

TRANSCRIPT OF MOSCOW TELECAST

This discussion was taped on June 24, 1982 in Moscow, and was aired on June 26, 1982 on Soviet National Television. It was rebroadcast in the Soviet Union on June 30, 1982. Participants were:

Dr. Bernard Lown
Dr. James Muller
Dr. John Pastore

Dr. Eugene Chazov
Dr. Mikail Kuzin
Dr. Leonid Ilyin

International Physicians for the
Prevention of Nuclear War
225 Longwood Avenue
Boston, Massachusetts 02115
(617) 738-9404

FOR THE PREVENTION OF NUCLEAR WAR

CHAZOV: Dear television viewers: Today, we present to you as Soviet and American scientists and physicians working together in the movement, International Physicians for the Prevention of Nuclear War, an open discussion about the goals of our movement. The basic purpose of this movement is the preservation of life on earth. We must work to preserve life because nuclear weapons have accumulated on a gigantic scale, and because the threat of a nuclear catastrophe exists. I would like to introduce to you the participants in our discussion: our guest, Professor Bernard Lown, Professor at the Harvard University School of Public Health, a cardiologist and President of International Physicians for the Prevention of Nuclear War; Professor John Pastore, Associate Professor at Tufts University in Boston; Professor James Muller, Assistant Professor at Harvard University. The Soviet participants are Academician Mikail Kuzin, Director of the Institute of Surgery of Vishnevskovo; and Academician Leonid A. Ilyin, Director of the Institute of Biophysics, and President of the National Commission of the Soviet Union for Radiation Protection.

Dear Bernard, perhaps you could say a few words of introduction regarding our movement and the participants.

LOWN: My colleagues and I are privileged and delighted to be able to address the people of the Soviet Union in this completely uncensored and unrehearsed television broadcast. At first we must express appreciation to Academician Chazov, my old friend Eugeny. I don't mean he is very old; I mean friendship of long standing. Eugeny, who in the midst of this historic congress of cardiology, which he is hosting, with 4.5 thousand participants all over the world, thought this issue was so vital that he took the time and energy to make this television appearance possible. Among the six of us sitting around this table, there has grown a deep bond of enduring friendship because we know that we need each other to help contribute to the prevention of death and destruction of our families, our children, our culture, our countries, the very civilization of our little planet - everything that a human being holds dear. The multiplying stockpiles of nuclear weapons with ever-increasing destructiveness threaten us all with an unimaginable catastrophe. We are held hostage by an accelerating arms race; a war without winners that endangers not only our survival but the very fragile ecology of our planet. Physicians' activities, as you well know, are compelled by the growing conviction that nuclear war is the number one public health problem in the world today...facing us all...and perhaps constitutes the final epidemic for which the only remedy is prevention. This analysis, which we reached a number of years ago, occasioned the writing of my good friend with whom I collaborated for many years in cardiology. It is interesting that our mutual involvement in sudden cardiac death was what actuated activities of our effort: when it became clear to both of us that the major sudden death we face is not cardiac, but nuclear. And when I wrote to you, (Chazov) you immediately responded. You said, "Of course we must cooperate." And then we met in Geneva just two and one half years ago...

CHAZOV: Yes, I remember.

LOWN: You remember. Jim, yourself, myself, and Eric Chivian...we met at that meeting and for two days we discussed, and we reached a meeting of minds. If only governments could agree so readily, as we physicians have; this would be a much better world in which to live. So from that little seed that we planted grew a mighty movement in only two years. We now have more than 30,000 members, we have participants of numerous countries, and by our next congress we'll have a good part of the world's physicians with us.

CHAZOV: Yes, I'm sure. Bernard, I have one question among other issues. I would like to say that all of us that are in this movement - that is - people that are of different political, religious views, different nationalities, are working together to preserve life on earth. But each of us has come to this in a different way. Now we all always remember, when we think of nuclear war, Hiroshima and Nagasaki, which were the first uses of nuclear weapons - the first threat of these weapons. I know that Professor Pastore has been busy studying this problem, and I think that he will be able to tell us how he came to join this movement, and what led him to us.

PASTORE: Thank you very much; you are right. I became involved with this movement through an interest that was sparked by the work that I did with the Atomic Bomb Casualty Commission in Hiroshima and Nagasaki, Japan. As you know, it's a joint medical endeavor that was sponsored by the Japanese and American governments and is a medical endeavor to identify the delayed effect of radiation on people and, where possible, to treat them. We have a short film which is relevant to the Hiroshima-Nagasaki experience and if we could begin to see that now, I'll explain what happens there...

CHAZOV: With a small bomb...

PASTORE: (Narrating excerpts from the film, "Hiroshima-Nagasaki 1945".)
With a small bomb...as a matter of fact, as you know, I'm sure, the explosion over Hiroshima was only a 12.5 kiloton weapon, and the one over Nagasaki which, as in this picture, (film running) was a 22.5 kiloton weapon. They were both air bursts and the relevance of that is that there was very little in the way of fallout; a ground burst involves more fallout. This picture of Hiroshima after the bombing, taken only a few days later, shows the tremendous devastation of the entire city in spite of the fact that it was only one bomb...there were buildings and department stores previously standing in that place before then. If one looks closely one might even see an occasional person walking along the street, but it was utter devastation. These shadows left down the street were left - this one by a person who was standing there and was vaporized when the bomb exploded. The medical capability was almost entirely destroyed in both cities - about eighty percent of doctors and nurses were killed immediately, and the hospitals that were left over were very primitive, and the doctors themselves as sick as the patients. Many children, of course, received serious burn injuries as immediate effects. The fatalities in the two cities were approximately 100,000 immediately. But several months later another 100,000 people died of more delayed effects: burns and infection were the main problems of those who survived the blast itself. In this case you can see the marks left by clothing (referring to film), and here there is a severely burnt patient being treated. Dr. Kuzin will speak about burn problems with nuclear explosions later.

PASTORE: This person obviously sustains severe injury to the face. I mentioned to you that the doctors were destroyed. This is a Nagasaki medical hospital. There were 1100 doctors and nurses in the hospital before the explosion, but 892 were killed by the bomb. And I think, in our movement, this has been one of the main themes: That there can be no reasonable medical response to nuclear war because the doctors and hospitals would be destroyed.

LOWN: I want to turn to two very important developments which account for the foreboding conclusion that we doctors have held: that the present course of the nuclear arms race leads inexorably to nuclear war. There are two factors. John pointed out that the Hiroshima bomb was only about 12.5 kilotons. That was carried by one plane, but that was equal to a one-thousand plane raid of World War II. At the present time we speak of megatons, which is still a thousand-fold greater than kilotons. The arsenals of both superpowers now contain 50,000 bombs...

CHAZOV: That is, we have a million such bombs which annihilated...

PASTORE: Actually, the figure is that we have the combined destructive capacity of one million Hiroshimas.

LOWN: But 15,000 megatons, which is accumulated now - to provide a conception of it, is WWII, which I don't have to tell the Soviet people who know so intimately, the meaning of WWII. WWII was equal to three or four megatons. Now we have 5,000 WWII possibilities, and if we have a WWII every hour, this can go on for 200 days uninterrupted morning, noon, and night, of such bombing. It's as though there is no moral break on the arms race. For us physicians it is like a cancer cell which multiplies because it has been genetically programmed to do so; because it can do no other. And this very massive arsenal creates the preconditions for a nuclear catastrophe.

CHAZOV: Bernard, I think it is very important to relay the message that the horrors of Hiroshima and Nagasaki are incomparable with what might happen to humanity today. I believe that one of the tasks of our movement is to study the precise scientific data concerning the medical consequences of such a war. And, as you know, Academician Ilyin is one from our group who is specializing in these questions. I would like to ask Leonid Andreovich if he would tell us the facts based on concrete scientific data about the consequences of nuclear war. Thank you, Leonid.

ILYIN: I would first of all in this presentation like to emphasize that the doctrine of so-called "limited" nuclear war, in my opinion, is completely untenable. Actually, the logic of contemporary military conflict with the use of nuclear and thermonuclear weapons is such that any nuclear war which might begin on a limited scale would irreversibly and rapidly escalate to a global thermonuclear catastrophe.

CHAZOV: I think we are all in agreement on this, as reflected in the Proceedings of our First Congress at Airlie, and at the Second Congress in Cambridge. All of the data presented indicated this.

MULLER: We like to say that thinking of a limited nuclear war is like thinking that the top third of a keg of dynamite will explode; only the top third! It's impossible. It will be a complete, total nuclear war.

CHAZOV: Yes, I agree with you.

ILYIN: As is known, from abroad there is not an insufficiency of various scenarios for nuclear war, including those for the use of a massive nuclear attack. I would like to bring the attention of our television viewers to the fact that for those of us sitting here, it is necessary to study the results of a specific type of nuclear attack, so that we would be able to evaluate this in a quantitative sense.

CHAZOV: Therefore we have picked a scenario, a hypothetical scenario for scientific study.

ILYIN: As an example, we have taken an American scenario, which was published in 1975 by a group of American specialists. The publication was entitled "The Long-Term Global Effects of The Use of Nuclear Weapons". In this scenario, it is proposed that the two opposing sides - that is, the Soviet Union and the United States - exchanged 10,000 one-megaton bombs. It is further assumed that this attack is on the latitudes from 30° to 60° of the Northern hemisphere. So that our viewers have the possibility of imagining what this would be, that is the sum of 10,000 megatons. I would like to give one concrete example. Ten thousand megatons in its capacity, is equivalent to 800,000 such bombs which, on the sixth of August in 1945 devastated the Japanese city of Hiroshima; about which my colleague Dr. Pastore already told you. I would like also to take into account that our Second Congress which was recently completed in Cambridge, England, took on the task of estimating the consequences of a thermonuclear global conflict for the calculation of the European continent. Upon answering your question, I would like today to describe what might occur to the population of the continent of Europe if such a sum of weapons fell on the territory of Europe, which comprises only ten percent of that capability - that is, the capability of 10,000 megatons.

LOWN: Leonid, when you speak of Europe, what do you include?

ILYIN: We conclude, and here we do not make any kind of discovery, that the European continent extends from the Atlantic Ocean to the Ural Mountains. We are judging this continent without taking into consequence any state and any national borders, and have divided it into five regions. Half of the thermonuclear explosions - half of the 1,000 one-megaton bombs - would be exploded over the five hundred largest cities of Europe with populations greater than 100,000. The remaining, that is the other half, 500 bombs with one-megaton capacity, would be equally distributed as ground-bursts rather than air-bursts over the entire territory of the European continent. Finally, I would like to describe the results of this.

CHAZOV: ... the medical effects...

ILYIN: The medical effects which we will demonstrate. I'd like to remind the television viewers and my colleagues sitting here that, on the basis of our calculations, we have arrived at numbers which only relate to the direct effects of wounded and killed people from the four effects of a thermo-nuclear explosion, that is: the blast; the immediate radiation, causing burns; the ionizing radiation; the radioactive fallout.

ILYIN: And I must say that we did not study, and in principle, science cannot quantitatively take into account what we might call unquantifiable effects of the nuclear war connected with the tremendous decrease in the quality of medical care, due to hunger and epidemics. This other question we will continue to study -- the illnesses and others.... Therefore, the presentation here is a lower boundary of the evaluation. This tablet shows the expected number of deaths from the population of the European continent as a result of nuclear blasts of 1,000 megatons. I would like to bring your attention to the resulting data: it means that it is clear that 314 million inhabitants of Europe would die in such a hypothetical attack. That is essentially one-half of the population of Europe, which is 671 million. 100 million people would be killed almost immediately; 68 million would die within two months as a result of radioactive fallout. Children, adults, old people, healthy, and sick people, pregnant women and fetuses still in the mothers' uterus would be affected.

CHAZOV: That is to say, Leonid Andreovich, that life in Europe would in general come to an end if such a nuclear conflict occurred.

ILYIN: Absolutely.

CHAZOV: And here we may discuss millions, but it is clear that in the case of such a catastrophe, Europe would basically cease to exist.

ILYIN: And I would also like to add the following comment. We estimate that in Europe, there would be 5 million pregnant women who at the time of attack would be awaiting the birth of their children with happiness and great expectation. More than half of them would be killed, and the others would be irradiated and would suffer from radiation illness. The number of injured, wounded and irradiated and those suffering from radiation sickness would be in the order of 150,000,000 people.

CHAZOV: And I would only like to add that if a nuclear war begins, the nuclear catastrophe would be world-wide, as we concluded at our First Congress. There will not be a safe place in America or in Europe. All the data which we have presented are well known to apply to other countries. In that First Congress we spoke about the results in the United States of America, in England, and in other countries.

ILYIN: All this data may be easily extrapolated to the United States of America.

CHAZOV: I would like to say that there is among us here one individual who has a very unusual history. None of us here has seen all of the horrors of war which he has seen. Michail Ilich lived through three wars. He has seen death and destruction and knows the problem of burns about which we've spoken already. He can tell us his impression about what medicine might offer in these conditions based on his experience -- his past. Perhaps we may now hear the thoughts of Dr. Kuzin on this.

KUZIN: Thank you. To speak of medical care during any war, we must always consider the number of wounded and the conditions under which medical personnel must work: the medications available, the hospital beds, etc... We talk about total war in Europe with 150 million wounded. This is incredible to try to imagine. Is it possible that a physician or any person might be able to imagine, that in a period of several days,

or one day, that such an enormous number of wounded could be treated, could receive medical care? In Europe so attacked? If we speak of care, we must think first of all of who might give that medical care. If there are 150 million wounded needing medical care, those people who could give the care would be considerably lowered in number. There will be only 100 million such people. Because of the 314 million living, two thirds will be old people, children and women not able to help. In a similar manner, we must calculate 100 million Europeans must give care to more than 150 million wounded. This is impossible. At the time of the 2nd World War, the calculations were such that for one medical worker in a hospital, there would be two to three wounded. And at the time of a nuclear catastrophe, as might occur in Europe, it is the following...

CHAZOV: Not only in Europe.

KUZIN: In any place. And therefore the situation will be extremely difficult. There is a second consideration. 70% to 80% of the physicians will be killed, as Dr. Pastore told us occurred in Hiroshima; the hospitals will be ruined, the pharmaceutical agents will not be available. And all of this will create extraordinary difficulties for the provision of medical care. In the majority of cases, we are in agreement with what Bernard said as a specialist in sudden death, and as a cardiologist: that such care will be on a most primitive level.

LOWN: Yes.

KUZIN: And that is to simply reassure or bring something to a patient. To provide care as one might under peaceful conditions will be difficult. And furthermore, the number of wounded - approximately 20% will be wounded and irradiated, and will require anti-shock treatment and transfusions of blood and antibiotics. There will be little of this material available. If we extrapolate from Hiroshima, the need for blood there exceeded the production of blood in the United States for a year. That is, in a period of a full year, the United States had available less blood than was needed in Hiroshima during that period.

CHAZOV: Therefore, if we approach this problem practically, we conclude that medicine will be without strength to help.

LOWN: I would like to comment. A number of years ago, we conducted an analysis of a hypothetical nuclear attack on Boston. Out of 2,875,000 people, a million were killed outright. A million were fatally injured and 500,000 were injured and survived. But, of doctors, of 6.5 thousand doctors - only 10% remained alive. And then we figured out: if a doctor spends 10 minutes with each patient which is, of course, an absurd assumption, he would be able to see the first patient again in 12 to 14 days assuming he worked 20 hours a day. Now, this is as you said, without blood, without x-ray, without diagnostic equipment, without communications... Let me give one example...

CHAZOV: Yes, please.

LOWN: ...of a burnt child that arrived at one of the Boston hospitals. This is a picture of a burnt child (shows photograph) that would be very common

LOWN: in a nuclear attack. This is a 70% charring of the body. And this child required packed red cells, platelets, albumen, frozen plasma, antibiotics, and two teams of doctors working twelve hours. It took a year to work on this one child and, eventually, a miracle of medicine. The child recovered, a bit crippled, but...

CHAZOV: That certainly is terrible.

LOWN: You see, this cost 300,000 dollars - a year's work. But in case of a nuclear attack over one city, we would generate more burn casualties by a factor of 50 than all the burn beds available in the United States. And this becomes an absurdity that those who talk about a nuclear war have not considered. There is no medical response, not because we doctors are disinterested, but because nuclear war makes doctors irrelevant.

CHAZOV: (speaking in English) Bernie, I think we have some question different. It is a problem concerning the psychology, the problem of mistakes. (reverts to Russian) The outbreak of nuclear war might not be intentional. I know, Jim, that you have data about psychological aberration and about the technical problems that can lead to the horrors about which we have been speaking. It is difficult to believe, especially for those who are viewing this show in our country, that such horrors about which we are speaking can actually occur. But, you know, please, perhaps you can tell us...

MULLER: I would like to talk about that, because I think most people, when they think about the horrors that we've been discussing, have a tendency to say: "It will never happen. No one will push the button." And I think that there is an extremely important way that a nuclear war could start, and a very likely way ...that we need to talk about. And we have some medical reasons for thinking it might happen. That is an accidental nuclear war. And when you begin to think of this, you think of the enormous arsenals: 50,000 nuclear weapons in the world with computers controlling parts of them. And we know, from working in a hospital - every doctor knows that you can't trust the computer. When the computer sends out something - when it says that the patient's potassium is 20 - we say, "it's that computer again." I think most people in their common life have had a computer do something crazy to them... and they are involved with nuclear weapons. And there is a record already of errors in the computer systems of the nuclear weapons powers. So, a computer error could start a nuclear war. A human being could start a nuclear war by mistake.

CHAZOV: Have such mistakes occurred?

MULLER: Yes, there have been. There have been public reports of 150 mistakes with computers.

CHAZOV: 150?

MULLER: Yes, in an 18 month period - over 150 mistakes in the computer systems of the nuclear weapons arsenals. Well, aside from computer errors,

human beings make mistakes - we all make mistakes. But a mistake with nuclear weapons can end all of us. Then there is a problem which really concerns us doctors - of human aberration. As doctors, we treat people who have trouble with alcoholism, or with drugs, or have psychosis, schizophrenia. These are common failings of people, and normally they don't cause much trouble. But there are records now showing that every year there are at least 5,000 military personnel removed from work with nuclear weapons because of psychological problems. This includes drug abuse with drugs such as marijuana, heroin; it includes people who have severe problems with alcohol, with psychosis. You think of the people who work with the nuclear weapons. They are down in the ground; they have buttons there that control the fate of the earth. It's amazing that it is not a higher number...

CHAZOV: Jim, to have the life of humanity in one button...

MULLER: Yes,...I think it might lead anybody to drinking...these 5,000 people are not at first rejected from work. They were on the job working and were selected by doctors, identified by physicians as having these problems. So, they were already near nuclear weapons. So, people who say that the world could go on indefinitely with nuclear weapons aimed at everybody are missing the point. Sooner or later we're going to have terrible, terrible accidents. I've three things: I think that the risk of an accident is getting higher every day. And, it gets higher for three reasons. One is that these weapons are spreading to other countries, other countries that may not be as used to working with computers, who may not have as good a control. So, there's one - spread to other countries. Two: the counterforce; the development of aiming the nuclear weapons at other nuclear weapons shortens the time to decide if something is crazy on the computer or if there is a real attack. So, the time to solve these accidental problems is decreasing. And, finally, every new nuclear weapon we build adds one more weapon that can go wrong. It adds another crew in a silo that can have trouble. So, the world is moving toward a higher and higher chance of an accidental nuclear war.

LOWN: Also ...

MULLER: Oh ... I don't want to hear another reason . . .

LOWN: ... the time available gets ever extremely short if you are targeting weapons systems because you then either use your weapons or lose them.

MULLER: Yes.

LOWN: Therefore, you are increasingly relying on computers. And, in effect, we human beings are becoming marionettes of our own technology.

MULLER: Puppets.

LOWN: Puppets of our own technology.

MULLER: Doctor Lown has said that the bombs and the computers are in control. Soon there will be no human beings at all.

CHAZOV: Humanity becomes the slave of the computer.

LOWN: I want to say something that is a little break in our discussion. And that is that there has been much controversy about civil defense. Civil defense requires alot of investment of resources. Civil defense ...I am talking only of nuclear war. Initially we talked of shelter programs. But it's clear that the shelter programs in targeted areas will become crematoria with the exhaustion of oxygen from fire storms, accumulation of noxious gases. The next policy is - let's evacuate populations. But evacuating is insane. It makes an assumption that we know where the bombs are going to fall; it makes assumptions about their sizes; it makes an assumption about weather conditions; it makes an assumption about the wind which will carry radiation.

MULLER: Will the people evacuate?

LOWN: And will the people evacuate? But furthermore there are negative aspects. That is - it fosters a sense of hope for people that somehow there is safety in this type of measure. Lastly, it becomes a factor to promote nuclear war. You know why?

CHAZOV: Well, nuclear war will have no winners. We believe that nuclear war will be the death of humanity.

LOWN: But if any nation begins to evacuate its people, it means it's preparing to strike, so it invites preemption. Furthermore, if you evacuate people, the economic cost is enormous. Every day the United States, for example, would lose billions of dollars. It compels the initiation of nuclear war. And we physicians have concluded that the only remedy is prevention - not civil defense measures. And we doctors have endorsed that at Airlie House, and at Cambridge, and it's time we said so openly.

CHAZOV: Bernard, I would like to pause on another topic.

LOWN: We have a big agenda.

CHAZOV: Yes, but we have time. This is a question of the economic aspects of the nuclear arms race, and the tremendous burden for humanity. If we take, for example, medicine, what could we do for humanity, for the health of the people if we had the money which today is being spent on rockets? submarines? airplanes? I have presented on Soviet television the numbers several times. Only 10% of military budgets would be enough to feed all the hungry.

LOWN: The head of the United Nations, Perez de Cuellar, told us in a meeting recently that every day 40,000 children die of hunger - every day.

CHAZOV: And the other question, if we must talk, for example, the medical question: for the liquidation of malaria, it would cost half of one submarine.

- CHAZOV: And malaria would be eliminated from the world. I know you've made similar calculations, that you judge the cost of sudden death ...how much is lost on sudden death, and how much on arms.
- LOWN: Yes, you know all my life, I've worked on this issue and a simple calculation shows that we spend roughly about two dollars per victim of sudden death for research worldwide. We spend a hundred thousand times as much for weapons that may cause sudden death and a hundred thousand times as much as compared to what we spend on research. To solve the problems which in my mind are solvable right now, right now we could solve the problem that in the United States and the Soviet Union is the leading cause of death. As we are talking here, every minute in the United States and the Soviet Union, someone dies suddenly from heart disease.
- MULLER: And every minute the world spends 1 million dollars on weapons.
- LOWN: On weapons.
- PASTORE: And in terms of medical diseases that have been essentially eradicated already, smallpox was essentially eradicated from the face of the earth at a cost that is equivalent to five hours of the arms race.
- CHAZOV: I think it is clear to all, certainly, that is - to any clear-minded individual that if the money that today is being wasted on the arms race could be spent on education, medicine, culture - humanity would flower, and it would be to the good of all.
- LOWN: In the first letter that you wrote me in October 1979 (referring to Chazov), you sort of jolted me, because I was talking of the danger of nuclear war. You said, "Look Bernard, nuclear war is already claiming victims. The preparation is already claiming victims by the denial." Two hundred fifty million people have no housing in the world today and 300 million are unemployed, 550 million are illiterate, 700 million are undernourished, 900 million live on incomes less than 30 cents per day, and 2 billion have no access to sanitary water, which is the cause of 80% of all the illnesses in the world. I mean, this is a disgrace. This is obscene.
- CHAZOV: You know the program which the World Health Organization proposed. It requires 300 million dollars so that the world's population could have clean water. This would have enormous hygienic meaning. That is the meaning of money. I would like to speak of another issue. We have discussed the question that the horror of nuclear war, of a nuclear catastrophe, presents for us. We've discussed what might happen to our planet if a nuclear war occurs. We have talked with the people of our countries, the United States and the Soviet Union, in an open and honest manner. But I know that some consider us to be, to a certain degree, Quixotic. In several circles they consider us to be Don Quixotes who really have no hope of having an effect on people. But I think it's important that people perceive what is actually occurring. They might not always know what is evolving in each country. Dr. Lown, you'd like to say a few words.

LOWN: Doctors, by profession, are conservative. They are slow to reach conclusions. Medicine is an empiric science. We do not go overboard. We do not wear jeans and long hair. We think through, carefully, and the medical profession speaking out - and I can speak of the United States right now...three or four years ago, when the physicians began to talk, few listened. But now there are hundreds of thousands, millions of Americans listening. A week or two weeks ago, at Central Park, 800,000 Americans marched. These were not the rebels of society. These were bankers, writers, physicians, physicists - every walk of life from Alaska to Maine. From Boston alone, ten thousand people went. So it means that the doctors' movement - I don't mean doctors alone - but the doctors' movement, by speaking out about these facts we have just discussed, has alerted people to the fact that their destiny depends upon what they do. What the people do right now will determine the destiny of the world.

CHAZOV: Bernie, I remember you told me that when...

LOWN: You can speak English. I don't mind.

CHAZOV: Of course, but I do not speak only to you.

LOWN: Eugeny, I understand.

CHAZOV: Bernie, you told me that when you arrived in Moscow, you decided to find out how much the Soviet people knew about the movement, and you asked taxi drivers, "Have you heard of the movement?" And they all told you about our movement.

MULLER: Three out of four...

LOWN: Three taxi drivers out of four. Three fourths of the taxi drivers in Moscow had heard of our movement, IPPNW.

CHAZOV: As I thought, it is not difficult for me to appear on television to tell people that we must work for nuclear disarmament, because our nation has suffered war and knows its horrors. And, of course, they understand to what corners of the world our ideas are spread. Our people understand this very clearly. I think that our program today, which I'm certain will be seen by millions of people in our country, is unique. It is in harmony with their interests and with the struggle against nuclear weapons, against nuclear war. And I also believe that if all people realize, as we have, that the preservation of humanity requires a freeze and the elimination of nuclear weapons, then humanity can be saved. For this we work as physicians, as those who have taken the Hippocratic Oath. But people of all walks of life have come to the conclusion that they must struggle for the elimination of nuclear weapons.

LOWN: When you stand on the edge of an abyss, progress is not taking one step forward. Progress is stopping. Progress is stopping and then going back. We physicians at Cambridge said that the first step of the nuclear powers must be a freeze on all production, testing, and deployment of nuclear weapons and their delivery systems.

CHAZOV: And this, of course, was reflected in our Proceedings.

LOWN: This should be accompanied by mutually acceptable methods of verification. We, all of us, agreed on that. And I believe that we physicians must urge this, because this is the only sensible position in today's world.

CHAZOV: I think we have expressed ourselves clearly on these issues. I would say, in concluding our discussion today, that in both congresses we expressed the belief that war is not inevitable. War is not our inevitable fate. Humanity may prevent war. We believe that intelligent people are the more predominant on the planet. And we see that more and more people are joining us to work against nuclear weapons.

LOWN: And if we didn't believe that, we wouldn't be here, because we profoundly believe what human beings can create, human beings can control.

CHAZOV: Now, dear friends, we have decided to conclude our discussion with a message from American physicians to you, the Soviet people, and then a message of the Soviet scientists to the American people. Jim knows Russian well. I know English less well.

KUZIN: Yes, Jim, you studied in the first Moscow medical school, and you can speak Russian very well.

MULLER: I will try. Excuse my mistakes. I have had the opportunity to live and work in the Soviet Union through scientific exchanges. Today I would like to tell you about the thoughts of those of us who live on the other side of the nuclear abyss.

I studied the Russian language shortly after Sputnik. In 1967, I was a student in the first Moscow medical school. Dr. Kuzin, then a famous surgeon, was dean of the school. By chance, Dr. Kuzin, together with Drs. Chazov and Ilyin, became a founder of the group of Soviet Physicians for the Prevention of Nuclear War. In 1975, Harvard Medical School sent me to Moscow to conduct joint research with Dr. Chazov in the area of new methods of treatment of cardiovascular disease. I came to Moscow with my family. My children had the opportunity to attend kindergarten with Soviet children.

I know how the Soviet people suffered in war. Among the students who were my friends in Moscow, there had been a war death in every family. In Leningrad, I visited a mass grave for those who died from starvation during the blockade. The vision of pieces of bread left on the tombstone is etched in my memory. I also know that the horror of war is not just a memory for Soviet people. There is a persistent and even more horrifying threat of nuclear war that presently concerns the Soviet people. This concern is intensely felt as we sit in this Moscow studio with the nuclear weapons of at least four nations targeted upon us.

We Americans also feel the threat of nuclear war. We put our children to bed each night with the knowledge that nuclear weapons threaten each tomorrow. In my nephew's school in Detroit, 75% of the students

MULLER: report that the threat of nuclear war clouds their future. In New York, on June 12, there was an enormous demonstration for nuclear disarmament, as already said, in which over 700,000 Americans participated.

So, in both the East and the West we live in fear, and watch with darkest pessimism as the world moves inexorably toward nuclear war. Must this be our fate? Or do forces exist which can give our children the chance to live, and their children the chance to be born? Today I am optimistic because I believe such forces do exist. The very growth of technology, which has so abruptly presented to humanity the possibility of extinction, has also given us a powerful tool for survival. Scientific and technical progress has led to a massive system for exchange of ideas among people of all countries. This can facilitate a positive change in consciousness; a change needed for survival.

The Soviet and American people bear a special responsibility for the resolution of the threat of nuclear war. Fortunately, we have demonstrated an ability to work together for the common good. Dr. Lown, Dr. Pastore, and I are here for the World Congress of Cardiology, in which physicians from many countries work together against the common threat of heart disease. The friendship of Dr. Chazov and Dr. Lown, two of the world's leading cardiologists, led to the formation of the International Physicians for the Prevention of Nuclear War.

Forty years ago, Americans and Soviets worked together against Hitler. We must now join together against the far greater threat of nuclear war. The struggle is much more difficult than the struggle against Nazism. We must now work against the accumulation of destructive force which, in limited quantity, brought us security, but in unlimited nuclear quantities brings only insecurity. Nuclear weapons have shattered forever the relationship between destructive force and national security.

We who populate this planet at this moment, have a solemn obligation to all past and future generations. We must work to strengthen the ties between East and West, which are now weak and limited, and build these ties on a humanitarian basis. In such a manner, we can diminish our common danger. We must remember that human beings can not only destroy, but can live with kindness and love in friendship and peace. Let us together affirm these aspects of our nature. Let us together continue life on this small planet.

CHAZOV: Thank you, Jim.

To the people of the United States, we American and Soviet physicians are united by our concern for the future of peace on earth for life on our planet. We may differ in our views on many issues, but in one respect, we hold firmly to our common point of view. The continuation of the arms race, and in particular the nuclear arms race, threatens humanity with catastrophe. Never since World War II has the situation been so grim. Never before has the burden of the mountains of weapons that surround us been so harmful to the people of the earth; and evermore lethal and sophisticated means of destruction. Nobody must remain indifferent to the fact that militaristic propaganda is attempting to make people think that military might will continue in the future to be the most effective instrument of politics; that nuclear war is not only conceivable, but even advisable in certain circumstances, and

that one might expect victory in a nuclear war. To believe for a minute in the ordinariness of nuclear war, to believe that it would not result in anything extraordinary is to surrender to the mercy

CHAZOV: of those whose plans will turn our planet into an inferno.

We physicians, loyal to the oath of Hippocrates, know by virtue of our profession, the human tragedy of radiation sickness, burns and wounds, a nuclear war would create. We believe that everybody must know the truth about the real danger. Everybody should know what actually lies behind the talk about the plans for the use of nuclear weapons.

World War II took a toll of 20 million lives in our country over the course of 4 years. We do not want a repetition of such a tragedy, either for ourselves or for others. We are fully aware that another world conflict, were it to happen today or tomorrow would, in a matter of hours, destroy entire peoples and countries and throw in doubt the future of life on earth. As you know, the explosion of a single one megaton nuclear bomb over a city with a population of 1 million would kill 300,000 people instantly, while 400,000 others would need medical care. But physicians in hospitals would also be destroyed. And thus, the wounded would be condemned to a slow and excruciating death. The amount of fissionable material accumulated in nuclear arsenals is sufficient to produce not one, but 50,000 such bombs. Are you aware of the fact that the explosion of just one kilogram of neutron charge would extend over a solid area of 8 kilometers? Its physical and other effects would be more profound and harder to remove than the case of other nuclear weapons explosions.

It is impossible to talk about the possibility of "limited" nuclear conflicts. The suffering of residents of Hiroshima and Nagasaki cannot be called limited in any meaningful sense of the word. And who could agree to be the one who is sacrificed? There is no ground for the hope that the first nuclear explosion would not be followed by a retaliatory strike and that the nuclear exchange would cease before the nuclear arsenals were emptied. In addition to malicious intent, a nuclear war may start by miscalculation, a technical malfunction, or a fatal turn of events. Nuclear weapons can lead to a nuclear war simply because they exist. That is why all people of the globe, irrespective of nationality, religion, or political views, should raise their voices against the nuclear arms race, against the plans of the use of nuclear weapons and against the very thought of nuclear war. Nuclear weapons should be outlawed, their production stopped, and their stockpiles destroyed. We address this message to you with the belief that reason will prevail. Thank you.

Thank you very much dear friends. Thank you to the television viewers. We hope that our work will bring a positive result.