Graphic Application:	Sandra Miesel - "Heavenly Dragon"
Open Award:	Don Simpson - "The Reaper"

Judge's Choice

William Broxon:	Wendy Fletcher - "Encounter of Troos"
Jack Gaughan:	Tim Kirk - "My Precious"
Peggy Kennedy:	Tim Kirk - "My Precious"
John Schoenherr:	David Lynch - "Bronze Dinosaur"
Karel Thole:	Cathy Hill - "Maid of the Sea"

Special Award to Karel Thole for Excellence and Imagination - awarded by the other four judges

Popular Vote:
1. Tim Kirk
2. Karel Thole

The Worlds of Clifford Simak
(Judged by Clifford, Shelley, and R. S. Simak)

1. A. E. Trembley - "House from Way Station"
2. Tim Kirk - "O'Toole and the Trolls"
3. Eddie Jones - "Cover for City"

"House from Way Station" was purchased by the Noreascon Committee and presented to Clifford Simak at the Monday night committee party.

Appendix 6

Masquerade Awards

Judges: Bob Briney
Frank Kelly Freas
Pat Kennedy
Katherine Kurtz
Jo Ann Wood

Best of Show: "Demon and Pets, Cockatrice and Salamander" - Jon, Joni, and Debbie Stopa
Judges' Choice: Outstanding Robot - Bill Cork
Most Beautiful (Male): "Wizard of the Flame" - Lin Carter
Most Beautiful (Female): "Isis, Red Witch of Loggia" - Robin Shuster
Most Beautiful (Group): (tie) "Poseidon and Friend" - Ron Bounds and Astrid Anderson
"Elric of Melnibone and Lady Zarozinia" - Richard Pini and Wendy Fletcher
Best Use of Costume: "Deep One, Priest of the Esoteric Order of Dagon, and Sacrifice" - David and Tracy Lynch
Best Interpretation of Character: "Emperor Ming the Merciless" - Cortlandt B. Hull
Best Presentation (Individual): "Maleficent (from Sleeping Beauty)" - Ann Layman Chancellor
Best Presentation (Group): "The Banana (from Sesame Street)" - Eddie Ferrell, Michael Dobson, Jerry Lapidus, and Mike Wood
Most Authentic: Winner - "Miss Thompson, the Mad Woman Who Thinks She's Queen Elizabeth I (from "The Queen's Own F.B.I.")" - Noel Carter
Runner-up - "The Highborn Afaun (from Jan 69 Analog cover by Kelly Freas for "Wolfling")" - Ann E. Cass
Best Alien: "Illylle, the Iften Girl (from "Judgment on Janus" by Andre Norton)" - Priscilla Stiles
Best Costume: "Wereriders' Wedding (from "Year of the Unicorn")" - Ted and Carrie Peak
Most Humorous: "The Wonderworking Rabbi" - Joe Ross
Most Popular: "Demon and Pets, Cockatrice and Salamander" - Jon, Joni, and Debbie Stopa

Junior Division

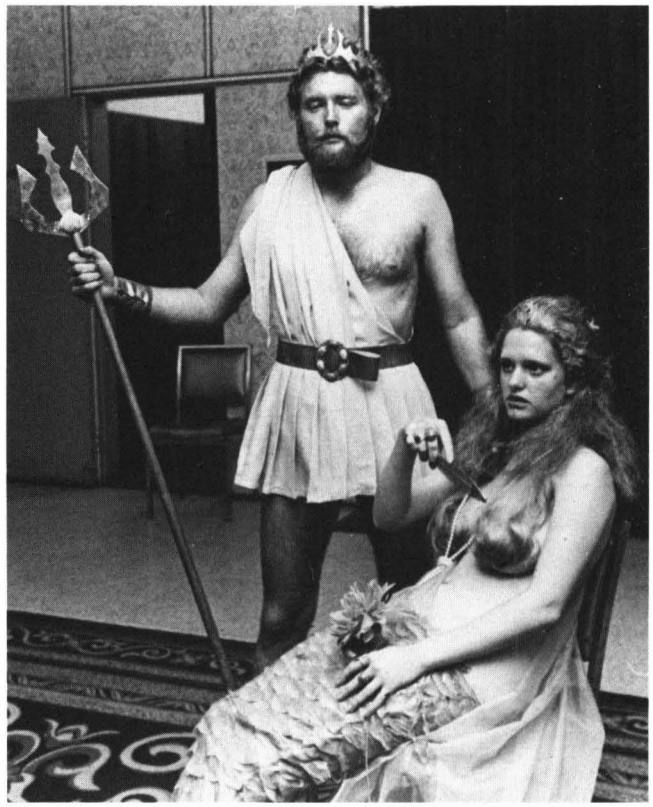
Most Beautiful: "Prince Xingu and Saralinda (from "The Thirteen Clocks")" - Katwen and Lora Trimble
Best Presentation: "Young Tarzan of the Apes" - Matthew Saha
Best Interpretation: "Lakla (from Virgil Finlay illustration to "The Moon Pool")" - Heidi Saha
Best Fantasy Costume: "Frodo, the Hobbit" - Douglas Takacs
Best Sword and Sorcery: "Kothar the Barbarian as a Boy" - David Takacs

Masquerade judges Pat Kennedy, Jo Ann Wood, Frank Kelly Freas, Katherine Kurtz, and Bob Briney
(Photo by Jay Kay Klein)

"Strider, Goldberry, Tom Bombadil, and Bilbo, from The Hobbit"
(Photo by Jay Kay Klein)

Masquerade Announcer George Scithers
(Photo by Jay Kay Klein)

Bill Cork as a robot
(Photo by Jay Kay Klein)



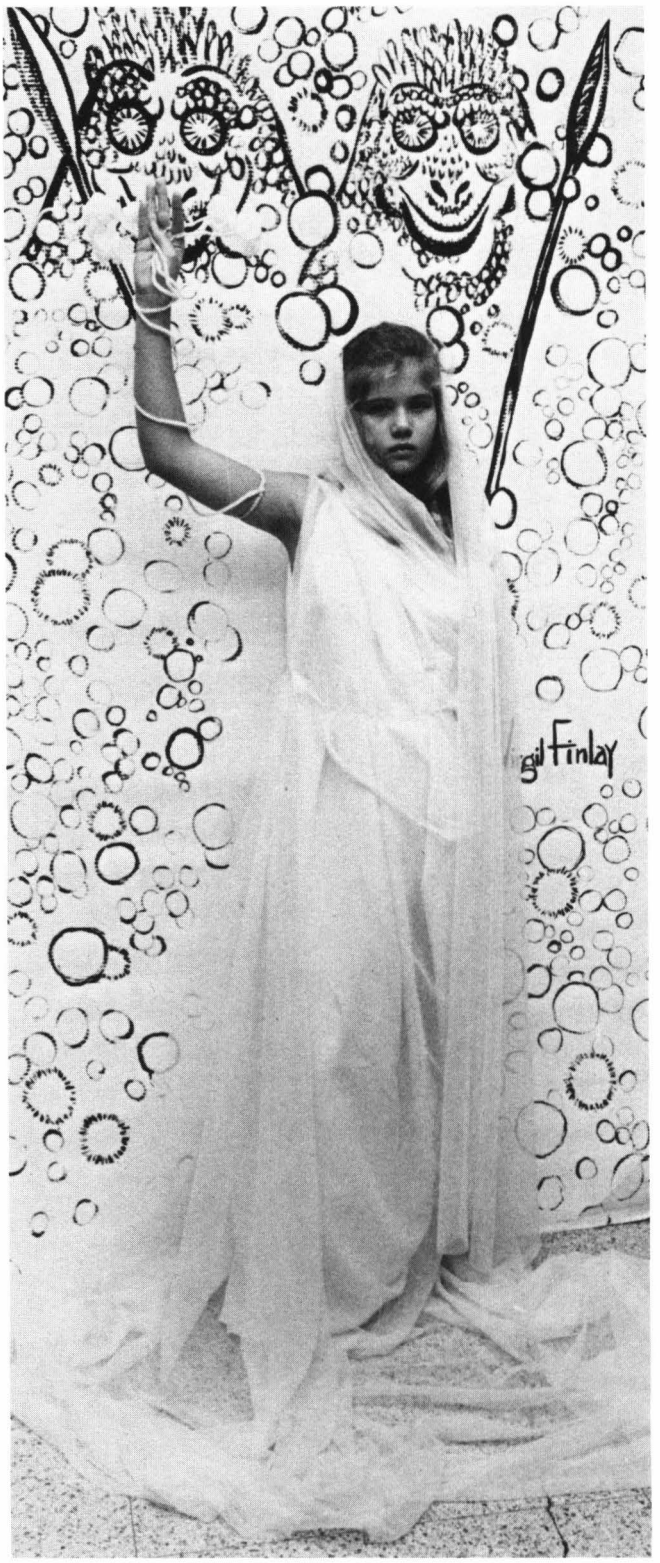
Ron Bounds and Astrid Anderson as "Poseidon and Friend"
(Photo by Jay Kay Klein)

Amy Brownstein as "The Cookie Monster", and Bruce Pelz, Marilyn Niven, and Larry Niven as "King Azaz the Unabridged, Princess Reason, and the Mathemagician, from The Phantom Tollbooth"
(Photo by Jay Kay Klein)

Lin Carter as "The Wizard of the Flame"
(Photo by Gail Osherenko)

Jon, Joni, and Debbi Stopa as "Demon and Pets: Cockatrice and Salamander"
(Photo by Jay Kay Klein)

Cortlandt B. Hull as "Emperor Ming the Merciless" and Ann Layman Chancellor as "Maleficent"
(Photo by Jay Kay Klein)



Heidi Saha as "Lakla"
(Photo by Jay Kay Klein)

Cortlandt B. Hull as "Emperor Ming the Merciless"
(Photo by Gail Osherenko)

Appendix 7

Report of the Business Meeting

Chairman: George Scithers
Parliamentarian: Elliot K. Shorter
Convention Chairman: Tony Lewis
Convention Operations: Stew Brownstein

The Business Meeting was called to order at 10:30 am on Sunday, September 5, 1971, in the Grand Ballroom of the Sheraton-Boston Hotel. Chairman George Scithers began by asking for permission to group motions on related subjects and to impose a time limit on the discussion of each motion. This was granted. He then described all the motions to the audience.

The first two items were motions tabled from previous Worldcon business meetings. A motion concerning mail balloting for Worldcon site selection, made by Bruce Pelz and Chuck Crayne at St. Louiscon, was passed. The exact wording was to be left up to Elliot K. Shorter, since the motion modified Section 3.06 of the World Science Fiction Society Rules. He has reworded it as follows:

> 3.06 Voting for sites of World Science Fiction Conventions shall be limited to members of the current convention who have paid at least $2 towards the dues of the convention to be voted upon. Eligible members may vote either by attending the site selection business meeting, or by mail. The Committee in charge of the convention at which the site is to be chosen shall be responsible for the mechanics of the mail balloting and they shall be guided in their responsibility by the mechanisms of the various professional societies which regularly hold balloting by mail.

The other tabled motion, from Heicon, was Erwin Strauss' proposal to define the rotation zones accurately. This was defeated.

This report originally appeared, in a slightly different form, in Locus 95, September 11, 1971
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The Chairman's first category was Hugo Rules. He suggested a committee to study Hugo Rules: Bruce Pelz, chairman; Len Moffatt, fan member; Lester and Judy Lynn del Rey, editor members; with Larry Niven, author, and Jack Gaughan, artist, to be specifically invited to membership. That suggestion was accepted. However, the Chairman's suggestion that Alex Eisenstein's Hugo motions be referred to the committee was rejected. The Committee will hold meetings at conventions across the country and report to LACon.

Alex Eisenstein's first motion was to change the Hugo to an English language award. It was defeated.

His next was to split the artist award such that no one individual could win both the fan and the pro artist Hugo in the same year. It was passed as follows:

> Resolved: That the graphic artist categories of the Science Fiction Achievement Award (or "Hugo") be clarified by redefining them as follows:
> (1) Article 2.06 -- Best Professional Artist: "An illustrator whose work has appeared in the field of professionally published science fiction or fantasy during the previous calendar year."
> (2) Article 2.10 -- Best Fan Artist: "An artist or cartoonist whose work has appeared, during the previous claendar year, in magazines of the type defined under Article 2.08. Anyone whose name appears on the final ballot for a given year under the professional artist category will not be eligible for the fan artist award for that year."

A. Joseph Ross and Paul Galvin moved to expand the Drama Hugo to include all media. It was passed as follows:

Moved: to amend Rule 2.05 of the World Science Fiction Society to read as follows: 2.05 BEST DRAMATIC PRESENTATION: Any production in any medium of dramatized science fiction or fantasy, which has been publicly presented in its present form during the previous calendar year. In the case of individual programs presented as a series, each program is individually eligible, but the entire series as a whole is not eligible.

The Science Fiction Writers of America then presented a petition asking the convention to reinstate the Novelette Hugo. The convention declined almost unanimously; there were a few abstentions.

The next grouping concerned minor changes to the World Science Fiction Society Rules. "Foregoing" was removed from 4.01 so that 4.03 would make sense. (Proposed by Alex Eisenstein.)

4.02 was amended such that (1) current practice would be codified and (2) it would not be as easy to rescind motions passed by the previous convention:

4.02 Any proposal to amend the rules of the Society shall require for a passage only a majority of all the votes cast on the question, except that a proposal to rescind any such action of the immediately previous business session shall require for passage three-quarters of the votes cast. (Renumber present paragraph 4.02 as 4.03 and present 4.03 as 4.04.)

3.03 was amended by removing the redundant line, "All bids must be placed two years in advance". The line appears correctly in 3.01. (Proposed by A. Joseph Ross and Marsha Elkin.)

A. Joseph Ross and Bruce Pelz withdrew their motion to require bid notification to the convention 4 months in advance because with mail balloting it is no longer certain how much lead time is necessary to minimize the expense of running the balloting. However, it was the sense of the meeting that the LA Committee be encouraged to set whatever time limit it finds necessary.

The last category concerned the establishment of a North American Science Fiction Convention, proposed by Tom Whitmore and Bruce Pelz. It was passed as follows:

Moved to amend the World Science Fiction Society Rules by adding the following Rules:

3.08 (a) Whenever the Society, meeting in North America, chooses a site outside North America for the coming Worldcon, it shall, at the same meeting, select a site for a separate North American Science Fiction Convention (NASFiC) to be held in the same year.

(b) Bidding for the NASFiC shall be open to North American sites defeated in the Worldcon voting, as well as to any other site eligible under the rotation system.

(c) Except as otherwise provided, the rules governing the rotation system, voting, and bidding on the Worldcon apply to the choice of site for the NASFiC. The meeting may be recessed in order to permit compliance with Rule 3.06.

3.09 When the Worldcon is held outside North America, if one or more bids for the oncoming Worldcon are entered for sites outside North America,

(a) The Worldcon shall choose among such sites and a site in North America to be chosen by the NASFiC.

(b) The NASFiC for that year shall choose a site for the NASFiC two years later in accordance with the rules governing the rotation system, voting, and bidding on the Worldcon.

(c) If the Worldcon chooses a site in North America, the coming Worldcon shall be held at the site chosen as the site of the NASFiC for that year.

A motion was made that when a NASFiC and Worldcon were held in the same year they should be at least 1 1/2 months apart. This was defeated.

The last item of business was the ratification of all business conducted at Heicon as called for by that business meeting. This was done and the meeting was adjourned until next year.

Appendix 8

Financial Report

Income			
Memberships			12372.93
Received		13516.83	
Expenses (postage, etc.)		-1143.90	
Banquet			- 186.63
Ticket Sales		4005.25	
Cost of Banquet		-4191.88	
Hucksters			994.92
Table Sales		1048.20	
Expenses (phone & postage)		-53.28	
Auction			1754.82
Income		5967.89	
Sales Commissions		-4140.57	
Expenses (guard, etc.)		-72.50	
Heicon Pass-On Funds			274.80
	TOTAL INCOME		15210.84
Expenses			
Publications			4049.01
Progress Reports		1093.42	
Ad Income	-315.74		
Printing and Mailing	1409.16		
Program Book		711.07	
Ad Income	-1347.65		
Production Costs	2058.72		
Restaurant Guide		396.36	
Sale of surplus copies	-922.95		
Production Costs	1319.31		
Banquet Record		904.87	
Proceedings Expenses		1057.36	
Taping of Convention	140.00		
Transcription	701.36		
Photography	216.00		
Miscellaneous Income		-114.07	

Art Show and Kinetic Katalog		522.42
Kinetic Katalog Slides	145.00	
Kinetic Katalog Equipment	264.09	
Art Show	113.33	
Films		2260.74
Miscellaneous Expenses		6646.73
Donations:		
To TAFF	150.00	
To Argocon	100.00	
Theft Loss	110.00	
Security Guards	460.00	
Liability Insurance	188.00	
Light Show	112.59	
Hugos and Plaques	582.85	
Badges and Buttons	357.58	
Postage and Phone	661.86	
Masquerade	218.39	
PO Box Rental	105.60	
Office Equipment Rental	80.60	
Slide Projector	188.00	
Membership Packet Envelopes	75.14	
Commemorative Envelopes	70.00	
Dead Dog Party	72.21	
Friday Night Pool Party (Net Loss)	279.67	
Gift in Art to Guest of Honor	70.00	
Gift in Art to Bjo Trimble	159.25	
Bidding Committee Loss	245.35	
Committee Hotel Rooms	1589.67	
Other Committee Member Expenses	569.79	
Miscellaneous Expenses	200.18	
Hotel		1038.10
Tips to Engineers, Bellmen, and Phone Operators	335.00	
"Tips" to Security	110.00	
Set-up and Miscellaneous	593.10	
TOTAL EXPENSES		14517.00
BALANCE:		693.84

The balance was paid to NESFA, together with all other assets of NOREASCON, when the two organizations were merged. NESFA agreed to obligate itself to publish the NOREASCON Proceedings.

Fred P. Isaacs
NOREASCON Treasurer

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