Proceedings
of the

Conference on Middle East Peace and Economic Development

(excerpted)

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Opening Remarks

Dr. Morris Levitt

Dr. Levitt is Executive Director of the Fusion Energy Foundation and also Editor of its publications, *Fusion* magazine and the *International Journal of Fusion Energy*. He has testified before numerous congressional committees and state legislatures on energy policy. Dr. Levitt received his Ph.D at Columbia University and taught for several years at Queens College and other branches of the City University of New York.

Dr. Morris Levitt

I'd like to explain a little bit about the Fusion Energy Foundation and today's program.

The ongoing objective of the foundation, since its inception in 1974, has been to bring on line commercial fusion power as the most advanced form of energy. However, we've always associated with that the complementary realization of every other form of advanced technology... We have from our inception also recognized that science is political in two immediate senses.

First of all, in order to get fusion and other advanced nuclear and related technologies on line, it is going to involve a political fight, particularly in the context of the zero-growth policies that are presently being pursued in this country.

Secondly, it is our estimation that the substance of politics — political policy-making and discussion — must come to be the discussion of how to implement appropriate global policies of scientific, technological, industrial, and agricultural development if politics is to be meaningful.

Now, if that connection is not clear, think for a moment about the career of Benjamin Franklin who, in his lifetime and activities, directly combined scientific research, statecraft, and politics. In fact, I can tell you that Benjamin Franklin publicly endorses this conference....

We will also find, later on in the day, that that was the outlook and the type of career pursued by one of the greatest figures of Islamic science, Ibn Sina, who will be the subject of our concluding session.

We are here today to address the related problems of the economic-monetary crisis in the advanced industrial sector, on one hand, and, on the other, the knotty political problems faced by the Mideastern nations at the present time. This is where we make the connection as to why the Fusion Energy Foundation is sponsoring this conference. It is our estimation that the way to cut through the knots that presently surround the production crisis in the West and the political situation in the Mideast is to vigorously advance a program of economic development for that region, predicated on a massive gear-up of high technology and, especially, nuclear production in the advanced sector and particularly in the United States. That is going to be necessary to break through both the prevailing zero-growth climate in this nation and the various obstacles that have presented themselves to a comprehensive political settlement in the Mideast at this time....

We proceed from what we perceive to be two essential realities about the present situation. First, in terms of the United States, the defining feature of our nation and our population is a deeply embedded organic commitment to progress that is there to be tapped if it is provided with effective political leadership. Second, in terms of the Mideast situation, we take it as axiomatic that a political solution is feasible in principle with the crucial evidence having been provided by the electrifying discussions between President Sadat and Premier Begin. Whatever the current status of those discussions, the impulse toward a solution of the problems and the commitment to a solution, if the appropriate political and economic framework is provided, has been demonstrated by those discussions.

What we aim to do here is to provide a strategic new input to that situation which, when coupled with discussion of the economic problems facing us here in the United States, opens the way to a new round of fruitful deliberations.

Finally, as our second panel will make clear, the other factor that defines the reality of the conditions under which we meet is that we stand on the threshold of some of the greatest breakthroughs in science and technology that humanity has ever witnessed ...on the threshold of both eliminating material want through technological progress and advancing our understanding of the physical universe in a wholly unprecedented way. I think that will become clear from the more scientifically oriented presentations this afternoon.

Our purpose here is not to present abstractions. We aim to present a very concrete, highly delineated program for solving the coupled Western-Mideast crisis and also to initiate a process of vigorous political organizing which will radiate out from this room and make that policy a reality.

Welcoming Address

The Honorable Paul J. Lattimore

Mayor Lattimore is in his tenth year as Mayor of Auburn, N.Y. where he is well known for his effectiveness in attracting industry to the Central New York State Auburn region. He is currently Chairman of the National Joint Task Force on Energy Strategy of the National League of Cities and U.S. Conference of Mayors. Mayor Lattimore was the first recipient of the Citizens Award of the New York State Chapter of Professional Planners.

The Honorable Paul J. Lattimore

First, may I express my appreciation for the honor of having been invited to address such a distinguished audience and to participate on a very distinguished panel. As Dr. Levitt mentioned, I have been very actively and very deeply involved in the question of energy in the United States....

I do not need to point out that this world runs on energy. In fact, our very person runs on energy. If we don't fuel it every day we'll soon be in trouble. As I told my fellow mayors in Denver, Colorado at the annual meeting in 1970, unless something is done and done soon about the energy crisis, the whole economy of this country and therefore the world could be most seriously affected....

The only answer to the energy crisis in the world is electricity, no matter how it is generated. But I think it is becoming most apparent that the most sensible way to generate electricity is with nuclear. Most elected officials are afraid to take a position on such a controversial issue. But just a few months ago, I publicly came out and fully supported a proposed nuclear plant — the Sterling Plant — which is north of our city on Lake Ontario. The City Council unanimously backed that plan. The County Legislature also supported that plan with the exception of one individual who was the father-in-law of the head of the environmental group.

I have pointed out to Governor Carey, and other people in those positions, that... I don't intend to have any of these professional environmentalists... run the show.... I've encountered them and tangled with them from Anaheim, California to the state house in Maine. They don't believe that we need any additional energy because they don't believe that we need any new industry to provide jobs for the young people growing up, or to provide increases in our commercial life.

We have left a void, a vacuum... any time you leave a vacuum on a given issue you will have these types of people, such as the hard-core, no-growth environmentalists, fill it for you. And I need not tell you that they have been most effective and most successful in filling that vacuum, writing... legislation that practically guarantees that nothing will get built today.

I was pleased recently to see my friends in the NAACP, in which organization I hold a lifetime membership, come out with a very positive position on the question of energy.

But again, and in conclusion, I say to all of us here that on questions of this magnitude which affect the whole world wherever we might live... don't leave the vacuum — we've left it already too long. It is time for action, political action, that will let the various elected officials realize that the great majority of this country and the world do not subscribe to the no-growth theory.

His Excellency Iqbal A. Akhund

His Excellency Iqbal A. Akhund is Ambassador Extraordinary and Plenipotentiary, Permanent Mission of Pakistan to the United Nations.

Warren Hamerman

Mr. Hamerman is a member of the National Executive Committee and Director of Organization of the U.S. Labor Party. He is the author of a draft proposal for the upgrading of the Export-Import Bank of the United States to function as a source of credit for projects in agricultural and industrial development. He is also the author of a monograph published in *Fusion* on "The Overlooked Importance of Pasteur," as well as several articles on theoretical biological research. Mr. Hamerman collaborates closely with the biology section of the Fusion Energy Foundation.

Uwe Parpart

Mr. Parpart is the Fusion Energy Foundation's Director of Research. A graduate of the West German Naval Academy, Mr. Parpart has taught and written on the basic questions in mathematical physics and strategic planning. He is the author of "The Concept of the Transfinite," an evaluation of the work of Bernhard Riemann and Georg Cantor.

Eric Lerner

Mr. Lerner is Director of Physics of the Fusion Energy Foundation. He is a graduate of Columbia University and has written extensively on global and regional economic planning and development.

Dr. Richard Dekmijian

Dr. Dekmijian was born in Syria, and was educated at Boston University and Columbia University, where he received a Ph.D in political and Middle East studies. He is the author of several books, including *Egypt Under Nasser* (1971) and *Patterns of Political Leadership: Egypt, Israel, Lebanon*, as well as numerous articles, including works published in the *Middle East Journal*. He is presently writing a book on President Sadat of Egypt. Dr. Dekmijian is currently a professor at the State University of New York at Binghamton.

Dr. Mohammed Rabie

Dr. Rabie received his Ph.D. from the University of Houston, and for five years taught economics at Kuwait University. He was also a visiting scholar at Georgetown University's Center for Contemporary Arab Studies, and is the author of a number of books and articles in Arabic. Presently, Dr. Rabie is a private consultant in Houston with Universal Enterprises, Inc., and is a member of the permanent delegation of the Arab League to the Euro-Arab Dialogue with the European Economic Community.

Fuad Taima

Mr. Taima has recently been appointed Regional Vice President of the U.S.-Arab Chamber of Commerce for Washington, D.C. after having served as President of the Baltimore-based Mid-Atlantic Arab Chamber of Commerce. Mr. Taima is a prominent figure in commercial, professional, and governmental circles both in the U.S. and the Middle East. For the past eight years, Mr. Taima has been President of Averroes, Inc., a MacLean, Virginia-based consulting company, and has worked closely with the U.S. business community, and the private and public sectors of the Arab countries.

PANEL 1

Economic Development of the Middle East

His Excellency Iqbal A. Akhund

I am very pleased to have this opportunity to speak to this group on a matter which is of great concern to both my country and to the part of the world, the so-called Third World, to which it belongs....

Now, if one looks back 30 years to the end of World War II, I think everyone can see how rapidly the shape of the world has changed. For one thing, there is today, as a result of the ending colonialism, a hundred or so new countries, members of the United Nations, playing a role on the world stage and wanting a place on the scene. On the other hand, the promise that the terrible nuclear weapon which destroyed two cities of Japan and brought World War II to an end, had of energy abundance has not been fulfilled. On the contrary, there are people today who fear that, very shortly, we are going to run into a period of energy shortages....In the Third World, the developing world, there are, according to the figures of the World Bank, more than a billion people who live not simply in poverty, but in abject and absolute poverty....

On the whole, the less developed countries find that the present economic system, the present trade system, monetary system, and industrial division of labor, are a disadvantage.... It is our perception that the present system does not work in favor of the developing countries, that it is not possible for the poor countries to develop unless the system itself is changed....

One can see that in the developed countries too the situation is not a satisfactory one. You have the strange and still inexplicable phenomenon of inflation combined with economic stagnation....

There is a view, which is certainly widely shared in the developing countries, that this state of affairs is not unconnected with the fact that there are wide disparities of income, of purchasing power, and of development in the world.

We live on one globe, but on it there are at least three and four worlds, each separated from each other and not interacting as they should. There isn't the kind of combined, integrated, and coherent effort that is needed to make the economy of the world work like a properly maintained machine.

Therefore, the demand has been made by the developing countries for the establishment of a new international economic order. This new international economic order would overhaul the present system; it would restructure some of the present machinery so that this sort of integrated development of the global economy could take place....

The aim, of course, is to develop the agriculture, industry, and general productive potential of the world as a whole and particularly of the developing countries where the need is greatest — their trade and so on.

It is quite obvious that energy is a key element in development. The industrial revolution..., which is responsible to a large extent for the prosperity of the industrialized world today, was built on the discovery and use of coal... the invention of the steam engine. Lenin... equated communism with electrification and said communism is electrification. You find also today that the possession of energy itself doesn't give you development.... You find oil-producing countries are rich, but they're not developed. It's the oil-*using* countries that are developed; it's the oil-*using* countries that have the international benefit from this commodity because of the possibilities that energy places at their disposal.... Although the OPEC countries have vast reserves of oil, they are still underdeveloped.

There are great schemes now to develop the Middle East and I think that the picture there is going to be transformed very substantially between now and the year 2000.

There are many countries in the Third World. But, in fact, the vast majority of... the population live in countries where there is no fossil fuel, where the fossil fuel is not available in sufficient quantities.... Hydroelectric potentialities... are concentrated in small regions.... It's against this development problem that one has to look at the development of nuclear energy in the developing countries. Today, more and more developing countries are turning to the nuclear option. At the same time, one finds in many industrialized countries a reaction against the kind of philosophy and approach that was embodied in President Eisenhower's "Atoms for Peace" program, which was pre-

mised on the idea that peaceful use of nuclear energy should be encouraged, that it is good, and that it is the only way to develop the economy of the world....

Now these problems (of nuclear energy — ed.) are not to be ignored; they're not to be dismissed. I think the people who are concerned are sincere. They genuinely fear that a plutonium economy would be dangerous; they genuinely feel that there are safer alternatives than the atom; they feel that the atom should never have been discovered at all. Perhaps, but it has been discovered and one has to learn to live with it.

I remember one of the most eminent environmentalists, Captain Jacques Cousteau. I appeared with him on one of these seminars and he reminded us that when Prometheus stole fire from the gods and brought it to earth he was punished severely. I said I agree with that, but I don't know if he deserved this punishment. He was punished, but nonetheless nobody has tried to put out the fire that he brought.

So these problems are indeed very serious ones and must be treated seriously, but they are solvable — these problems can be solved.

We have set up in the International Atomic Energy Agency international means and instruments for controlling proliferation. Every country in the world is a member of the IAEA — a hundred-odd countries have signed the nonproliferation treaty under which they have accepted stringent safeguards on their nuclear establishments, equipment, and so on. So far, there has not been a single case of safeguards being violated....

To talk of accidents: there have been cases here and there of this or that going wrong in a nuclear power reactor (I don't think there is any way one could say that things could never go wrong), but the fact remains that in 30 years of experience with reactors there has never been a runaway explosion or runaway chain reaction....

We must approach this whole business of nuclear energy on a realistic basis. Really there is no alternative available today....

For all fossil fuel countries there is no choice. At least you have... 250 billion, a trillion, God knows how many tons of fuel. We have none at all in Pakistan. There are many other countries in that position....

So, for (Pakistan), there is no option but to go nuclear and our plan is between now and the year 2000 to build 26,000 megawatts of nuclear energy-generating plants. I don't think we will be able to reach this target, but this is the target. Today, Pakistan's per capita consumption of energy is 200 kilowatts. In the United States, it is 10,000 kilowatts per head. That tells you the whole story of why Pakistan is poor and the United States is not. Now, after 20 years, if and when we have set up these 26,000 megawatts, our average per capita consumption will still be only 1,000. That's one tenth of what yours is today and one fourth of what the world average is expected to be by then. So, that is by no means...the total energy we're seeking, but it is a realistic solution to our problems....

Development does mean industry and above all technology. We are heading into a technological future, and the technology of today is nuclear, it's electronics, it's laser. There are all sorts of other things that are going on that perhaps we haven't even heard about,... but technology is the key to mankind's survival and progress, and I think every country is entitled to develop energy and to have technology....

So I think that one has to keep an open mind about the future that lies before us. We must make careful choices, avoid making mistakes. There's no guarantee that we shall, but we should try.

Warren Hamerman

A comprehensive Middle East economic development package and an immediate commitment of the world economy to nuclear energy realization are the twin centerpieces of the immediate economic potential for vectorizing the world economy as a whole into unprecedented progress and industrialization.

At this moment,... the advanced sector and the United States economies represent the greatest concentration of skilled labor, technological know-how, and productive plant and equipment ever assembled

in the history of man. If one surveys the developing sector, its potential, and its desire for a new world economic order... and takes into account the Comecon sector's need and desire to contribute to scientific development of nuclear energy and undergo an industrial expansion, one readily sees that the combination of forces exists at this very moment for us to actually implement an economic expansion of the world economy — provided we can solve three problems.

For the advanced sector, the problem that we must solve is the lack of low-interest credit for export, technological development, and for gearing up the grossly underutilized skill capacity, and productive plant and equipment capacity of the advanced sector economy.

For the developing sector, the problem which we must solve is the question of debt commitments, and the political and economic contracts necessary to build skilled labor and infrastructure in the developing sector, not through labor-intensive programs, but through capital-, energy-, and technology-intensive programs.

And for the Comecon sector, similarly, what is needed is a concrete avenue into economic expansion and cooperation in the development of nuclear energy and fusion power in particular for the world economy as a whole.

There exists at this moment a very straightforward approach for us to simultaneously solve those three questions....

In Western Europe, various banker, industrial, and political leaders representing significant factions within France, West Germany, Switzerland, and elsewhere are preparing a plan to utilize the already existing Eurodollar holdings of the OECD central banks and the OPEC nations as the basis for consolidating a credit-issuance center in Luxembourg... to issue credits for expanding trade and real economic development.

The approach is one which can be termed "hard-commodity credit issuance"; namely, that those credits are issued for real productive economic activity.

In the United States, the Eximbank has functioned historically... as the critical engine for gearing up American trade and exports to the developing sector and the Comecon, bypassing bottlenecks in private capital markets....

If one places together the efforts of the Europeans... with a raising of the U.S. Export-Import Bank's lending ceiling from the current $9 billion up to a $200 billion ceiling,... then we immediately have the basis for moving into the era of economic expansion.... We have a very concrete solution which is not inflationary because it utilizes already existing liquidity which will be advantaged through stabilization of a gold reserve.... As opposed to the IMF and World Bank labor-intensive programs for the developing sector and continued trade collapse and credit restriction for American and West European advanced industry, we have a workable plan, elaborated development projects and programs, and, most importantly, we have... the productive capacity and the labor force to immediately move into implementation. It's on that latter point that I would like to elaborate from the standpoint of what such a proposal will mean for the United States.

In terms of real economic parameters, it will mean, in the immediate term, the solving of the unemployment and the deindustrialization processes which are actually underway at this time.... The Export-Import Bank level embodied in the proposal would immediately create 11 million skilled jobs in the United States; would immediately necessitate a modernization, retooling, and gearing up of the steel sector of the American economy; and would immediately necessitate the training of a new layer of skilled workers from the urban population....

Such a program will be implemented through an alliance between labor, industry, technology-proud farm strata, and economic-growth oriented urban organizations as epitomized by the NAACP.... A labor-industry-agriculture-urban alliance in the United States and in Western Europe as well is not, I would emphasize... a far-away vision, but an immediate practical reality.... Skill-conscious trade union strata, technology-oriented industrialists, agricultural strata who have struggled for and maintained their identity through technology and exports are informed of, are discussing, and are organizing toward the implementation of the combined Export-Import Bank, Luxembourg-centered solution to the world economy.

In short, corresponding to the economic development parameters of a new world economic order, we must immediately move to create a new world monetary system.... It is a program which will work, and it is one which ought to be struggled for if we are to ensure that we enter the 21st century with a commitment for scientific development and economic expansion.

(Note: the full, detailed proposal for expanding the credit-issuing role of the Export-Import Bank of the United States is available from Executive Intelligence Review, *P.O. Box 1922, New York, N.Y. 10001, for a single issue price of $5.00.)*

Uwe Parpart

...When we first began to develop the ideas for this conference last fall, the first very hopeful and positive signs... of a lasting Middle East peace began to appear on the horizon. But, in our first communication to various individuals concerning the kind of proceedings that we wanted to present at this conference, we noticed that no matter how hopeful and positive the political signs in the Middle East were, any such efforts would necessarily founder and would necessarily run into trouble sooner or later if... limited or restricted to the idea of military withdrawal, of the redrawing of boundaries, of the implementation of certain specified UN resolutions, etc. While all of these, we realized and said in our first communication, were aspects of a critical first step in Middle East peace developments, ultimately the component that would be decisive would be the question of the overall economic development of the area.

Now, the reason we said this should not be mysterious. I want to point out that... right now, progress toward peace seems to have been arrested, seems to have been halted. It is, therefore, so much more important that these ideas, the principal ideas that we outlined in our first communication concerning this conference — the notion of economic development — play a crucial role not merely in a second stage in the developments. They have to be introduced at the outset as a critical element....

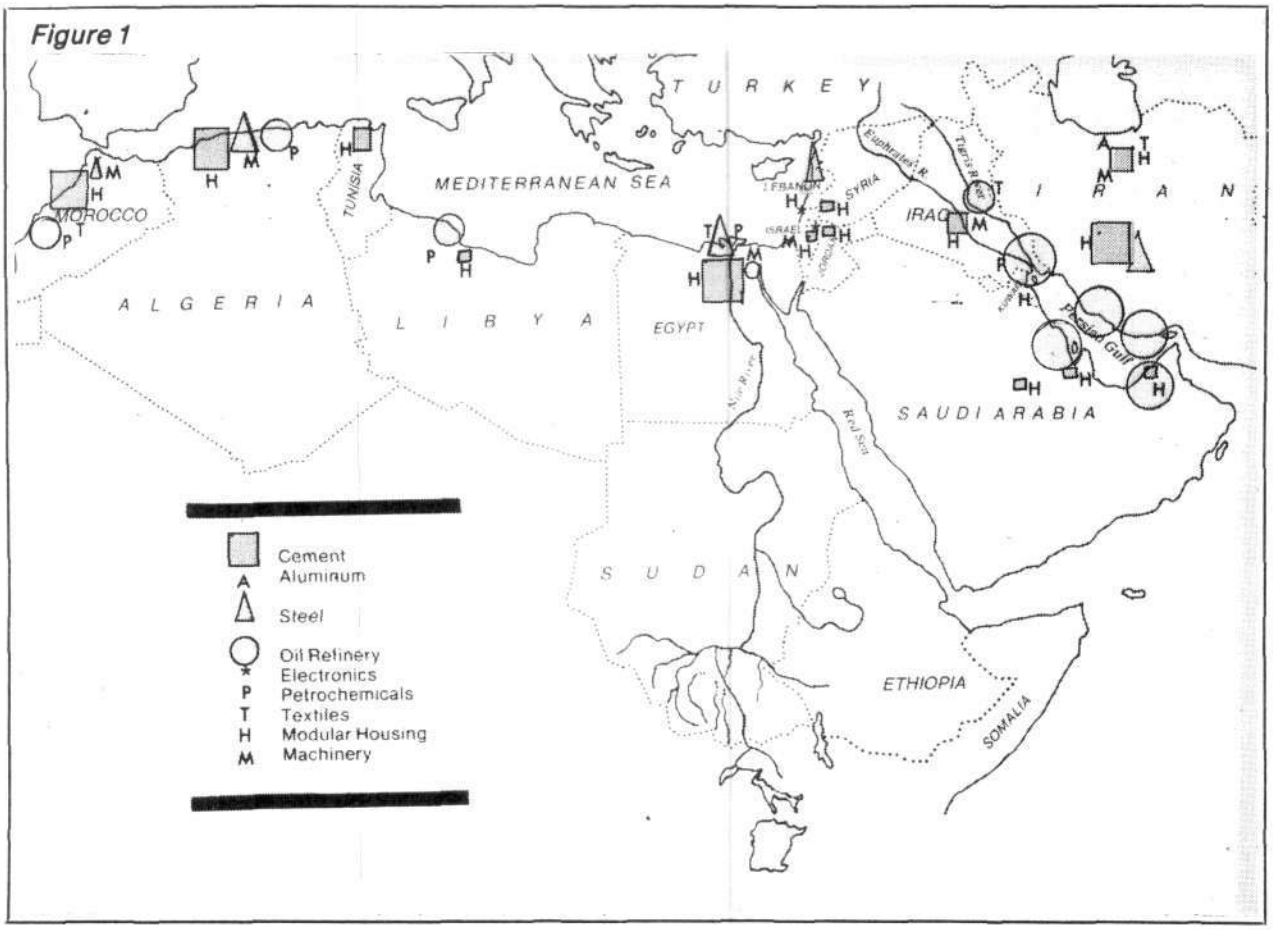
I'd like to conceive of this as a political flanking maneuver, as a strategic flanking maneuver. When you have a situation in which things have come, for a variety of reasons, to a standstill, rather than going ahead and banging heads on the same issues, it is critical and necessary to come up with an initiative, an alternative approach, a way of shaking things loose and getting things going again. I think the type of programs that we want to present here today, both in terms of its content and in terms of its strategic significance, is precisely designed to have such an effect.

Now, the overall idea of economic development as the essential basis for peace is not a very new one, nor is it very new to the Middle East itself. The earliest explicit such development of which I am aware occurred no later than the 10th century B.C. in the efforts of Hiram and of Solomon in precisely the area that we're dealing with today — Phoenicia and Palestine. Two otherwise competing groups, the Israelites and, at that time, the Phoenicians collaborated to their mutual advantage on economic development and played a very crucial role in the entire area, not merely in what is today Lebanon and Palestine, but in a broader area that reached all the way to the southern parts of Arabia, what is now the Sudan, Egypt, and into the entire area of Mesopotamia.

One will find that, time and again, there was a joint commitment on the part of groups, on the part of nations not to limit themselves to the existing state of affairs, to a stagnating political and economic status quo. Some kind of joint commitment was developed when it could be said "O.K., fine. Under the present circumstances, neither your existence nor my existence, in the long run, can be guaranteed. Therefore the necessary effort is to look principally at the possibilities of enlarging the circumstances of our existence. With that principle in mind, we will be able to define how we are going to coexist, define what peaceful coexistence is going to look like."

This has been the one very critical element that runs like a red line through world history. You will find such a commitment to peaceful coexistence when a commitment to this principle was there. People have lived in peace. But when, for a variety of reasons, either willfully or through the force of circumstances, this principle has not been the governing principle in development, then we have had the kind of problem that we have to deal with today. So this is the strategic context in which we want to present the development program.

Figure 1



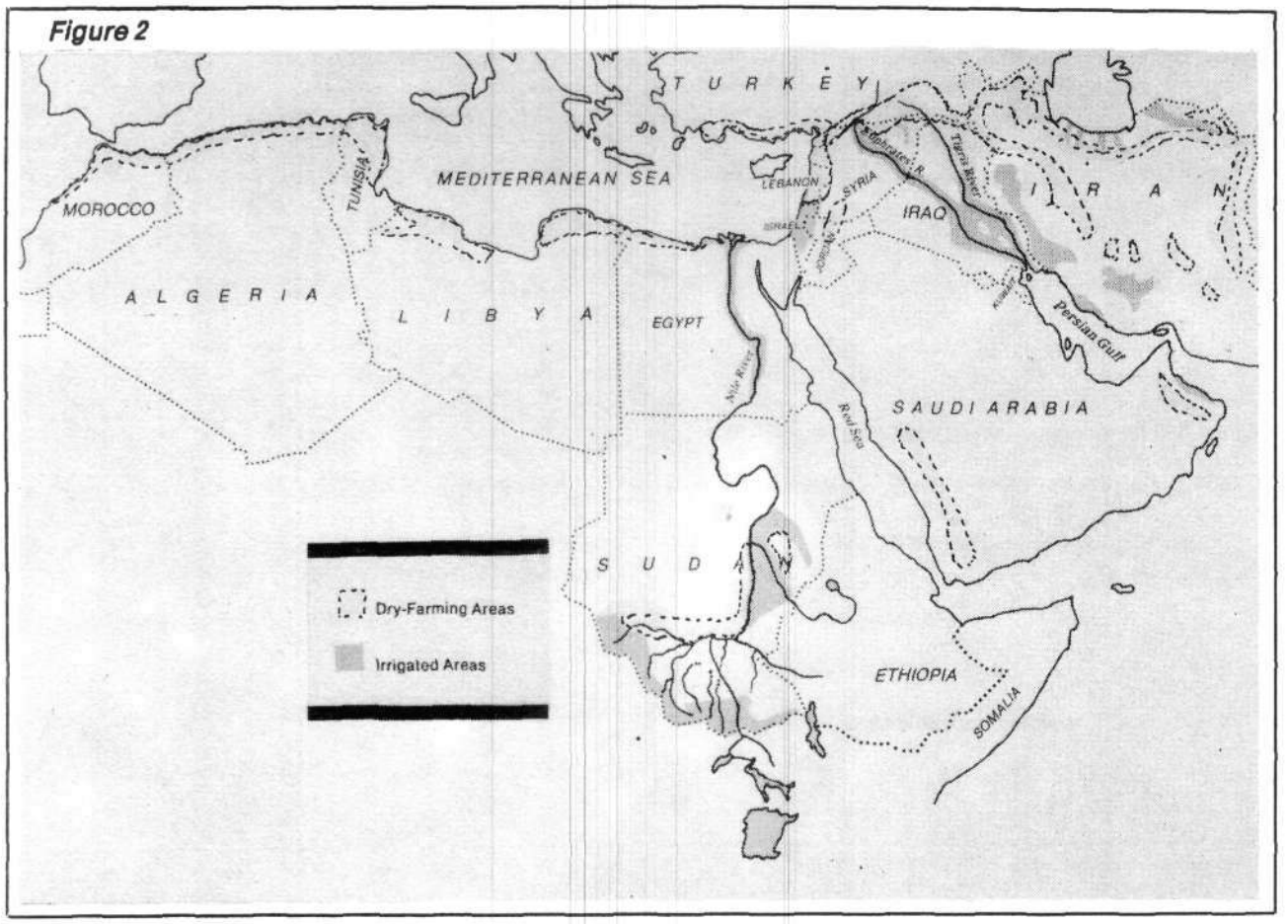
Now, a few remarks on the principles of such a program. It is not sufficient to just demonstrate in general terms the need for development in the Middle East. We all know that this is not difficult to understand if you look at Egypt and its 30 million-plus population. If you look at the other Middle East countries, you will immediately find that, in spite of the apparent richness, as the Ambassador pointed out earlier, of the area, you have, at the same time, some of the most abject poverty, some of the most abject underdevelopment in the entire world. Now, there exists in this very same area some of the best potential — not just in terms of the raw material resources, but rather precisely in terms of the existing manpower of the area — to turn around that situation in a very short period of time. In this respect, the Middle East in its entirety and very much in its ancient outline compares very favorably with other parts of the developing sector; it compares very favorably, for example, with large parts of Africa....

So, we would look at the Middle East not in terms of saying, "here are all these raw materials, fossil fuel resources, etc. Isn't this the perfect basis for doing something in the area?" Rather, we would focus on what is the crucial and essential point: There exists in the population of Egypt, the population of Palestine, and the population in Israel a joint potential for development which, outside of the advanced sector, is unparalleled. One has a similar situation in parts of the Indian subcontinent.... There are good situations for potential development in South Africa, as well as in parts of South America. However, next to the existing population potential in the advanced sector of the world economy, the situation in the Middle East is ideal for the kind of program that we want to outline.

Now,...this is a very different conception than that usually developed by such institutions as the World Bank. The usual development plans that you find by the World Bank or by institutions related to the World Bank and to the International Monetary Fund are based on the assumption that the actual richness, the actual wealth of a country or of a part of the globe is defined by what is in the ground. If there is a lot of oil in the ground, this is a rich country. If there is a lot of copper in the ground, this is a rich country. If there is a lot of this, that, and the other thing in the ground, this is a rich country. Never mind what is aboveground. Never mind what the actual population potential is.

It is precisely that kind of approach which is entirely mistaken. It is precisely that kind of approach which is simply a way of mortgaging off the wealth in the ground against a certain kind of apparent development credit which, however, really leaves the

Figure 2



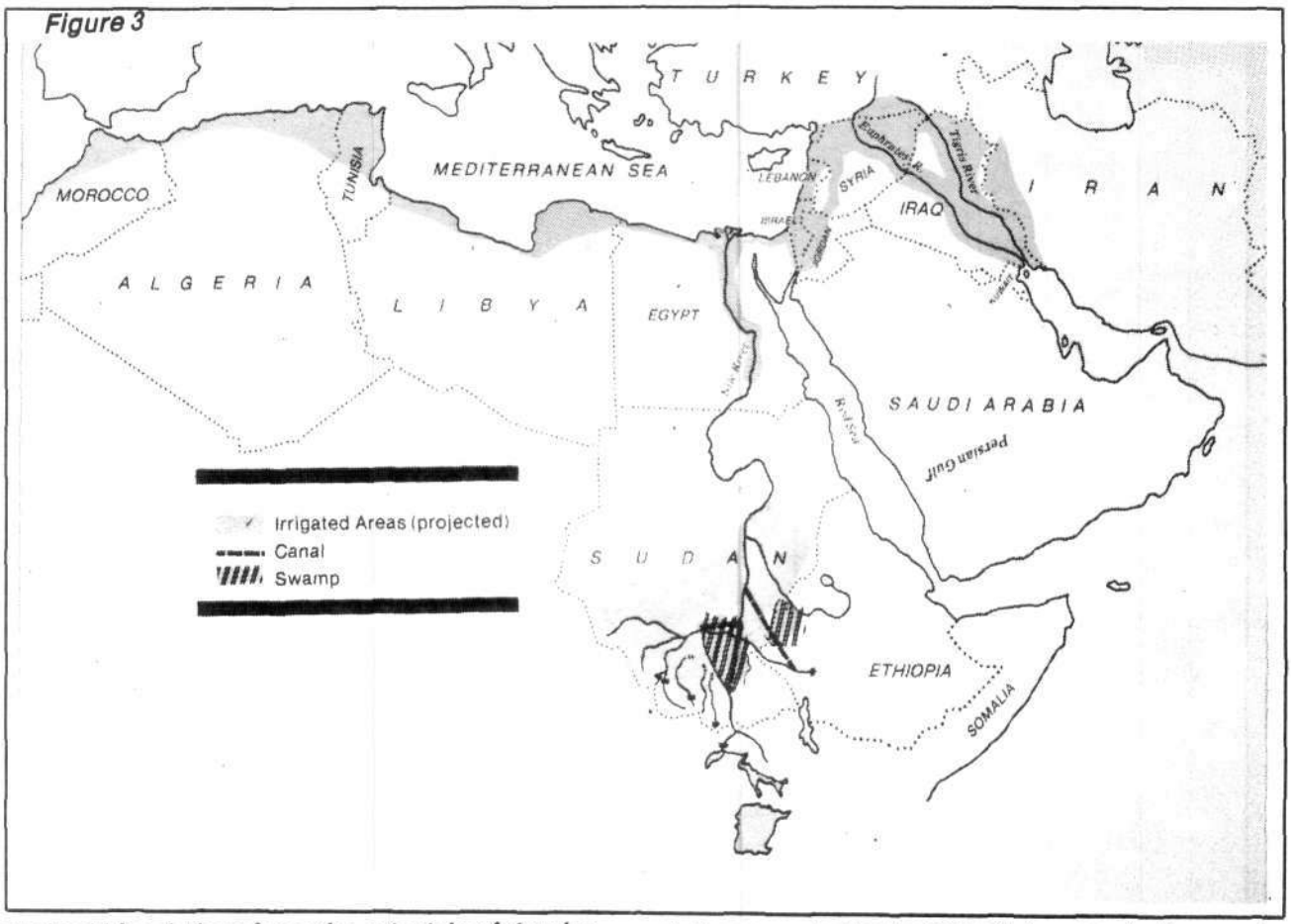
situation intact precisely as the Ambassador described earlier — a situation in which the principle relationship between the advanced sector and the Third World countries does not change or only changes for the worse. This is based on the raw materials approach to the world economy, which is essentially an economic warfare approach. Most of the principles of the raw materials approach were developed historically in the context of an attempt at economic warfare in the period leading up to World War I.

We are proposing a strategic alternative to the specific political situation in the Mideast and to the very essence of the concept of development. The real wealth of a nation is defined by the potential of its population. The real measure of actual development that occurs could very well not be... the resources in the ground, but per capita energy consumption by the population concerned.

For instance, there are various programs on French television, on West German television, and so on. It's very interesting; on the French or German government level, there is a certain commitment to nuclear development and industrial development. In the media, however, there is a very different type of soft approach to zero growth. What you find is this comparison: Why is the United States economy not functioning at this point? It's because it consumes too much energy. Why is there such a bad balance of trade in the United States? Because there is too much consumption of energy. And then the figures come: a cartoon on French television of a huge American Cadillac and a small Citroën that looks like a sewing machine, sounds like one, runs like one, and are generally as efficient. The point is that there are these gas guzzlers that consume per United States automobile driver eight times as much gasoline as the French driver. What a scandal! Per capita, the U.S. citizen consumes three times as much energy as the European and at the same standard of living — which is a total lie. By anybody's way of looking at the situation, the most appropriate measure of the actual standard of living — the material and cultural standard of living — is precisely per capita energy consumption. This is the principal of the development program which we have been talking about.

I have several transparencies here.... Now, this map (Figure 1) demonstrates not the present situation, but the kind of situation we envisage and which Mr. Lerner will go into quantitatively. I'll merely describe this situation qualitatively.

Figure 3



It should be obvious from the principle of development that I have presented that we are not proposing to simply develop to a larger extent the present extractive capacities in the Middle East, because precisely such an approach would not solve the difficulties that exist in the area and would necessarily lead to an exacerbation, in a matter of decades, of the present world-wide energy crisis through an increase in energy prices as a result of the depletion of resources. At the end of such a period, the entire area here would collapse in a fashion similar to when, without actual currents of development, extractive industry develops then collapses at the depletion of the resource.

Perhaps one of the most horrible examples of this historically is the island of Cyprus, which was based, way back, on copper extraction and was one of the richest islands at that time in world history. It has been turned into a nightmare, depopulated, and so forth. The point is that there are many examples historically in which you find that basing the idea of wealth on what is in the ground is precisely the wrong approach to the problem.

Now, what is involved here? The basic thing we are proposing is the mobilization of the population potential of 30 million people in Egypt, the population potential represented by the Palestinian people, the population which is in the entire Arab sector and which is generally the most skilled population in the entire area, and, then, the mobilization of the Israeli population's industrial potential for the joint development of the area. There is no question that such a joint mobilization of the population potential of Israel and of the Palestinian population would make realistic the establishment of a West Bank state. There is no question that, without such a commitment written into the original treaty, the situation will be such that we will not make any progress. It is, therefore, important to look at what we are stressing here in the development program.

One of the first problems we will have in the industrialization of the area is the housing of the vast population in Egypt, which, at this point, has no adequate housing and, therefore, lacks the minimum elements of infrastructure necessary for an advanced industrialization process. We need to gear up those elements in the area itself which are the principal elements of a construction industry — steel, cement and so forth....

Aside from the immediate problem of creating housing, after the initial establishment of infrastruc-

ture, the energy question itself must be solved and must be solved in precisely the way in which previous speakers have already indicated — from the standpoint of nuclear energy development. It is the only renewable source, the only recyclable resource in our ecological system.

After the initial phase of the most massive development of oil and especially natural gas resources for energy development, one would assume that the principal utilization of the fossil fuels of the Middle East would be for petrochemical development, the establishment of a major petrochemical industry. So, I want to give you the perspective of the plan qualitatively in its entirety.

The overall concept is to use the existing population potential for actual industrialization of the earth. The key to this is the development of nuclear energy as the basis for powering such a process and, simultaneously, the development of the necessary infrastructure to make such a process possible. One of the key elements from the outset is the development of housing, the development of an appropriate textile industry, which, by the way, is very closely linked to the building petrochemical industry, and also, the initial phase, the establishment of a significant steel industry where this is possible.

This approach is indeed totally at variance with the programs and development plans that the World Bank and others have proposed. The principal proposals for Egypt, as you perhaps know, all involve the gear up of labor-intensive agriculture as the necessary first step for development of the area. This would be a disaster of major proportions, because it would not involve the utilization of the manpower resources in the way they can be utilized. If you look at it from the standpoint of the criteria of energy throughput-per-capita, a more labor-intensive agricultural expansion in especially Egypt and Sudan and possibly in certain parts of Iraq and Syria would only exacerbate the problems the area already has.

This is not to say that there should not be agricultural expansion, but the agricultural expansion of the area must be conceived from the perspective of nuclear energy development and the development of an industrial infrastructure. If agriculture is subsumed under the general notion of progress and a process of industrialization, then you have the possibility of agriculture in this area which is simultaneously the concept of agriculture which has made the United States's agricultural industry the most advanced such industry in the world. It was not on the basis of labor-intensive methods. United States agriculture was historically the first to most rapidly introduce mechanization and that assigned the United States its present unparalleled place in the development of agricultural goods. The same thing is possible and must be done in the Middle East.

To give you an idea of what kind of agricultural expansion will be possible within the context of the described process of industrialization, here (Figure 2) you have the existing irrigated area and certain dry farming areas which, in most cases, are not nearly as productive. Indeed, if you look at the irrigated area in Egypt, much of the population in Egypt is supported by that relatively thin strip on the Nile and by the productive agriculture which is very rich because of the soil there. The actual possibilities for expansion in this particular area are nonetheless, not that encouraging because you very frequently run into soil problems when you expand beyond the immediate area of the Nile River. Those problems are not insoluble, but, at least in the first phase of development as we envision it, this area is probably not the most advantageous for agricultural development.

Now, if we keep this in mind and look at the next slide (Figure 3), you will see that we envisage taking the existing dry farming areas and accentuating development there through major irrigation projects. The principal expansion is in North Africa. The second major expansion area is in the southern part of the Sahel, and the third is in the so-called Fertile Crescent. There will be some expansion in Egypt as well, but this will not be the point of agricultural expansion.

Figure 4

COST BENEFIT ANALYSIS

TOTAL IMPORT REQUIREMENTS

Item	Amount	Cost $ Billion
Agriculture		
Desalination	15.5 thou cumsec	40
Tractors	.6 Million	6
Energy		
Steel Pipe	88 Million Tons	96
Oil & Gas Equip.		40
Electric Plant	170 Gigawatt	120
Infrastructure		45
Trucks, etc.		30
Industrial Capital Goods		300
Total Imported Capital		700
Peak Year		200

EXPORT EARNINGS

By 1985	$600 Billion/Year	
To 1985	$2,400 Billion	

ADVANCED COUNTRY MANPOWER

Total Manyears	10 Million
Peak Employment	3 Million

ENERGY PRODUCTION

Increase In World Energy Output	Triple
Manufacturing Employment	150 Million
Increase In Capital Goods Production	50%

This kind of program is not something that we are thinking of in terms of the next 50 years or so. The example of Iran, the example of the planning of Pakistan and other countries in the general area indicate that it is perfectly feasible to introduce a nuclear energy development program in the area on the scope which is immediately consummate with the growth rates that we are projecting for over a period of a decade to a decade-and-a-half.

This entire development is predicated on roughly a 35 percent overall energy utilization growth rate, not merely in terms of what is pumped into the Mideast itself, but in terms of the world economy.... One-third or 33 percent of that growth rate will be accomplished through nuclear energy development. We are talking, therefore, about nuclear development plans of exactly the same scope as the program already embarked upon by Iran and already envisaged by Pakistan. The other two-thirds will be covered through increased utilization of fossil fuels, primarily, for energy purposes, of the massive natural gas resources in the area.

Here is a brief quantification (Figure 4) which will give you some idea of how this program fits into the overall world economic situation as was described by Mr. Hamerman earlier.

The major impact of such development will not be felt only in the Middle East, by the population, or through the upgrading of the material and cultural standard of living of the population; the major impact of this will be felt at the same time in the advanced sector. It's precisely the necessary coupling of the idle production capacities of the advanced sector with the immediate development needs of the developing sector which is characteristic of the approach we are taking to Middle East problems. You will find a major necessary increase in steel production in the advanced sector; in order to fuel this kind of program, you will have to think in terms of desalination, irrigation capacities, and various other capital goods which will lead to a significant increase both in export earnings and in advanced sector manpower utilization rates. In terms of the increase in capital goods production, this will actually lead to an increase at least in the neighborhood of 50 percent.

We are proposing to the United States government, to European governments, and to parties concerned in the Middle East that, at this point, the immediate strategic necessity is to take this type of plan, at least in its qualitative dimension, and introduce it into the present process of negotiation in the Middle East as the only way of out-flanking the present impasse, an impasse that was foreseeable at the outset of the peace process set in motion last fall.

A lasting peace in the Middle East, as well as in other principal areas of the world economy and the developing world economies, such as South Africa, is only possible through a joint commitment to economic development which will benefit both the advanced sector countries and the specific parties concerned in the conflagration.

Eric Lerner

The key aspect of the development program for the Middle East is industrialization. In fact, by approximately the middle of the next decade, the Middle East, under this program, will have developed its basic industry to a point comparable to many nations of Western Europe. At the same time, this program provides the adequate basis for the vast increase in the production of fossil fuel energy in the area which can fuel the transition period between the present and the 1990s when the world as a whole can be expected to rely primarily on nuclear energy — both fission and, increasingly, thermonuclear fusion.

What I want to outline are the various aspects of the program from the standpoint of its feasibility, because, in spite of its extremely ambitious scope, it is the only feasible program for implementation.

First, the development of the Middle East's vast energy resources in the transition to nuclear.

Now the CIA and the Department of Energy have told us all that we are running out of oil; there is only 30 years of oil left, which is an interesting figure. Look back 50 or 60 years ago and there was 30 years of oil left then too. A remarkably constant figure.

Very confident estimates made by both Soviet bloc and U.S. experts state that Middle East oil production could be massively increased. We estimate that total oil production could be more than quadrupled to approximately 115 million barrels per day by 1987. That is enough to fuel a world-wide energy growth rate of some 25 percent per year, more in the underdeveloped sector, somewhat less in the developed, but enough to turn the present economic stagnation into economic boom.

OIL AND GAS PRODUCTION GOALS-1987

(Assuming 25% Annual Growth Rate MBDE)

	Oil		Gas	
	Production	Goal	Production	Goal
UAE	1.75	8.2		10.0
IRAN	6.1	18.0	.3	16.5
IRAQ	2.1	9.6		1.3
KUWAIT	1.7	20.0		1.6
NEUTRAL ZONE	.48	4.7		
SAUDI ARABIA	8.9	45.0		2.7
ALGERIA	.9	2.1		11.0
LIBYA	2.0	7.3		1.3
TOTAL	24	115	.3	45

Total Exports/Year at Current Prices $500 Billion

MAJOR GAS PIPELINE PROJECTS

Project	Volume (MBDE)	Length (Miles)	Steel (Million Tons)	Cost ($ Billions)
IRAN-UAE-INDIA	18	3,000	50	50
IRAN-EGYPT-SUDAN	15	2,000	20	20
ALGERIA-TUNISIA-SICILY-ITALY	12	1,700	18	26
TOTAL	45	6,700	88	96

other oil and gas expansion costs — approx. $40 Billion

Natural gas is tremendously unexploited. Present production of .3 million barrels per day equivalent could be raised to at least 45 million barrels per day.

The reason given for the nonexploitation of gas is the lack of infrastructure. All that needs to be done to exploit this tremendous energy resource is to build for the Mideast and the Eurasian continent the sort of major gas pipeline projects that have been built for the North American continent over the past several years.

We propose one stretching from the Iran and Emirate gas fields to India, supplying a major portion of India's energy demands; another between Iran, Egypt, and Sudan, supplying the basic energy needs of the Mideast region; and a third from the enormous gas reserves of Algeria into Tunisia, Sicily, and Italy to supply a major portion of the total energy needs of Western Europe during the 1980s.

Approximate total cost — $140 billion.

EGYPTIAN HOUSING AND CONSTRUCTION MATERIALS EXPANSION

Year	1977	1980	1981	1982	1983	1984	1985
Cement (Million Tons)	3.6	7.2	15	25	35	45	50
Housing Units (Millions Housed)	—	1.9	4	6	8	11	12
Steel Consumption for Housing (Million Tons)	—	1.9	4	6	8	11	12
Cumulative Construction (Millions Housed)	—	1.9	6	12	20	31	43

Egypt is the structural basis upon which the Middle East as a whole will be industrialized. The leading element of this industrialization will be around the heavy industry needed to develop the urban infrastructure to adequately house the numbers of people now living in rural areas who will become residents of the major industrialized cities of the Middle East.

In Egypt, the basic shortage is housing. On the basis of the development of certain key centralized industrial projects, it is possible to produce within Egypt most of the requirements for a massive housing project that we estimate will result in a 12-fold growth of the cement industry in the next decade. By the middle of the next decade, this urban development project will be capable of housing 43 million people in houses on the adequacy level of that in the U.S.

MAJOR EGYPTIAN INDUSTRIAL PROJECTS

STEEL	Million Tons
Present Production	1.3
Expansion of Helwan	.7
Direct Reduction Plant Dakhelia	5
TOTAL PRODUCTION **By 1982**	7
Expansion Dakhelia	13
TOTAL PRODUCTION **By 1985**	20
TOTAL INVESTMENT	$10 Billion

MODULAR HOUSING	Million Units
By 1980	1.9
By 1982	6
By 1985	12
TOTAL INVESTMENT	$30 Billion

OIL REFINING	Million Tons
Present Production	5
By 1985	60
TOTAL INVESTMENT	$2 Billion

FERTILIZER	Million Tons
Present Production	.8
By 1985	10
TOTAL INVESTMENT	$2 Billion

CEMENT	Million Tons
Present Production	3.6
By 1980	7.2
By 1982	25
By 1985	50
TOTAL INVESTMENT	$5 Billion

TEXTILES	Tons
Present Production	180,000
By 1985	400,000
synthetic	200,000
TOTAL INVESTMENT	$3 Billion

PETROCHEMICALS	Million Tons
By 1985	20
TOTAL INVESTMENT	$20 Billion

MACHINERY	
By 1985	1 Million Trucks
Tractors	100,000
TOTAL INVESTMENT	$5 Billion

TOTAL INVESTMENT MAJOR INDUSTRIAL PROJECTS
$80 Billion

This is a summary of the major development programs we are proposing for Egypt, concentrated industrial projects whose productivity will approach or equal that of the most advanced technologies of the advanced sector.

The principal projects are first a massive expansion of the steel industry, especially the major plant now under construction near Alexandria. Second, the development of a large-scale modular housing unit industry which will increase 10-fold over the average productivity of that industry today. In addition, if Egypt is to become the nucleus of general development of the region, it must develop petrochemical and allied industries, such as synthetic textiles. Some $3 billion will be invested in textiles, $2 billion in a major expansion of oil refining, $22 billion in chemicals and fertilizers, and $5 billion in the development of a machinery industry that will principally produce on the order of a million trucks annually.

EGYPTIAN EMPLOYMENT EXPANSION

Industry	Present Employment Thousand	1985 Employment Thousand
Steel & Primary Prod.	100	200
Cement	5	25
Modual Housing	0	700
Textiles & Clothing	300	700
Oil	60	120
Petrochemicals	10	80
Machinery	120	350
Other	500	1,300
All Manufacturing	1,100	3,500
Construction	369	1,800
Transportation, Dist.	1,000	1,500
Gas & Electric	40	200
Services	2,000	3,500
Agriculture	4,180	1,500
Working Abroad		250
Total	9,000	12,250

This chart summarizes the increase in employment that is involved in the programs under discussion. Industrial employment in Egypt will approximately triple to 3 million; agricultural employment will be reduced by about that amount. Overall, productive employment in Egypt will increase by 3 million — far more than the population growth — resolving the present situation in Egypt where the population, more skilled than the rest of the Third World, is largely unemployed.

The second major focus of Middle East development is the area of ancient Palestine, which includes the anticipated independent Palestinian state, based mainly on the West Bank, and Israel.

Here, there is a tremendous potential to be harnessed for development projects and urbanization, coupling the Palestinian population, the most advanced and skilled in the area, with Israel's advanced, high-technology industry, such as electronics. Our plan suggests a major 60,000 unit-a-year modular housing factory, cement plant, and, significantly, a computer factory as the basis for a major Israeli-Palestine electronics industry. In short, we propose coordinated Israeli-Palestinian state industrial development that will render insignificant the border question that now looms so large.

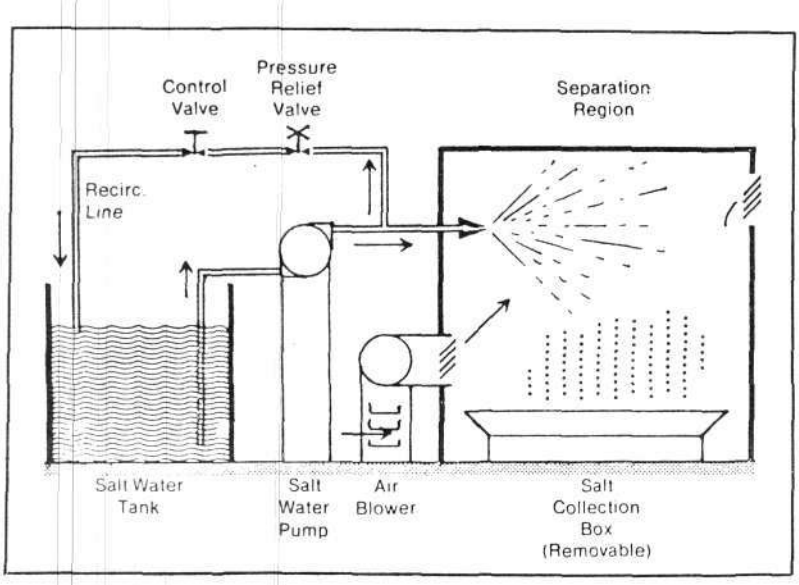
Israel's role is to supply the highly skilled technicians to the high-technology, industrial, and agricultural development that will have to occur in the region.

MAJOR WEST BANK PROJECTS

60,000 Unit/Year	**Modular Housing Factory**
2 Million Ton/Year	**Cement Plant**
10,000-Employee	**Computer Factory**
15,000-Employee	**Food Processing Plants**
1 Gigawatt	**Nuclear Power Plant**
Total Industrial Employment-1982	50,000
Total Construction Employment	50,000
Total Irrigated Land	300,000 Hectares
Irrigated Grain	200,000 Hectares
Grain Production	2 Million Tons/Year

The key to agricultural development is high technology. Although it is generally thought that a massive expansion of irrigation is impossible because of the lack of water in the region, desalination processes are under development which could reduce the expense of producing fresh water for irrigation.

One such process, the atomization-desalination process, does not require the use of tremendous amounts of energy, but uses the pressure differentials produced by the pumping of water to evaporate the water and allow the salt particles to drop out. If you can reduce the pressure in a chamber below approximately .04 of the atmospheric pressure, evaporation will take place at room temperature. This is possible if you develop a sufficiently forceful stream or jet of water from a specially designed nozzle which can create a partial vacuum within it.



This process, demonstrated in a laboratory in the U.S. uses approximately .05 of the energy of existing processes at approximately a tenth of the cost. In terms of the final cost of water, it is $.22 per thousand gallons of water for the atomization-desalination process compared with $2 to $4 for existing processes.

COMPARITIVE COSTS AND PERFORMANCE OF DESALINATION PROCESSES

Process	Capital Cost $/GPD	Energy Efficiency pounds/BTU	Cost of Water $/thou. gallons
MSF	3.50	10	4.00
Multi effect	3.00	20	3.00
Osmosis	2.00	40	2.00
ADP	.12	1000	.22

SUMMARY OF AGRICULTURAL DEVELOPMENT PROJECTS

	Area Million hectares	Desalination Thousand cumsec	Energy Gigawatts	Irrig/Infra. Billion$	Tractors Thousands	Fertilizer Million tons/yr	Production Million tons/yr
I Persian Gulf [Iraq-Iran]	10	3	6	2	100	8	100
II Syria	5	2.5	7	1	50	4	35
III Israel-Palestine Jordan-Lebanon	2	1.0	2	.4	20	.8	20
IV North Africa [Libya-Tunisia Algeria-Morocco]	18	9	18	3	180	14	180
V Egypt	3	-	-	1	40(s)	1.2	20
VI Sudan	80	-	-	30	800	40	500

This one technology, coupled with nuclear energy to power the pumping systems, will transform the whole picture of Middle East agriculture. In the Fertile Crescent, major projects for the irrigation of the entire Iranian-Iraqi valley can produce 100 million tons of grain per year; on the Syrian plateau, 35 million tons; and, most importantly, the transportation of irrigated water into the West Bank-Jordan-Israel-Lebanon area could increase agricultural production to 20 million tons a year.

COSTS AND BENEFITS OF AGRICULTURAL DEVELOPMENT PROGRAM

	PHASE I		PHASE II		PHASE III	
Item	Amount	Cost	Amount	Cost	Amount	Cost
Desalination thous cumsec	0	0	15.5	40	0	0
Energy Plants Gigawatts	0	0	33	33	0	0
Irrig. Infra	0	1		7.4		30
Tractors Thousands	200	2	200	2	800	8
Fertilizer Million Tons	10	1	16	1.6	40	4
Total Costs		4		84		42
Production Million Tons	65	6.5	300	30	500	50

This table summarizes what is involved, in terms of money, for agricultural development based on desalination. The provision of approximately 33 thousand megawatts (gigawatts) of nuclear energy generation, irrigation infrastructure, fertilizer, and tractors over a three-phase development program requires an investment of $120 billion. By Phase II, the expansion of production in these areas to on the order of 300 million tons of grain would make this region a major world agricultural exporting region. Only on the basis of productivity approximating these levels does widespread mechanization make sense.

MAJOR RURAL URBAN POPULATION SHIFTS IN FIRST FIVE YEARS OF AGRICULTURAL PROGRAM

	Urban		
COUNTRY	Present Population percent of total	Population By 1985 percent of total	Present Population millions
IRAN	50	70	30
EGYPT	45	80	38
MORROCCO	30	50	17
ALGERIA	40	60	15

We thus anticipate an influx of the rural population into the cities as agriculture is mechanized. In the major, more populated areas, such as Iran, Morocco, and Algeria, the urban population will increase from about 30 percent to 50 or more percent of the total population. In Egypt, that shift will be from 45 percent to 80 even 90 percent of the total population. Such a shift becomes feasible only on the basis of a massive industrialization program as we have described and, in turn, provides the labor power to make industrialization possible.

REGIONAL INDUSTRIAL DEVELOPMENT

Industry	Present Production	Goal for 1985	Investment	Employment
	Million Tons	Million Tons	$ Billion	Million
Steel	5	100	50	1.0
Aluminum		2	2	
Copper		2.5	2	
Cement	20	220	20	
Oil Refining	160	1200	25	2.5
Petrochemicals		40	40	
Acetylene		17		
Propylene		8		
Vinyl Chloride		6		
Fiber		5		
Agricultural		1.5		
Fertilizer	3.5	40	8	
Modular Housing		50*	125	3.0
Tractors		.3*		
Trucks		2*	10	1.0
Construction Mach		.1*		
Textiles	.4	.9	6	2.0
Other Manufac.				6.5
All Manufac.				16
Construction				7
Services				13
Transportation				6
Energy				2
Total			300	44

* Million Units

In terms of the Middle East region as a whole, industrialization will focus essentially on four major industrial areas: 1) The Persian Gulf region, the center of oil refining and petrochemical industries; 2) Iran, a major steel, heavy industry, and machinery production center; 3) Iraq, a secondary center of oil refining and heavy industry; and 4) Egypt-Algeria-Morocco-Libya, a major steel belt.

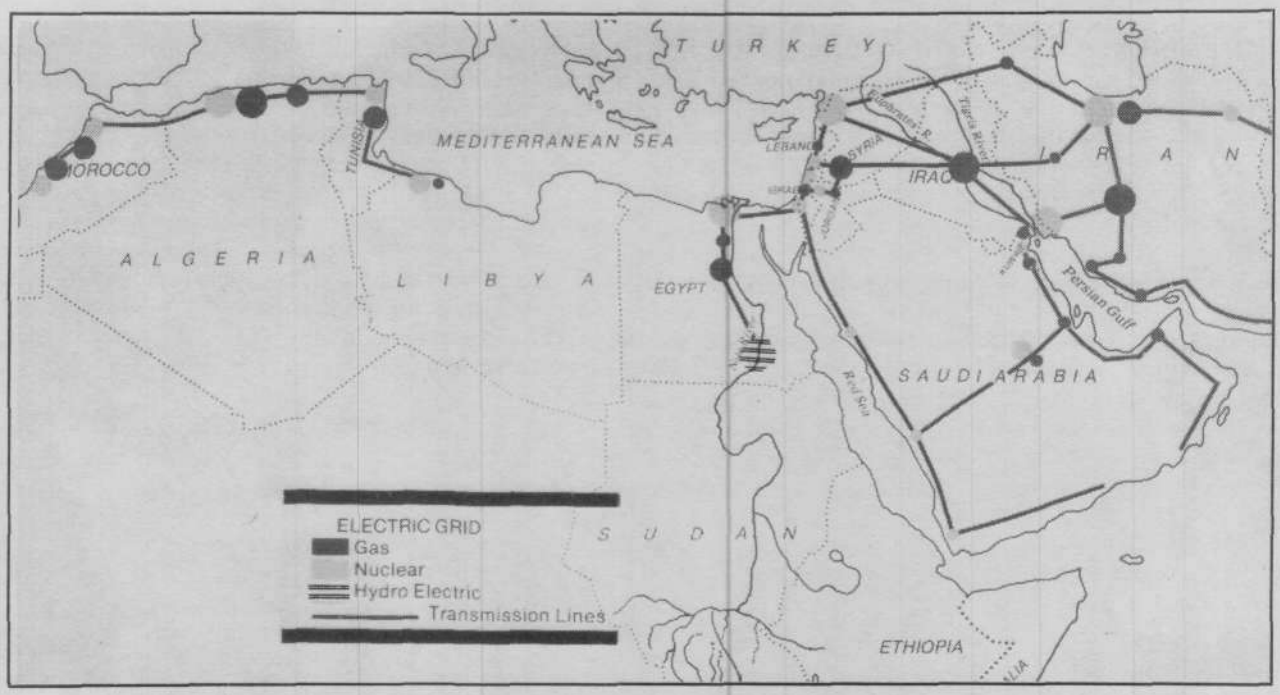
By the next decade, the region will produce 100 million tons of steel, 220 million tons of cement, 40 million tons of fertilizer, 2 million trucks, and so on. This program can transform the Mideast with its approximate 200 million population into a major industrial power.

ELECTRIC ENERGY DEVELOPMENT PROGRAM

[GIGAWATTS]

Country	Present Capacity	1985 GOALS		
		Nuclear	Non-Nuclear	Total
IRAN	4.2	12	24	36
KUWAIT	.8	1	2	3
SAUDI ARABIA		2	4	6
IRAQ	.3	5	10	15
SYRIA	.3	3	6	9
JORDAN		1	1	2
LEBANON	.5	1	2	3
PALESTINE		1		1
ISRAEL	2.0	5	5	10
EGYPT	4.0	12	24	36
LIBYA	.3	1	2	3
TUNISIA	.4	3	8	11
ALGERIA	1.1	6	15	21
MOROCCO	.9	6	15	21

The 35 percent growth rate referenced by Mr. Parpart entails advanced sector capital development and the development of approximately 170 gigawatts of power distributed as this table shows. About 60 gigawatts would be nuclear.



This map shows the development of a major electrical grid stretching across the entire Mideast area with the development of 170 gigawatts of power. By the mid-1980s, per capita electrical energy production will approximate present U.S. utilization rates.

In summary (see Parpart, Figure 4), the proposed Middle East development program represents a capital investment of $700 billion to triple energy output over the next decade and to provide minimally 150 million new productive jobs. The return on that investment is the elimination of unemployment in the world-wide capital goods sector, energy for world-wide economic growth, and industrial exports from the Middle East on the order of $20-25 hundred billion.


CHARD DEKMIJIAN

Dr. Richard Dekmijian

The general thrust of the conference is, as the previous panelist pointed out, that Egypt is the key to the area or, in a sense, the nucleus state, as the late President of Egypt Gamal Abdel Nasser used to point out. Egypt is the nucleus state of the future development of the area....

...Egypt has most of the attributes, in fact, all of the attributes to be the nucleus state. The proposal here to industrialize Egypt as the key... to the Middle East problem is a good one, it's a very noble one. The question is how do we do it and who is to do it. The proposal here,... scientifically developed according to the very best minds, involves the interaction of many forces in the Middle East on the basis of interdependency, reciprocity, and so on.

In other words, the Fusion Energy Foundation's

proposals require massive coordination. The question is, from the point of view of the political scientist and the political economist: Who is going to do it? Who is going to economically coordinate the whole matter on a regional basis? Even in the context of Egypt, is the Egyptian government capable of doing it in a limited sense for Egypt alone?

The underlying problem here... or the underlying flaw... is that our hope is... that economic realities and needs will lead to political solutions. This particular thought, of course, is nothing new; it goes back to the writings of many important political philosophers, the most famous of which is Marx. But, he wasn't the only one. Therefore, the question is: will economic reality determine political reality or what is desirable politically, which everyone agrees should be... peace?

Maybe the opposite is true. Maybe what we need is a sort of a minimum of political progress, especially on the Arab-Israeli conflict, especially on the Palestinian issue, before the first steps could be taken in this very noble and worthy cause of economic integration. And then, maybe, with all the economic dimensions coming in, the eventual result will be Middle Eastern peace as well as world peace.

DR. MOHAMMED RABIE

Dr. Mohammed Rabie

Economic development, industrialization, and organization are becoming nice and catchy concepts. They dominate the politics these days of the developed and most of the underdeveloped countries. But, if we try to evaluate the success that has been achieved in the field of economic development in most of the underdeveloped areas, I think we'll be disappointed.

The reason for that is not because we are not aided in the effort needed, but because we look at different issues of economic development as isolated issues. We look at the process of industrialization as separate from the social, cultural, and political environments. And, if we fail to place those issues in the right context, I'm sure that any attempts... in the future will also fail....

...The program that was suggested here, I think, was a good program. But, if we don't have the right system, that program and any other program will be nothing but a mental exercise.... If the political, as well as social and cultural systems continue the way they are in the Middle East, there will be no hope of any economic development in that area.

...I'll just mention one thing about the political situation between the Arabs and Israelis. Although I agree with President Sadat's attitudes — because everyone in the whole world is for peace — I totally disagree with his approach. I think he made a serious mistake by going to Jerusalem and now everybody is paying for that mistake, because, if his approach fails and it is going to fail, then all that we will have in the Middle East is war. There's no other alternative.

And (then there is) the attitude of the American government when they say that the Palestinians have the right to participate in determining their future: it's just like saying that every human being on earth has the right to self-determination except the Palestinians....

The Palestinians, as was mentioned earlier, are the best educated in the Middle East; they are probably one of the best educated nations in all of the world. As a matter of fact, they have the highest percentage of college graduates in the whole world.... The Palestinians are anxious for peace, but not to be subjugated and oppressed, and left in refugee camps.... And if peace can be achieved on the basis that Palestinians will have self-determination, I think it could be achieved.

The mistake that most countries have been making, and I have been saying the same thing for at least five years, is that if all of the Arabs decide to fight and the Egyptians are not willing to fight,... then there will be no war in the Middle East, because Egypt is the main power, the military power of the Arabs. But, at the same time, if all the Arabs and all the world decided to make peace and the Palestinians are not willing to make peace, there will be no peace in the Middle East.

Fuad Taima

AIMA

...How do we do things in the Arab world in partnership with the rest of the world, in terms of meeting some of our economic development objectives?

What we are trying to do is... to bring forth a dream that we've learned about through the course of history. It was not long ago in terms of our historical knowledge that the Arab world was a major intellectual, political, commercial power. By 1492, the last man leaving Andalusia turned off the light. Is it not ironic, in 1492, that Christopher Columbus also set out to discover the Americas? It wasn't really that long ago. Upon achieving some of the vestiges of political independence, we began to think in terms of implementing some of these goals which are mandated for our economic survival....

Very few people in this room... are unaware of an organization known as OPEC... It is basically a gathering of the Arab oil states which are involved in the export of oil. That's one of their functions. The second and extremely important function they have is the responsibility for drafting highly articulate and, I would say, realistic programs for economic development, particularly in the fuel-related industry.

...Then we have a host of organizations both in the private and the public sector.... The listing alone can run approximately 70 major organizations dedicated to the principle of enunciating development projects and, at the same time, assisting in the financing of these projects. So, the question raised earlier by my colleague about the banks not participating I find rather... subject to... disagreement....

The problem is not in drafting a proposal, the problem is implementation. In terms of actual experience, what is really wrong in terms of current economic development efforts, I find, is that there is a massive emphasis on industrialization.... We are concentrating right now on petrochemical industries which is fine. We are concentrating on gas... for the fertilizer industry, which is fine. We are concentrating on the cement industry, which is fine because you need all of these things.... But you are also neglecting the following: For a region that is absolutely abundant in richness when it comes to domestically available and cheaply available construction material, it blows my mind, as they say down on Madison Avenue, to see this concentration on concrete. The traditional form of building in the Arab world happens to be brick....

Let's not push industrialization too fast. To push industrialization too fast, you require qualified... manpower. The Arab world... is predominantly agricultural.... So when you push industrialization,.. when you're building an economy, it has to be an economy which is responsive to the indigenous requirements of the nation itself.... We have to build these economies slowly, from the way down, all the way up. The way we're going about it now, we're building from the top, all the way down. In the process, we're seeing... shortages of manpower in Egypt — ironic, but true — 40 million people. But, in order to improve on the manpower capacity,we 're going to have to pull people off the farm. If we pull people off the farm, Egypt is going to nosedive further into agricultural deficits.... We've gone overboard on... these pantheons of industrialization. They're fine, but they have to be relevant to the domestic requirements....

William Cornelius Hall

Mr. Hall, a member of the Trustees of the Fusion Energy Foundation, is President and Chief Scientist of the Chemtree Corporation. He is a former Chairman of the metropolitan New York section of the American Nuclear Society. Mr. Hall is Chairman of the policy board of the *Journal of Civil Defense*. He has published widely on nuclear power and the structural design of reactors, and holds patents on high-density concrete. Mr. Hall is a fellow of the President's Council of the American Institute of Management and is a member of the *Société des Ingénieurs Civils de France*.

Dr. Steven Bardwell

Dr. Bardwell is Director of Plasma Physics of the Fusion Energy Foundation. Dr. Bardwell received his Ph.D. in plasma physics from the University of Colorado in 1976. He has done research in a wide variety of self-organizing phenomena in plasmas and fluids. He has spoken widely in the United States and Europe on fission and the transition to fusion.

Dr. Stephen O. Dean

Dr. Dean is Assistant Director for Confinement Systems, Division of Magnetic Fusion Energy, Department of Energy. He received his masters degree in nuclear engineering from the Massachusetts Institute of Technology in 1962 and worked in the Atomic Energy Commission from 1962 until 1968. From 1968 to 1972, Dr. Dean did research in laser fusion at the Naval Research Laboratory, in the course of which he received his Ph.D. from the University of Maryland in 1971.

Dr. Dean has held his current position since 1972, first with the Energy Research and Development Administration and now with the Department of Energy.

Professor Charles F. Bonilla

Professor Bonilla is Vice Chairman of the Department of Chemical Engineering at Columbia University. He is the author of a widely used text, *Nuclear Engineering*, published in 1957, and is a recognized authority on heat transfer and fluid flow processes in nuclear power engineering. He was a recipient of the Kern Award of the American Institute of Chemical Engineering, and is currently Editor of *Nuclear Engineering and Design*.

Dr. Stefan T. Possony

Dr. Possony is a senior fellow of the International Studies Program at the Hoover Institute in Palo Alto, California. He has published many books and articles on strategic doctrine and analysis, and on energy policy. Dr. Possony is currently a member of the American Security Council and Associate Editor of *Defense and Foreign Affairs Digest*.

John Causten Currey

Mr. Currey is currently Senior Editor of the *Oklahoma Times*, *Daily Oklahoman*, and *Colorado Springs Sun*. Mr. Currey was formerly a nationally syndicated columnist. He also served with Air Force Intelligence.

PANEL 2

Energy: Nuclear Fission and Fusion

William Cornelius Hall

...Here are some things I want to emphasize. One; the NAACP has recognized the direct correlation between the level of economic activity and energy availability and consumption. That's an important recognition because (the NAACP) represents a large number of people, and it represents people who do not have as much, on average, as the rest of our society. Lack of prosperity hurts those people the most.

Item two: 50 years of fusion, 50 years after we've got it, we'll see adequate energy at affordable cost....

Item three: prosperity, low unemployment and adequate available energy all go together.... They're like the three sides of a triangle. If one is missing, the others aren't so good.

Item four: the wealth of nations has always been the scale of available energy. Gold has merely been a convenient token. Always, whoever had the energy soon had the gold. Right?...

Item five: adequate energy at affordable cost will provide world-wide prosperity and employment. The first step is conventional nuclear power reactors constructed in five years by standard design. The second step is breeder reactors to stretch out our nuclear fuel. The third and most important step is a crash program for fusion energy development. Supplementary energy wherever efficiently available, such as geothermal, solar energy, or hydraulic energy, should be used. The waste of energy should be curtailed....

Today, the U.S. is largely dependent on fossil fuels — gas, oil, and coal — for its energy needs. Fossil fuels are a chemical inventory treasure house which should not be combusted when alternative fuels are available. Depletion of fossil fuels is relatively near.... Only fission and fusion energies can avert this catastrophe....

The Fusion Energy Foundation merits your financial and other support in its public education efforts about the world energy problem. Steven Bardwell, Charles Bonilla, John Currey, Stephen Dean, and Stefan Possony will individually and collectively provide technical backup on world energy needs and what can be done to provide all the energy that will be needed.

Dr. Steven Bardwell

There are two essential pillars for development, both in the advanced sector and in the underdeveloped sector. Those are energy and labor power....

I think there are three criteria that allow us to look in more detail at this question of the interrelation between labor power and energy... The first is that you don't have an adequate energy source or an energy policy unless there is a suf-

Figure 1

COMPARISON OF COST AND PRICE OF DELIVERED ELECTRIC POWER

	Total Energy Costs mills per kw hr†	Total Energy Price mills per kw hr‡	Energy Payoff Time years	Net Cycle Efficiency percent
Oil	25.1	45.7	0.2	26.6
Coal	24.2	31.7	0.2	32.4
Coal Gas	41.7	55.7	0.4	17.5
Coal Liquid	46.3	58.8	0.5	19.4
Light Water Reactor	27.8	28.5	0.4	24.9
Liquid Metal Fast Breeder Reactor	33.7	33.9	0.4	34.7
Fusion	45.2	45.2	0.4	24.6
Solar Collectors	490.0	490.0	8.3	2.6
Solar Cells	680.0	680.0	48.0	3.9

†Real, non-inflated costs
‡Fuel costs based on 1975 fuel prices

ficient *quantity* of energy to solve energy needs....

The second criterion is a question of the *density* of that energy....

The third criterion for an energy program must be: "Do we consume current energy sources in such a way that when we run out of them, it doesn't matter anymore?" Namely, you progress to some new technology, to some other mode of production of energy that makes the finitude of the former source irrelevent.

If you have an energy policy that doesn't address the question of its own supersession, you don't have an energy policy....

The key to that process is labor power. If an energy policy or means of energy production doesn't train labor power, doesn't provide the living standards for the labor power appropriate to the next level of technology, then that energy program or energy production method — no matter how much energy it may provide — is inadequate because its finitude in that case becomes an absolute limit to human survival....

Nuclear energy is the only way to go in the near term. In the simplest terms, you can get an idea of what I maintain by looking at what is a crude, but very useful measure of the applicability of an energy source. That is, how much does it cost? How many dollars does it take to deliver a given unit of that energy? On this chart (Figure 1)... one column lists the delivered price of electrical energy today for a number of practicably available technologies — oil, several coal technologies, conventional and nuclear reactors, more advanced nuclear reactors, and solar energy. Now, there are two interesting things to point out about this chart — first, if you take present cost of production of electricity, taking into account inflated fuel prices due to the 1973 oil embargo, you see here that by quite a large margin light water reactors provide the cheapest delivered electricity today. A factor of almost two in favor of conventional nuclear energy. Now, if we move back either by sane financial policies or by just a leap of the imagination to the point at which no fuel price is subject to artificial manipulation, the cost of fossil fuels goes down dramatically (the price of uranium also goes down because there is a quite powerful uranium cartel right now); however, you still see that, within a factor of 10 percent one way or the other, conventional nuclear energy is competitive with fossil fuels.

Now, the lesson of this in practical terms today is exactly what the Ambassador from Pakistan pointed out.... The choice between coal and conventional nuclear energy use is essentially one based on the local availability of fuel.... If you want to produce electricity in the short term, it's got to be done with nuclear energy with a large admixture of fossil fuels, but the margin for further development by and large comes from light water reactors....

In global terms, what are the energy implications of a given means of production of energy? A very useful measure of that is what is called the energy payoff time; that is, adding together the energy that it takes to build, fuel, maintain, and operate a given energy production technique, how long does it take to produce more energy from that plant than it took to fuel, build, maintain, and operate that plant?... Every technique which involves, as we'll see, high densities of energy and advanced technologies, has an energy payoff time of less than six months. In less than six months, it produces more energy than the plant consumes during its whole lifetime for operation, maintenance, fuel. That's not true for two techniques of solar energy, one of which — solar cells — is an absolute drain on the economy; it takes more energy to produce a solar cell than you get out of it over its whole lifetime....

I'd like to now... examine the question of nuclear energy in light of the other more rigorous criteria I laid out in the beginning....

The question of quantity of energy available through fission is a difficult one, but... it's pretty much uncontested that there are sufficient fuels for conventional nuclear reactors for at least the next 20 years.... However, it is the case... that within some finite period of time, that fuel available to conventional nuclear reactors will run out, or become prohibitively expensive.

Yet nuclear energy has built into it the possibility of

expanding its fuel source.... The breeder reactor enables you to turn nonfissionable isotopes of uranium into fissionable isotopes — plutonium or thorium. These fissionable isotopes then are useable in nuclear reactors to produce more energy.... For every year of conventionally usable uranium that you have, 70 years of fuel can be bred by the breeder reactor.... The development of more advanced forms of nuclear technology allows us to telescope the amount of energy available, essentially to the point where it doesn't become meaningful to talk about limits to that form of energy....

The second criterion... is the question of energy density. That is, is fission producing energy in sufficiently intense quantities? I have a chart (Figure 2) which makes the case. We presently produce energy in fossil fuel plants at the rate of 10 megawatts per meter squared — this is a unit measuring how much energy comes out of a given unit area per unit of time or how much energy flows out of a given area using a specified means of energy production.... Solar energy is very good for agriculture, but that is about it. Fossil fuel is limited... by the combustion temperature of the fossil fuels involved.... Fission offers us the most dense energy source that we have available. You can see here it's on the order of 5 to 20 times more dense than fossil fuel. This allows improvements in efficiency and decreases capital cost....

If you have more dense energy, you can recover it more efficiently and build less equipment to capture that energy.... The present generation of fission reactors are light water reactors, pressurized water reactors, CANDU reactors.... The next generation, which is on line at a plant in Colorado and is operating right now, is the so-called high temperature gas reactor. It uses uranium in the same nuclear process, but operates at considerably higher temperatures and with a higher energy density flux inside the reactor. This allows... a 10 percent decrease in capital cost for the high temperature gas reactor as opposed to the... light water reactor, and also an improvement in efficiency by a considerable amount....

Figure 2

ENERGY FLUX DENSITY

MW/m²

Solar — biomass	.0000001
Solar — earth surface	.0002
Solar — near-earth orbit	.001
Solar — near-solar orbit 5 million miles	1.
Fossil	10.
Fusion [first gen.]	2.-50.
Fission	50.-200.
Fusion [theoretical]	trillions

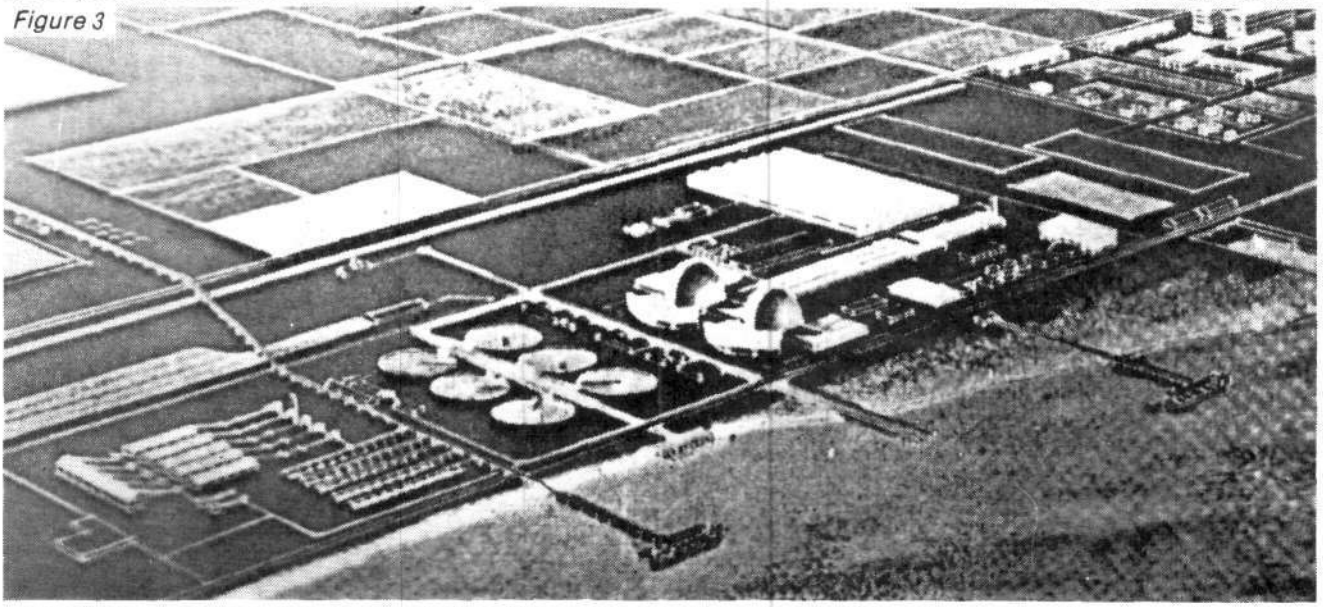
The third question about fission is: does it lay the basis for its own supersession? Supposing we use fission energy for the next 20 years, what do we do at the end of that time; does it provide for its own improvements?... I think that, without doubt, it does.... It offers a transition to the next stage of technology and it allows the development of the labor power necessary for that process.

I have a picture here (Figure 3), which... is an artist's conception of what is called a nuplex.... This is an idea of using nuclear energy as the basis for development in underdeveloped countries by taking advantage of its very intense source of energy, its very high energy density flux, and its capability for passing on that advantage to the economy of the country....

The basic idea is that, because it is so compact, nuclear energy can provide an intense source of not only electrical energy, but also thermal energy — basically hot water — which can be used for powering a number of industrial processes as radiating effects from a nuclear plant. The key thing... in the context of Third World development is its ability to integrate with agricultural development.

This picture is of a seacoast, and the Guayama com-

Figure 3



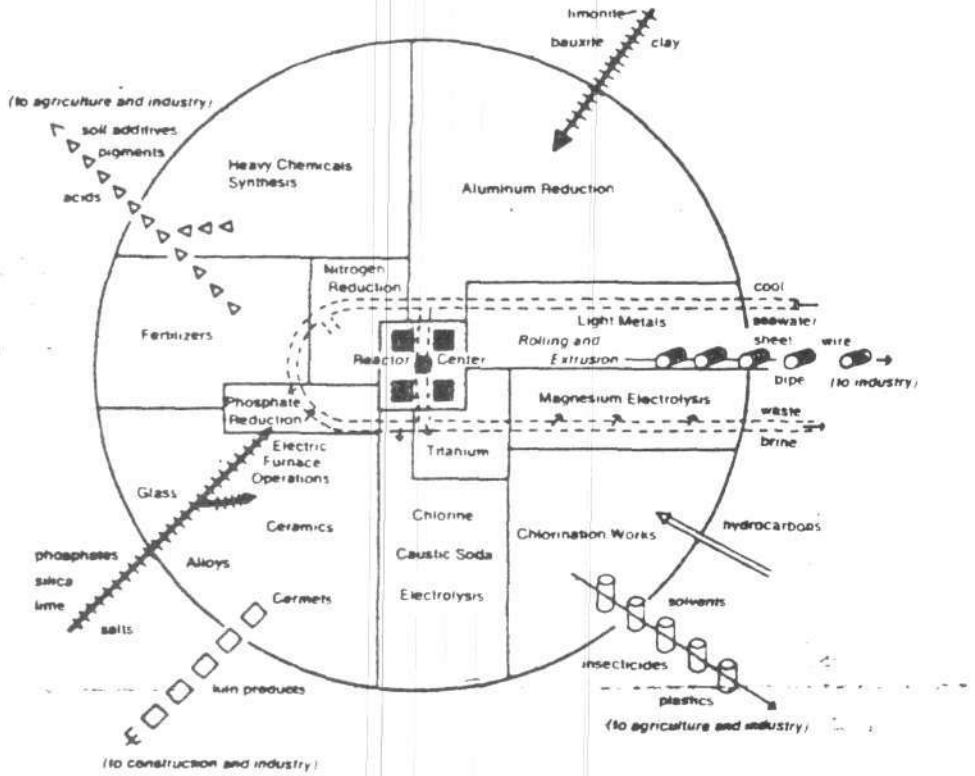
An artist's rendering of a nuplex design that could desalt up to a billion gallons of salt water a day while generating more than 2,000 megawatts of electricity and helping to feed 6 million people.

Figure 4

NUPLEX

AGRO-INDUSTRIAL COMPLEX-WESTERN UTTAR PRADESH SUMMARY OF ECONOMIC EVALUATION

	Capacity tons/day	Power Balance Production MWe	Power Balance Consumption MWe	Investment millions of $	Manufac. Costs millions of $	Revenue from Sales millions of $
1 Nuclear Plant	—	1200	—	272	27	39
2 Ammonia Plant	1500	—	557.87	66	24	
3 Nitric Acid Plant	1800	—	7.50	13	3	
4 Ammonium Nitrate Plant	2170	—	6.78	10	5	
5 Total Lines 2-4			572.15	89	32	50
6 Elemental Phosphorus Plant	625	—	200.00	42	21	
7 Phosphoric Acid Plant	625	—	1.15	6	1	
8 Diammonium Phosphate Plant	1360	—	1.70	10	5	
9 Total Lines 6-8			202.85	58	27	48
10 Fertilizer Plant Today	3680	—	775.0	147	59	98
11 Aluminum Industry	135	—	125.0	63	25	31
12 Total Industrial Plant		1200	900	481	111	168
13 Power Distribution			300	77	25	26



The original caption of this early (1956) nuplex design describes it as "a hypothetical map of an industrial estate that might naturally grow up around a million kilowatt nuclear reactor."

plex had associated with it a 20 million gallon-a-day desalination plant which would provide the basis for much irrigation and a highly mechanized agriculture in Puerto Rico. In the case of the Indian nuplexes that were designed, desalinated water was not a key problem, so the crux of the idea of a nuplex in India was using it as the basis of an industrial complex. This is the Western Pradesh nuplex, the table (Figure 4) is taken from the studies done on those plans.

...There were a number of limiting factors in Indian agriculture, like fertilizer and pumping wells.... A nuplex offers the capability of producing vast amounts of fertilizer and providing the electrical energy necessary for tube wells.... The Indian plans for the two nuplexes show the immediate possibility of feeding on the order of 40 million people for each nuplex.... That involves the irrigation of some 4 million acres of land and providing fertilizer for the intense cultivation of that land. It also involves spin-off industries in a number of chemical areas and, optionally, the operation of an aluminum plant....

From the standpoint of the advanced sector... I want to point out that the necessity for nuclear energy over the short term becomes clear if you look at it as a transitional technology to the next stage of energy production and industrial development which comes with the development of thermonuclear fusion.

...There is a very natural chain of nuclear technology which takes us from where we are today — the first generation and second generation light-water nuclear reactors — to the point where we are ready to use the very high temperature, very high-energy density flux technologies associated with fusion. We can see already high temperature gas reactors.... Succeeding that would be the breeder reactors.... There is a succeeding step in that chain of nuclear technology, called the fusion-fission hybrid, which uses the neutrons from a fusion reaction... to breed fuel much faster than even the conventional fast breeder can. This technology is on the drawing boards—in the Soviet Union anyway, where they are talking seriously about breeding fuel for conventional nuclear reactors using fusion hybrids by the late 1980s, within ten years.

Each of these technologies takes us one step closer to the next leap in technological development.... Nuclear energy, in this respect, bears the mark of a successful technology, provides the self-perfecting process which allows for its continued development and perfection toward the point when it is superseded by nuclear fusion....

Dr. Stephen O. Dean

...Fusion energy is the power that runs the universe. If you have any doubt of that, and if you would like to see a fusion energy system in operation you have only to go outside on a sunny day and see it and feel its warmth. If you would like to see the billions of fusion reactors that power the rest of the universe you have only to go outside on a clear night and look into the sky.

Man began his search and attempt to create fusion as an energy source on earth in 1952. For about six years, the work was carried out in secret in the Soviet Union, Britain and the United States. After six years, it became clear that the job was extremely difficult, that the physics and the scientific knowledge did not exist at that time to translate fusion into practical reality. And so an international collaboration began with the declassification of fusion research in 1958 at the Geneva Conference.

At the close of that conference, the chairman of that conference, an Indian, made a prediction. He said it would take 20 years to develop the scientific foundation for fusion and to be able to assess whether fusion was an energy source that could be tapped for practical purposes. That 20 years is just about over, and the question is: Has that prediction come true?

I hope to be able to show you today that in fact that prediction *has* come true, that the scientific basis for fusion is here, that the critical experiments to demonstrate the scientific data base in order to move into practical applications are under way, that the data will come out during the next year or two, and that fusion is ready to be treated and considered as a practical option for future energy resources....

Now, our objective in the fusion energy program is to produce a useful commercial product at an early

date. What are some of the applications of fusion? Fusion offers a diversity of applications. Electricity has already been mentioned. It is possible to imagine using the energy from a fusion reactor to generate synthetic fuels, portable fuels that could replace conventional fuels like gasoline or natural gas. It is possible to use fusion for process heat in industry. It is possible to use fusion to produce nuclear transmutations... to use fusion as a breeder of fissile material for a fission reactor economy. There also have been studies that indicate that fusion is a possible technique for use in waste disposal problems of fission reactors, transmuting some of the most dangerous long-life radioactive waste into benign species.

What is the fusion reaction? Fusion occurs between the very lightest elements in the periodic table, primarily forms of heavy hydrogen... deuterium and tritium. When the deuterium and tritium come together at high energies, they merge and a nuclear reaction takes place in which the deuterium and tritium combine to form helium, which is a stable nonradioactive gas, and an energetic neutron which carries the energy out for eventual use.

The sum total of the masses of the deuterium and tritium, as compared to the masses of the helium and neutron product, are heavier. The mass which has disappeared is converted into energy according to the well-known formula of Einstein....

Now, this process only occurs at very high temperatures, because it must get these charged particles, the deuterium and tritium, to overcome the repulsive Coulomb forces between their nuclei. When you raise a gas of such nuclei to very high temperatures, you form what is called a hot plasma. To do that, you must put in an energy investment in order to get energy out. You must have a confining force which keeps this plasma around for a sufficient length of time to get a net release of energy.

...You must reach a temperature peak for the ions... of about 50 million degrees, which is about 5 to 10 kiloelectron volts — the units normally used in the scientific community. You must keep a certain density of this fuel around for a certain length of time, such that the product of the density times the time exceeds a number which is 5×10^{13} or approximately 10^{14}. I ask you to keep these numbers in mind, 10 kilovolts temperature and 10^{14} density, so you can see as we go on how close we've come to reaching these conditions.

I mentioned that these nuclei are charged. One of the ways you can keep these particles around where you want them is to use a magnetic field. We are all familiar with the fact that magnets exert forces on charged particles such that the particles tend to orbit the lines. By creating a suitable geometry or magnetic bottle, you can get the plasma to stay around in the place where you want it.

We have two basic types of magnetic bottles.... The open bottles use the principle called magnetic mirrors in which, by making the magnetic field strength larger at the ends, you create a situation where the particles, as they try to go along the lines, are reflected back into the middle....

Another way to get around that is to create a donut-shaped bottle, a so-called closed system, in which the particles flow freely around the bottle, but have difficulty moving across the magnetic lines to get out.... You will hear a phrase called tokamak, which is a Russian name for a toroidal magnetic chamber which gives a version of this general class of bottles called a closed system.

The idea is that once you get this fusion plasma where you want it, and keep it around for as long as you want it, the energy starts coming out of this plasma in the form of neutrons. You then slow these neutrons down in materials in the same way you do in a fission reactor. You then put coolant through this material that has been heated up by slowing down these neutrons. That hot coolant then flows out to a conventional steam cycle or gas turbine (if that evolves), and you wind up with a conventional electrical power plant....

The T-10 (tokamak closed - ed.) device... is the largest device in the Soviet Union at the present time. It is essentially the same size as our largest operating device, which is the Princeton Large Torus at the Princeton University Forrestal campus. I will mention in a minute some very exciting new results from the Princeton experiments in the past month and a half that have not yet been announced....

Now fusion systems come in different shapes.... The Doublet Tokamak... is under construction at the General Atomic Company out in San Diego... and will go into operation next month. This machine, by the way, is designed to have the capability of reaching all of the conditions that I mentioned for a fusion reactor, namely, a 5 to 10 kilovolt ion temperature, and a 10^{14} density plasma. So this machine... has the capability designed into it to fully reach breakeven conditions....

We are building an even larger device... at Princeton,.. the Tokamak Fusion Test Reactor. This machine is designed to actually use deuterium and tritium as fuel. The other machines that I mentioned use hydrogen, a lighter form of hydrogen. This machine is designed to actually exceed breakeven conditions — to release more energy than was put into the plasma. This machine is under construction and will begin operation in 1982.

...You don't actually have to build a power reactor in order to get the information you need to design it, fortunately. If you operate an experiment in a scientific regime, where the data that you get can be extrapolated in a knowledgeable way to the machine you want to build, essentially a scale-model version, then you have the information you need to design with competence....

...During the coming year, we will get... the engineering data and the scientific data required to design a machine — a reactor — which has this (10^{14} - ed.) quality of containment of the fuel. And it is on this basis that I state that we will, during 1978-1979, get the information needed on confining the plasma in order to design the fusion reactor.

Now the other quantity was the temperature....

Back in 1975 and 1976, we were working at fairly low temperatures. If we can run... experiments in the range of 2 to 6 kilovolts, this gives you the scientific information you need to design this reactor. About a year ago, we just barely hit the threshold of this regime in a tokamak called Ormak at Oak Ridge. But, our big machine to test this is the Princeton Large Torus, the PLT, and this is the new information which has not been announced until today.

We have just put into PLT 1 megawatt of auxiliary heating to raise the temperature of this plasma and, for the first time, we have achieved a data point above 2 kilovolts in this regime. During the coming year, we have coming on to PLT (experiments will begin in March) up to 3 megawatts from 1 megawatt of heating. We expect to be able to explore this whole space, thereby generating the scaling laws with temperature needed to design a fusion reactor.

You can see, I hope, that the prediction made 20 years ago that it would take 20 years before we would have the scientific data necessary to assess fusion is coming true.

...Power density is very important...

It has turned out from the studies that we have done and from the information that we have generated over the past couple of years that our ability to predict the size of the reactor has improved. We believe we can run a much higher power density in the reactor and therefore the size... for a reactor has come down over the years....

So, in an engineering sense, we are really almost there in terms of having operated a machine at the size a reactor would actually have to be....

...We will be making fusion power in the early 1980s. Beyond that we will have to go into a phase of actually building experimental power reactors to get operating experience, maintain ability, reliability, engineering experience, and economic experience in order to have an intelligent basis for judging at what rate fusion reactors should enter the economy.

During the past year, we pulled together a group of vice presidents and senior scientific people from high-technology companies across the country. We asked them to take a look at where fusion stands today and to give us their view on the status of fusion.... These people stated the following:

- That fusion research has reached the stage where the plasma temperatures and the confinement are within modest factors of the reactor goal;
- That the primary, near-term objective should be to demonstrate the reactor level conditions experimentally;
- That we should pay increased attention now to the range of possible end uses to which fusion could be put....

The committee believed that the potential benefits of fusion energy production are so great and that the recent progress is so encouraging that it is reasonable to plan the program on the assumption that fusion energy development will be successful....

Professor Charles F. Bonilla

One of my colleagues,.. in charge of the fusion program at Columbia, took me aside when I told him I had just discovered this fusion research organization (the FEF), and said, "Look, it is a political organization." I thought faster than usual and I had a reply; I said, "Bob, I got the money for this Columbia reactor... the safest thing in the world... in 1960. Nothing much happened for a couple of years, we waited for the building in which this reactor would be put, to get started. From 1963 to 1977, all I have been involved in is politics, trying to get the darn thing in operation.."

I learned a lot, I have been disillusioned a lot, but I... discovered... that there is a technique to crack political opposition.

I want to give instances of (how)... to prick the bubble that the environmentalists and the politicians use to try to keep people who are interested enough to listen — but not interested enough to study the facts — on their side....

One is the Columbia reactor.... The Board of Health was going to publish a notice of intent to amend a certain part of the New York City Health Code to regu-

late nuclear reactors and critical fissionable assembly operations in New York City. Now, the Nuclear Regulatory Commission heard about this and wrote a very nice, legalistic letter. It said (I will read a part): "In enacting the Atomic Energy Act, Congress... invested in the NRC exclusive authority to regulate against radiation hazards, thereby preempting state and local regulation in that area.... Subsection K further provides that nothing in this section shall be construed to effect the authority of any state or local agency to regulate for purposes *other* than protection against radiation hazards... No other agreement entered into pursuant to Subsection B shall provide for discontinuance of any authority of the NRC. And the Commission shall retain authority and responsibility with respect to the regulation and the construction and operation of any production or utilization facilities."

That includes nuclear reactors.... We do a little bit of producing — practically negligible — of fissile material. They were just reminding New York City they did not have any authority to do that. Of course, they went ahead and did it anyway.

The next thing, the regulation finally came out and in due course every reactor in New York City, which includes ours and the Manhattan College reactor (there having been others planned but never carried out)... (had) to apply for permission to operate their reactors. Last April, we received permission from the NRC — after 12 years of their knowing about it....

Dr. Stefan T. Possony

I think we are all in agreement that the development of the Middle East is a mandatory matter. It is not a matter where you can say: Well, maybe we do it and maybe we don't. The penalties for not doing it... are all catastrophic and they may involve the whole world in a bloody war.

The other thing you have to make up your mind on when you go into a program is that you are not starting from scratch in this case, but close to scratch. So you really want to know what your objectives are. In terms of the technology and infrastructure you have to put in, the objective obviously has to be that you go into the 21st century. The 20th century has passed us by — certainly in development projects when you plan in the lead times.... So, you need new technologies for the specific needs of the area which you are trying to develop....

Here in the United States we have *the* advanced country of all the advanced countries. We created a nuclear resource we were very proud of and said no one could imitate us.... Hans Bethe once told Ed Teller that no one in the Soviet Union could figure out the H-bomb, "because only a crazy fool like you could have come up with it...."

But then we went to town and we had Senator McMahon who was very much worried... (Bernard) Baruch was hitched on by (Dean) Acheson to create these beautiful plans about... "sharing," not developing. All of this was a bunch of nonsense. I feel very happy saying this and adding that I predicted so at the time, and got into trouble with the great brains of the *Bulletin of Atomic Scientists*....

The house that Senator McMahon built... was a monopoly. While it was not 100 percent a monopoly and while the monopoly was subject to interference by the government and by Congress... the bureaucracy dominated the field where the decisions of the agency were made on the development of nuclear power. It didn't work because monopolies don't work....

We have, nevertheless, succeeded in getting some things started, among others, the peaceful atom. It wasn't developed in the AEC, which was run at that time by Mr. Lilienthal, who had been put in charge of the AEC because he was the fellow who developed the notion of the TVA and also the Jordan Valley Authority, which was supposed to be the Middle East counterpart of TVA. Now Mr. Lilienthal couldn't care less about the peaceful atom....

Then it turned out that... the Bureau of the Budget... suddenly started to cut production of fissile materials on the specious grounds that we have... enough bombs to bomb them twice, so you don't need any of the element at all. Just close down all these facilities, including the labs.

We were in dire need of an argument. So, we developed the argument: "for heaven's sake, we are adding to our coal reserve and our oil reserve, we must add to our nuclear resources... Let's build power

stations." The AEC told us: it's not economical. We fought this under Truman — fights over insurance rates which were suddenly set so high that it couldn't be economical; there were statistics that were phoney.... Most people with whom you talked walked out of the room. The AEC fought a battle against this.... Lilienthal left.... Finally, we briefed every secretary in the Pentagon... about twelve people, and every one said "yes, that's a good idea, we should go that route." Secretary Lovett, who was one of our better Secretaries of Defense, ... went to Harry Truman and said: "Mr. President, your regime began by dropping the A-bombs on Japan, maybe you can correct this a little bit...." Truman said, "I don't want to hear anything about this...." That battle was lost....

We had an ally in all this... Lewis Strauss who was a confidant of Eisenhower. So, when Ike came in, we got over there and said that such and so could be done. Ike understood this because he is an old military man; he understood these connections. We wrote a nice speech — Struass did — and Ike sat down and corrected it, rewrote it in his own hand, a very rare occurrence for an American President.... Then he went and delivered the Atoms for Peace speech.

What is the story? The story is that we got across by some sort of ... conspiracy... to one President who just happened to be a little smarter than the others. That is an important thing to do. And it was sufficiently impressive for him that, a few weeks after he took over, he went to New York and he made the speech....

A few years later, we had a little argument with the Iraqis and made a landing operation in Lebanon. So Strauss, who at that time was the special advisor to Ike, said: "Mr. President,.. why don't we move forward in a constructive way?" Ike always reacted to this notion: We have trouble, let's move forward in a constructive way. What's a constructive way? Well, the Middle East needs water, so why not make a nice speech on the water situation in the Middle East and we can make proposals, not that we can provide the water... The fundamental notion is let's go in and move it. So we made a fairly big research effort on this one....

We prepared a speech in which the problem — underground water, desalination, power, and all that — was all put together, and Ike delivered it.... The fundamental recommendation was very mild, deliberately so. The fundamental recommendation was: let's set up joint research facilities to solve this problem for everyone.

Where do you think the opposition came from? The State Department and, of course, the other bureaucracies. Why? I haven't the foggiest notion.... Those sons of bitches walked in there to the President and gave him a piece of paper, when they were telling me they hadn't even worked on (the problem) for five years....

So... development today is held up in all countries by incapacity in the subject of development. Every single one of them, including the Soviet Union, which prides itself on the fact that it is "the great developer." If you have any doubts on the subject, just look over there at their agricultural successes....

John Causten Currey

Investment in new technology is absolutely necessary.... New technology for the most part is not available for the developing countries of the Middle East; it has to be imported....

You can't separate economic development in an area from peace; you can't have economic development without peace. I don't think there is anywhere in the world where they need both more than they do in the Middle East.

There are 60 million people in this tight little area we call the Middle East....Economic development is not going to come about because of any... single plan. It is going to come about because individuals are free to concentrate, to use their energies, free to cooperate and work together on a number of plans.

Maybe the plan we have here today will be the key one. It may be that only $70 billion instead of $700 billion will be available to do it. Maybe the idea for dropping Mediterranean water into the Red Sea will eventually prove feasible, it may be that we can dig a wider Suez Canal... but, it will all have to happen simultaneously. We are not going to have any one economic development plan that will solve all the problems at once, any more than we will have one diplomatic deed that will make all the people in the Mideast suddenly love and trust each other....

PANEL 3

The Cultural Heritage of Islamic Science

Dr. Parviz Morewedge

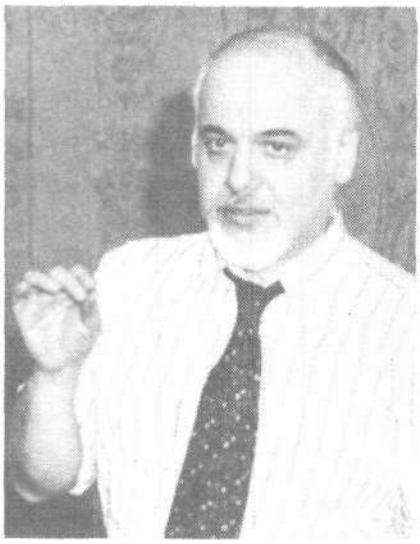
Dr. Morewedge completed his studies in philosophy, mathematics, and Near Eastern studies at the University of California at Los Angeles. He worked as a research mathematician and logician in the computer industry, and has taught at UCLA, the State University of New York at Binghamton, and Columbia University. He is now teaching and lecturing at Fairleigh-Dickinson University, the City University of New York, and the Center for Near Eastern Studies at New York University. Dr. Morewedge is also the Secretary-Treasurer of the Society of Islamic Philosophy and Science, and is the Coordinating Editor of the series, *Studies in Islamic Philosophy and Science*, and translated, with a commentary, the *Metaphysics* of Ibn Sina.

Criton Zoakos

Mr. Zoakos is a member of the National Executive Committee and Director of Intelligence of the U.S. Labor Party. A graduate of City College of New York, Mr. Zoakos has recently authored "Ibn Sina and the Dawn of the Humanist Heritage." He currently heads an investigative team studying Arab and Islamic culture and ideology.

Professor Ellis Rivkin

Professor Rivkin is Adolph Ochs Professor of Jewish History at the Hebrew Union College of Cincinnati, Ohio.



Dr. Parviz Morewedge

I would like to summarize some themes for the purpose of discussion afterward on one topic: possible isomorphisms between nonreligious philosophical tendencies in the Middle Eastern Muslim world and dialectical materialism....

I will focus on Ibn Sina, since some of you are interested in him. I am also assuming that most of you know about dialectical materialism, so I'll keep my remarks on that short....

Concerning the similarities, I would like to separate them.... First, the ultimate entities in the two systems... are explained not in terms of substance-event primitives, but in terms of processes...

Both types of philosophies emphasize collectivism; that is, they define self in terms of society, and society in terms of total humanity, rather than a kind of isolated ego or unalienable-right kind of individualism which is found, let's say, in Locke, Smith, Jefferson, and so on....

Nonreligious Islamic philosophy does not emphasize any kind of historicism, does not deal with any particular events in the world. But, in terms of Avicenna (Ibn Sina) at least, you emphasize necessity. That is a difference between Avicenna and Aristotle: We don't start necessarily from actual events of experience, but point out logical possibilities. It's important....

If we were going to depict a language for Marxism, we would explain the world in terms of processes such that temporal considerations are the essential bases in the language, and you have stages of dialectical development or class struggle, etc. You're all familiar with that.

In Islamic mysticism, in the theory of self or persons, you have the so-called stages of mystical self-realization.... You don't have any kind of natural law, any kind of static harmony. This is very much against the harmony theory of nature and the good.... The world is considered in terms of developments, and the persons developed....

Now what are the other kinds of languages? Well, for example, Aristotle talks about the world in terms of substances — first substances... of which space and time are a kind of measure of movement and place is defined in terms of the boundary of one thing contained in terms of another, and by looking at the world in terms of mere watches, chairs, and stones, instead of a river-like kind of entity.

...You see, Aristotelean language can be depicted in terms of Aristotle's categories, which assumes that the ultimate reality depends on the relationship of entities — such as quality, quantity, and so on — with the first substance. The ultimate things are particulars that are static to some extent.

Plotinus in the *Aeneids* rejected the notion of categories in *Book VI*. In Islamic philosophy, you have a language that deals with categories in the first part of the *Metaphysics*, and you use that until you have physical explanations. But, as soon as you want to work with mystical realization, happiness, and normative matters, you throw that out and bring in a language of analogies that actually *does* something. Language changes the world, it explains the world. You set up isomorphisms and you set up distinctions between movement in the stars or traveling, and so on. The Aristotelean substance-event language is used as a pragmatically valuable tool to explain physics. But, when you move to other areas, you bring process languages and you us Neoplatonic language.

That's very important because we have to understand one point about Islamic philosophy: Language is used as a tool to explain a content; language is used as a tool to change a person....

...So there's a difference between events and processes. Processes are defined in terms of the completion of a task, whereas events or tempos are fixed indices. Process languages are important in this sense. Two different processes can merge into the same process, like, in a love relationship, two different selves can consciously, behaviorally, or economically merge as a family unit, become a single process. Or, in certain cultures such as certain Arab tribes, the process is more of an activity of a tribe, not of a person. So the process language is able to explain certain societal terms better than substance-event terms. Avicenna and the Islamic mystics were more aware of this and *used* it — used language pragmatically to change the world, rather than to explain it....

Criton Zoakos

People have to understand... what is the Islamic mind, what is the Hebrew mind, and I suggest that Americans have to begin to understand what is the American mind.

Why is it necessary to bring these things out now? And what solutions do the propositions of Dr. Morewedge provide to the problems that emerged earlier in the conference? I have a long list called "controversies" that emerged throughout the course of the conference which were ever so gently and politely alluded to in some very friendly polemics....

Now let me illuminate a few of these friendly conflicts. Among certain business representatives, who were present and probably still are during this last panel, profound doubts emerged as to economic development at this point in time in the Mideast given the depravity of the population, an insufficiently educated labor force, and the bad infrastructure.... This is the American businessman who is concerned about investing, about profit margins, helping the place to grow, and so forth.

Our second controversy was among certain trade-union representatives who, from their standpoint, asked an exceptionally valid question. They said, "Look, are we really going to develop the Mideast, or are we going to set up another Taiwan with cheap labor to compete with American jobs. If you mean by development that you develop those guys so they eventually have American labor standards and American productivity, that's all for the good for us. That means it will create jobs for us here to export...."

A third... is the controversy between the gifted and rather impressive President of Averroes, Inc. and his fellow panelist Mr. Rabie. The controversy, as you may recall, was that Mr. Rabie had said that Saudi magnates and the various Arab banks are not interested in development, they are not investing, they are just getting their 5 percent.... He was attacking the local entrepreneurial class, had his complaints about the American multinationals, and some very noble statements about national self-determination....

The gentleman from Averroes, Inc., Mr. Taima, was very insulted, himself being an Arab entrepreneur... but later on put forward... a scheme that Middle Eastern industrial development should be different, should be tailored to local conditions.... He was very straight on the British question. He has the British Empire sized up and he attacked it several times in his way, but he accepted the parameters of underdevelopment and restriction that British domination imposed for approximately two centuries.... He was more or less unfavorable to the types, levels, and rates of industrial development that we want to impose there — the American way.

These are serious controversies.... There were also some controversies of the more interesting kind which arose not among two conversants or two fellow panelists, but within the mind of one single panelist. It had to do with the trials and tribulations of the Phillips curve and its relation to stagnation, inflation, the banking systems, and the rule of national banking....

I suggest that you take the proceedings of this room as a laboratory test case to begin to understand what is going on in the larger world outside — between Cairo, Jerusalem, Damascus, Baghdad, Teheran — to see the complexity of solving the problems of Middle East peace....

You see, the problem in Mideast politics is that there are many identities, ultimately, in terms of political solutions to a list of problems. There exist in world politics, psychological identities and national identities, which are as real as physical entities.... They seek to subsist, they seek to survive, they seek national expression.... This is no academic issue. People have shed blood and are continuing to shed blood.... People do die over questions of these identities. The emotions run extremely high; lines are drawn rigidly; there seems to be no solution....

Is there a solution to this? Is there a solution in this room, in the proceedings of today? Is there a solution to the controversies that emerged along the various participants here today?...

I suggest that "yes" a solution is feasible. The question is what human type is required to come to grips with these problems and provide the solution. What quality of human character is needed to address these problems and resolve them? And moreover, what is that kind of culture that creates such human types that are capable of coming to grips with and solving these heteronomic problems?

... I am going to talk about the fact that something occurred in world history through the seventh, eighth and ninth centuries of the Christian era which served as a demonstration that the possibility of the emergence of such cultures is embedded in the human race, that such cultures have existed.... I am going to use that fact, the fact that the Islamic High Renaissance occurred, to demonstrate that certain gains have been made in the soul, in the identity of the world of Islam which are indelible in character. Although dormant today, they represent the potential for providing the base for a solution to the problems we face in the world outside in the Mideast.... And there are political reasons why its dormant: because of pernicious forces out of the City of London who have systematically worked for approximately 200 years to keep them dormant.

The models for economic development, the models for political organization, and the models for cultural activity and cultural identity that motivated the Founding Fathers of this nation were recognized by those Founding Fathers to be direct and immediate products of the Islamic Renaissance. Before the Founding Fathers, this was the case of the Puritan settlers in New England, this was the case of the Pietist settlers in Pennsylvania, this was the case with William Penn himself, with... Cotton Mather.... Avicenna's works, Averroes's works, Al-Kindi's, and Al-Farabi's works were all in those people's libraries in New England, among the Puritans; the same phenomenon, with more sophisticated ramifications, in Pennsylvania. These two places, these two states, were basically the ones that provided the core intellectual, military, political and economic organizers of the American Revolution. Benjamin Franklin knew this very well....

This tradition is carried by Mathew Carey and Henry Carey into the Whig networks in the 1850s and 1860s which organized a world-wide counterconspiracy to the so-called free trade movement of Jeremy Bentham, the Millses, Ricardo, and Smith. The so-called free enterprise theory of capitalism of Adam Smith is *un-American*.... This was the first attempt of the British after their defeat in the Revolutionary War to destroy American industry's chance of getting off the ground, because free trade meant no state support for the then-budding industry.... Eventually it had the net result of extirpating these traditions of unbroken continuity that join the American Republic, the American promise, with the height of achievement of high Islam... This tradition for scientific, technological, industrial excellence that came to the shores of this country was started in Islam....

Now, in the Middle East we have the same thing. The gains that were made by the Islamic peoples are indelible. They are there somewhere in the depths of the present misery....

Islam, what does Islam mean? It means submit your particular heteronomy to the universal. Illuminate your particularism, your heteronomy to the higher universal cause of humanity. This is the literal meaning of Islam.... That is the fundamental value judgement of that society, which is the highest achievement of 3,000 years of human struggles. That's what you have.... What you do with it is another story. What you are forced to do with it, however, is another story yet, because that's where British intelligence comes in....

We are going to be getting the news day after day from CBS, Reuters, and UPI telling how bad things are turning out in the negoitations. Then the Russians may do something to open up a new flank. And then what?... It looks absolutely insoluble forever....

When you see these disasters (and I mean it for very well qualified and documented reasons) in the Middle East, you see the pawprint, the end result of British intelligence. Now, if you do not come to grips with this fact, you are going to be confronted with a world that makes no sense, that is incomprehensible. If you extract the role of British intelligence and their American collaborators in the Middle East today, then you are confronted with an absolutely inexplicable world, which is going to depress the Hell out of you.... It's leading us to Armageddon....

However, once you recognize who's causing all these troubles, you arm yourself with weapons to counteract what is going on there.

There are certainly very, very negative cultural traits in contemporary Islamic society.... They all go back to the beginning of British penetration of the area in the mid-17th century. Several of the more reactionary traditionalist Anglophobes of Islamic religious practice are directly financed, funded, and cultivated by British intelligence. This has been going on for quite some time; going on since before the time of St.-John Philby, the father of this British intelligence agent that infiltrated the Soviet apparatus; even before Sir Richard Burton, who was one of the key British intelligence operatives for the Middle East.

British intelligence did a massive psychological profiling job throughout the place, and on the basis of that psychological profiling job they decided on a course of action. They decided to cultivate certain tendencies, strains, which tend to accentuate the separateness, the otherness, the difference of Islam from other people. This creates a fundamental conflict in Islamic consciousness — Islam being submission to universality. How can you develop an identity that is separate from others? You are different from the West? You are different from the industrialized nations? We can't industrialize as fast as you Americans want us to?...

How about the Israeli side? All you have to do is just look at who signed the Balfour Declaration. It was Balfour; let's leave it at that.

So, there is massive British manipulation on the Israeli side too.

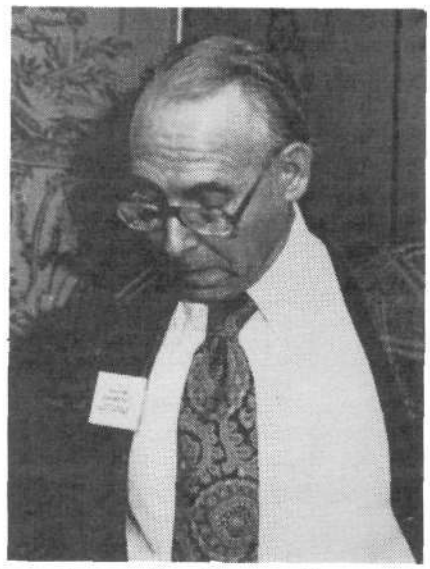
What's the objective? The overall strategic objective of the British Empire is to bring American industry to its knees. Their tactical objectives in the Middle East are tailored, are designed, to bring this ultimate effect about. If you perpetuate conflict in the Middle East, what happens? Given the material,economic, and energy realities in the Mediterranean, you screw up the West European industrialist tendencies who want industrial development and who tend, day after day, to link up with American industrialists and put together a world-wide international industrial development program that is going to get us out of this mess....

If you want to have an inflammatory situation in the Middle East, you... have to lock America and Russia into a Cold War mode perpetually, you have to block American-Soviet industrial cooperation. Second, you have to maintain a Damocles sword over European and Japanese industrialists.... All the City of London has to do is what it did in 1973, and jack up oil prices another 400 percent....

So this cockpit of history, the Middle East, is right now one of the key elements that the British Empire is using to bring American industrialism, the American System, to its knees and transform it into a miserable zero-growth, pot-smoking, heroin-injecting, literally dying civilization.

The Middle East is playing a nodal role in this strategic plan. You don't recognize this? Then, there is no way we are going to have Middle East peace and development....

This beast of London has to be destroyed. The job was not completed in 1776. It has to be finished. It was not completed unfortunately during the American Civil War. It has to be completed. This is the role of America. This is what America is made for. This is the raison d'etre of the United States: Destroy Britain. This way you are going to have Middle East peace.



Professor Ellis Rivkin

The spiral of development derives from the existence of a developmental frontier which, by moving every two or three years to new levels of technology, is compelled to release the former high technology to societies that are on a somewhat lesser level of technological development. These, in turn, then release their technologies which were formerly high technologies to the level below and these, in turn, to the level below until it reaches out to the very dregs of humankind. This draws them on to a spiral of continuous development upward and onward so long as this developmental frontier is continuously energized by the innovative creativity following from the infinite possibilities lying within the law of nature itself.

As a consequence, for this spiral of development, imperialism becomes totally obsolescent.

At the end of the 19th century... access to new technologies led to hoarding, led to the nurturing of underdevelopment, with the hoarding societies literally precluding access to these new technologies to the lesser developed. Great Britain — even before MI-6 — as the exemplar of that hoarding mode, did not allow steel technologies or any manufacturing to penetrate into India. As you will recall, Britain's treatment of the Middle East and its treatment of the mandate of the Jewish settlement at that time was... obstructive of industrial development.

What we have here is an antithetical kind of development, where the older technologies that were built on previous technologies generate imperialism and, therefore, could allow Lenin to extrapolate this as the necessary stage of capitalism. Tapping the laws of nature... yields the necessity for the dissolution and dismantlement of imperial systems because of their utter unprofitability. Put another way, the profits that lodge in development, simply mock the petty profits that existed in the nurturing of underdevelopment.

It so happens — and I just want to throw this out in the way of a parenthesis — that the British policy of restricting industrialization in the Jewish settlements and in the mandate in Palestine yielded... a high-technology agriculture. It is because Israel has this high-

technology agriculture that when it moved into industrial development it basically had an infrastructure that the rest of the Middle East and the rest of the Third World so desperately needs. The major reason the underdeveloped world is bogged down in the way that it is is that the agricultural structure is still rooted in traditionalism and still nurtures the landed classes who, far from becoming poor through underdevelopment, find underdevelopment the continuous source of their wealth. Consequently, they will fight to the very end unless development moves in and compels a radical restructuring and brings in high technology to the land and high technology to the cities and the factories.

...It was historically American capitalism — and no other capitalism — that made this decisive breakthrough.... For years, the term "capitalism" has been used as though every kind of capitalistic enterprise is equivalent to every other kind of capitalistic enterprise. In actuality, capitalism is a house divided between nation-state imperialist capitalism, which is nurtured by underdevelopment, and developmental capitalism which is nurtured by development. Only American capitalism broke through to the developmental levels....

The United States, necessarily feeding on development, is compelled to try to energize the developmental spiral. What obstructs this spiral is not its possibility but the existing structure of underdevelopment which is there as an obstacle which does not yield readily to the good news that there no longer need be poverty, hunger, or exploitation. The good news for the wretched of the earth is the worst possible news to those who thrive on their wretchedness....

KEYNOTE ADDRESS

America and the Arab World

Dr. Clovis Maksoud

Dr. Maksoud was born in Lebanon and was trained in law, serving as an attorney in Beirut. From 1961-1966, he was a visiting professor at the Indian School of International Studies at New Delhi; he also served as the Chief of Mission, League of Arab States, in New Delhi. In the past, Dr. Maksoud has served as a Senior Editor at *Al Ahram* and *An Nahar*. In 1974, he was named Special Envoy of the Arab League to the United States. He is the author of many works, including *Crisis of the Arab Left: The Meaning of Nonalignment*, and various articles in leading journals. Dr Maksoud is presently visiting scholar at the Center for Contemporary Arab Studies, Georgetown University.

Dr. Clovis Maksoud

...We are, at this moment in history, finding that the Mideast has been unfolding many develop ments. I myself happen to be an Arab, and I would like to communicate to you as much as possible how recent developments affect us and thus affect the world situation.

To a very large extent, we Arabs are at this moment a rich nation of poor people, and this is the fundamental challenge for us. We seek to join the 20th century hopefully *during* the 20th century. This inevitably means that we have to expedite the rate of progress and the functions of transformations of our respective societies....

In our search for internal, integrated ideological direction to set ourselves free from the polarization which we faced in the aftermath of the Second World War,.. we have adopted, in one form or another, a policy of nonalignment.... Nonalignment was to us a form of *alignment* with the rational, progressive, dynamic, humanist, modernist forces within both blocs....

Our view of international development is not necessarily in conflict with that in the U.S. or in other parts of the industrial world. But, it is different. It is a variant. It seeks to dovetail, if that means world peace. It seeks to confront, if it means the undermining of our independence and unity.

To this extent, the Arabs have played a relatively constructive role. It is not an adequate role.... However, Arabs have to be understood in manners that perhaps many other nations in the developing world have not been. On the one hand, our nationalism is a concept which is functional and not ideological. It is functional in the sense that nationalism to us was a vehicle to assert our equality in the community of nations and not to assert our distinction from the others.... And, to that extent, our nationalism is... humanist in content. It is, in a way, a function of spreading internationalism in the Arab world. To that extent, nationalism and internationalism complement each other, when nationalism is perceived as functional and not as ideological. This, however, did not come to us in a very easy manner....

We find that the Arabs, at this moment, are faced with the dilemma of a conflict which has been brought into their midst: the Arab-Israeli conflict. I do not want to paraphrase the past, because I think it is necessary to attempt to spell out a credible future. That is why, when I say that we are a rich nation of poor people and we seek to expedite our transformative factors, our interest in peace is not only an ethical requirement of our humanist tradition. However important that might be, our interest in peace is equally a pragmatic necessity to bring about the transformation in our midst....

At this moment, the United States has been delegated a role in the Middle East conflict which, however much it seeks to act as impartial, has not been functionally and operationally as impartial as it ought to be.... There is a fundamental difference between commitment to the state of Israel and commitment to the objectives of Israel. If this discrepancy is not removed from the present diplomatic posture, then all the efforts of the United States will become counterproductive.

Furthermore, there has arisen in recent years a fundamental grievance of the Palestinian people, people who have been forcibly removed from their homeland.... Irrespective of the rights and wrongs, there has been a fundamental realization on the part of the Palestinians, as well as of the Arab people, that the state of Israel has been the product of a crisis of Western civilization.... In the post-World War period, with the crisis of basically Christian conscience of Western civilization,.. Zionists told the West, "We will absolve you of the guilt for your practices against the Jews provided that you in the West will absolve Israel of the guilt to the Palestinians and to the Arabs." It is this mutual absolution, a very Catholic term, at the expense of the Palestinian people being uprooted from

their homes to accomodate the new formation of an Israeli state, that remains a fundamental block in the psyche of the Arabs. When this is compounded by an American official and consistent Israeli "Palestinian blindness" — like color blindness — then you come to the crux of the whole issue....

In the aftermath of this,...we were faced with a situation: do we insist on being consistent with our perceptions, which I have just spelled out, and thus irrelevant in contemporary world politics; or do we become relevant at the expense of our consistency. This was our subsequent dilemma. If we want to become relevant with the given balance of power or balance of superpowers, then we have to submit to the dictates of the Israeli potential in the Middle East. But, if we want to be consistent, we would have to reject outright any existence of Israel as a structured state in our midst....

This is what has been called "the psychological block"....

In the two months since President Sadat went to Jerusalem, there have been new vistas opened and then suddenly closed, as we have witnessed in the last few days.... Prime Minister Begin underestimated the resilience of Egyptian commitment to its natural role in the Arab constituency. President Sadat thought just because he dramatically went to Jerusalem, breaking the psychological barrier, he could also break the barriers of the (Israeli) settlements, of the denial of Palestinian rights, of the occupation of Arab territory, and all that. Well, this simply was not so.

And the United States, the major superpower involved in the negotiating position, thought that by coming out of every meeting saying "the negotiations and meetings were constructive" that they were necessarily constructive. This is called constructive ambiguity....

President Carter, at one stage, began reluctantly to spell out the outlines of a settlement. He realized that step-by-step diplomacy was an exercise in disjoining the Arabs from each other. Well, the man who did the step-by-step happens to be my next-door neighbor at Georgetown University.

(Please don't phone me because my phone might be bugged!)

So step-by-step was replaced by comprehensive settlement. The nickname for the comprehensive settlement became Geneva.... Then, everybody realized that you can't ignore the central issue of the Middle Eastern crisis, namely the Palestinians. So, there was a need for a Palestinian homeland. But the constructive ambiguities were not to say where it is. Because if you say, "this is where it is," that's not clever and diplomacy is identified with cleverness....

If you want to bring a comprehensive settlement with the recognition of the Palestinian homeland in some form or another, then it is necessary that this Middle Eastern crisis, as explosive as it is, should not be discussed in a way that would accentuate the Cold War in the area. Hence, the Soviet-American joint statement....

The joint statement between the Soviet Union and the United States is not really an acceptable framework for the Arabs, but it is something that the Arabs can live with. This is important. This is a concession to the practical realities because we feel that we would rather have our Middle East crisis resolved in a manner that might help detente than accentuate the Cold War....

So, the crucial matter about peace in the Middle East is that we have to come to the framework of resolving this without accentuating the Cold War. We have to recognize the national rights of the Palestinian people in a homeland within the framework of the accepted modalities of mutual recognition of each of the Arab states and of Israel. At that moment, the people in Israel — when they get out of the ghetto garrison state fixation — can help with the Arabs in expediting the ultimate ends of the peoples in the region and of the Arabs: rapid transformation, joining the 20th century during the 20th century, so that there is no more a hierarchy between the North and the South or between Arab and Arab, but an investment in human equality. Only through equality can you achieve a quality of man conducive for continued peace.

At the Frontiers of Scientific Progress

The Fusion Energy Foundation was founded in November 1974 at a New York City meeting attended by representatives of the U.S. Labor Party, the United Nations and the International Atomic Energy Agency, as well as scientists who have made leading contributions to fusion research, and interested laymen.

The purpose of the Fusion Energy Foundation is to promote the rapid development of fusion energy — the cheap, safe, and nearly unlimited source of energy now within the reach of modern science. Since its inception, the foundation has led a campaign to secure government funding for a crash-basis program of thermonuclear fusion power development, drafting legislation and testifying before congressional committees to this end. The foundation has emphasized that cooperation between the scientific communities of the two nations in the lead of plasma physics and applied fusion research, the U.S. and the Soviet Union, is essential to the solution of the global energy crisis.

In the spring of 1977, the FEF issued a national call for the repeal of the antitechnology National Environmental Policy Act of 1969. The NEPA legislation was identified as the main weapon of the Naderite environmentalist campaign to sabotage high-technology U.S. industry, particularly the nuclear energy sector.

In the forefront of the battle for scientific and technological progress for more than three years, the FEF has become the authoritative source in independent evaluation of plasma physics and fusion research, has sponsored research in these basic areas, and has assembled a group of scientists and engineers who publish and lecture on the breaking developments in science and technology.

The foundation also promotes important research and development in all significant areas of high-energy research and technology, including MHD coal use systems and advanced industrial methods such as the Jordan Blast Furnance Process.

In May of 1977, a Fusion energy Foundation Biological Sciences Division was formed to promote research into "nonlinear" biological processes.