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AN EXCERPT

from

"THE VOICE OF THE DOLPHINS"

by Leo Szilard

Preface to the Excerpt

"The Voice of the Dolphins" deals with the problem the bomb poses to the world. It does not attempt to give a blueprint for the solution of this problem but merely states what the real issues are that are involved. Still, when we recognize what the real issues are, we may be taking a long step towards finding the solution.

To me it seems that only by excluding war between the Great Powers can we solve the problem posed by the bomb, because any war in which America and Russia intervene on the opposite sides would be likely to turn into an atomic war. This would hold true even if the Great Powers were to try to turn the clock back and attempt to base their defence on conventional weapons only, for the world may get rid of the bombs that have been stockpiled, but it cannot get rid of the knowledge of how to make the bomb.

Throughout history, the Great Powers have relied on force or the threat of force in their dealings with each other and they might continue to do so for another generation or two. It does not follow, however, that the threat of force must necessarily continue to mean the threat of war, and the threat of force might take on a new form in the so-called atomic stalemate.

In "The Voice of the Dolphins" I describe how this might happen by relating the history of the world from 1960 to 1985. I describe what might happen - if we are lucky - in order to show what it would take to avoid a war that neither Russia nor America wants.

This "Excerpt" has been prepared as a working paper for an international meeting of scientists which was initially scheduled to take place in Moscow early in September of this year. The unabridged version of "The Voice of the Dolphins" will be published in America by Simon & Schuster. No reference is made in this "Excerpt" to the dolphins which play an important part in the unabridged version.

Leo Szilard

September 5, 1960.

Text

Between 1962 and 1965 the world passed through an agonizing transitional phase in the so-called atomic stalemate. At the beginning of this period America had still to rely mostly on bombers, based on airfields located in the proximity of Russia. Because of the possibility of a surprise attack which could have knocked out America's ability to strike a counter-blow, in times of crisis America felt impelled to keep one-third of her bombers in the air, on an around-the-clock basis. Russia, on the other hand, had no foreign bases, nor was she in need of any, since she possessed an adequate stockpile of long-range rockets which could be launched from bases inside of Russia and were capable of carrying hydrogen bombs large enough to demolish a city. By 1965 America had an adequate stockpile of such long-range rockets also and thereafter she was no longer in need of having foreign bases either.

By 1965 America and Russia were capable of destroying each other to any desired degree. Their long-range rockets could be launched from trucks or railroad cars that were kept constantly on the move and thus it would have been impossible for either Russia or America to destroy, by one single sudden blow, the power of the other to strike devastating counter blow. With the fear of a surprise attack thus eliminated, the atomic stalemate began to gain a stability which it did not formerly possess.

~~bombs and rockets until about ten years later.~~

~~People in America ceased to think in terms of massive retaliation by 1965, because~~

~~PA~~ At a time when America and Russia could have destroyed each other to any desired degree, the threat of massive retaliation would have been tantamount to a threat of murder and suicide. Such a threat might be believable if made by a nation whose very existence was at stake in a conflict, but it would not be believable if made by America in a conflict in which American interests were at stake, but not America's existence, as a nation. ~~Therefore,~~ America concluded that for the defence of her national interests she could no longer rely on long-range rockets carrying the large bomb and that she ought to maintain highly mobile forces which could be rapidly transported to almost any part of the globe. It was assumed that, in the case of an armed conflict, America would send troops to the area involved and resist by using small atomic bombs against troops in combat, within the contested area. ~~P~~In time, Americans came to understand well enough that the "real aim" of such a limited war could not be victory, which clearly might not be obtainable in every case, but rather the exacting of a "price" from the "enemy". If America were able to exact a price higher than the price which the "enemy" would be prepared to pay, then America's capability of fighting a limited atomic war, anywhere on the globe, would effectively deter the "enemy" from attempting to change the map by force. It was recognized of course that, in order to freeze the map, America would have to be prepared to pay a price as high as she proposed to exact, both in money and in lives - the lives of the young men who would die in the fighting.

It was generally taken for granted that the large bombs and the long-range rockets would play no role in any of the foreseeable conflicts. They were kept as an "insurance," for the sole purpose of discouraging Russia or China from attacking America, by means of such large bombs. In this sense, and in this limited sense only, did the large bombs seem to serve a useful purpose as a "deterrent".

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No one had any doubt that the revolution in Iraq, which caught America by surprise, was in fact communist-inspired and America responded promptly by landing troops in the

Lebanon and Jordan. This time she was determined to settle the issue of the control of the Middle East and thus to end, once and for all, the threat that Western Europe might be cut off from its Mid-Eastern oil supply. Egypt and Syria declared that they would regard an invasion of Iraq by American troops as an attack against themselves. Turkish troops were poised to move into Syria, and Russia was concentrating troops on the Turkish border, for the purpose of restraining Turkey.

At this point America proclaimed that she was prepared to send troops into Turkey, to use small atomic bombs against Russia troops on Turkish soil and in hot pursuit perhaps also beyond the pre-war Turkish-Russian boundary.

It would appear that Russia disliked the prospect of fighting an atomic war on her southern border. ~~with~~ ^{there was} little assurance that such a war would not spread and finally end up in an all-out war, ^{and} rather than to take this risk Russia decided to adopt another kind of strategy. In a Note, which was kept very short, she proclaimed that she would not resist locally, by force of arms, an American intervention in the Middle East but would rather seek to deter America by setting a high price. The price would not be set, however, in terms of human life but in terms of property. The Russian Note listed twelve American cities by name. Russia stated that if American troops crossed over into Iraq she would single out one of these twelve cities, give that city four weeks of warning to permit its orderly evacuation - as well as to allow time to make arrangements for the feeding and housing of refugees - and thereafter the city would be demolished with one single long-range rocket.

The American reply indicated that for each city that Russia would demolish in America, America might demolish two cities in Russia.

To this, Russia replied in a second Note - a Note of unprecedented length - that if America were to demolish two cities in Russia for each city that Russia may have demolished in America, and if Russia were to demolish two cities in America for each city that America may have demolished in Russia, then the destruction of one city would trigger a chain of events which would step by step lead to the destruction of all American as well as Russian cities. Since clearly America could not possibly want this result, she may not make such a threat of "two for one" and expect it to be believed. Russia, on her part, would tolerate

that America demolish one Russian city, in return for Russia having demolished one American city. But for each additional city that America might demolish, Russia would demolish one and just one additional city in America.

This second Note made it clear that even though Russia would abide by such a principle of "one for one", this did not mean that America would be free to demolish a large city in Russia in return for a small city demolished in America. What would count in this respect, so the Note stated, would be the size of the city, as expressed by the number of inhabitants, rather than by the number of square miles covered by the city.

Twenty-four hours after this Russian Note was received in Washington, the American members of the Steering Committee of the Seventh Pugwash Conference issued a document which listed the number of inhabitants of all American and all Russian cities. They stated in the preface that if American troops were to invade Iraq and Russia were to demolish one of the twelve cities she had listed, an undesirable controversy might arise on the issue of which American city was equal to which Russian city, unless an authentic list of the number of inhabitants was readily available.

This document was issued so promptly that it aroused Russian suspicion. The Russians thought that somehow the American members of the Pugwash Group Steering Committee might have had inside information about Russian intentions and thus were able to prepare in advance this list of cities. American and British statesmen had so often said that the Russians were unpredictable that finally the Russians themselves came to believe it. There is no reason, however, to think that the Pugwash Group had any advance information. Rather, it seems that the American scientists who were active in the Pugwash Group, being no inferior in intelligence to the men in Moscow who devised Russia's policies, were generally able to predict the moves that Russia would make.

The second Russian Note caused a turmoil in Washington. Various groups urged the Government that it adopt a rigid policy of demolishing two Russian cities for each city demolished in America, or that it accept the principle of "one for one", or that it do neither but just keep the Russians guessing.

At the meeting of the National Security Council several experts expressed the view that were Russia actually to demolish one of the twelve cities she had listed, the public would demand that America retaliate by demolishing a large number of Russian cities. They said that the President would thus not be able to abide by the principle of "one for one", without seriously risking the defeat of his party at the next elections.

The Government thereupon asked Gallup to conduct a poll on an emergency basis. Residents of the thirty largest cities were asked whether if Rochester, N.Y., one of the twelve cities named, were demolished, America ought to retaliate by demolishing just one Russian city, or whether she ought to retaliate by demolishing more than one Russian city. To the surprise of the Government, 85% of those who had an opinion declared themselves against America demolishing more than one Russian city.

In retrospect, this response does not appear to be so very surprising; the people polled knew very well that if America were to demolish two Russian cities in retaliation for Rochester, Russia would demolish one additional American city and this additional city might be their own.

Some of the members of the National Security Council declined to take this poll at its face value and said that the people would react differently if Rochester were actually

demolished.. The rather involved psychological argument they cited in support of this view was never put to a test, however, for America did not intervene militarily in Iraq.

Within a few days after the receipt of the first Russian Note which listed the twelve cities, people began to register in Washington as lobbyists for one or other of the twelve cities, and ten days later there was not a hotel room to be had in the whole city. It was the most powerful lobby that ever hit Washington. With steadily increasing editorial support across the nation, after an initial period of uncertainty, this lobby succeeded in forcing a re-examination of the whole Mid-Eastern issue. Doubts were raised as to whether Western Europe was really in danger of losing its supply of oil, since there was no other market for mid-eastern oil. It was said that, while the price of oil from the Middle East could be raised, it could not be raised very much, since it could be replaced by oil from the Sahara. As the result of a re-examination of the whole Mid-Eastern issue, America decided to withdraw her troops from the Lebanon and Jordan:

This decision was reached in the face of strenuous opposition on the part of a small, but vocal, and influential, group of opinion makers. There were prophets of doom who declared that if America yielded to Russia's threat on this occasion, then from here on Russia would be in a position to get her way on any issue; she would be in a position to change the map at will, simply by threatening to demolish a limited number of American cities, in case America should try to resist locally, by force of arms.

Fortunately, these prophecies proved to be incorrect. For the time being at least, Russia appeared to be quite satisfied with the map as it stood. True enough, a number of nations in South-East Asia went communist and so did several nations in Africa. On the other hand, the Communist Government of Iraq broke diplomatic relations with Russia, in protest against Russia's supplying oil at cut-rate prices to Western Europe, thus demonstrating once more that the capitalist nations have no monopoly in feuding with each other.

Russia did derive great economic benefit from her decision to forego war. In short order, she abolished her air force and her entire navy, including her fleet of submarines; she also reduced her army and retained only a comparatively small number of highly mobile

units equipped with machine guns and light tanks. Russia continued to maintain, of course, a large number of long-range rockets mounted on trucks and on railroad cars, which were constantly moved around, along her highways and railroad tracks.

As the result of the economies thus achieved, Russia was able to invest 25% of her national income in capital goods, serving her consumer goods industry, and her standard of living was increasing at the rate of 8% per annum. Her per capita consumption of meats and fats rapidly approached that of America ~~and~~, as the result, deaths from coronary attacks rose very markedly and were approaching the American figures.

Propaganda-wise the Russians stressed the moral issue involved and made the most of it. All over the world Communists and Russian sympathisers proclaimed that wars, which initially merely meant the killing of soldiers, but in the end came to mean the wholesale killing of civilians - men, women and children - as well as soldiers, were now a thing of the past, thanks to Russia's decision to forego, abrogate and abolish war. They said, over and over again, that Russia was the only truly Christian nation, since she alone, among the Great Powers, was upholding the Fifth Commandment.*

*Footnote: The possibility that it might be to Russia's advantage to adopt this type of strategy was discussed by Szilard in an extensive article which appeared in the February issue of the Bulletin of the Atomic Scientists in 1960. It is not known whether Szilard's article elicited any response other than a notice in Newsweek, in America, and in Crocodile, in Russia. Newsweek condensed this article beyond recognition and managed to convey the impression that Szilard had proposed that Russia and America ought to demolish each other's cities in exchange - to no sensible purpose. Taking its information from Newsweek, Crocodile suggested in its issue of April 20, 1960 that Newsweek carry an ad for Szilard offering to exchange his room 812 in the Medical Division of Memorial Hospital, New York, for a bed in Ward 6 in the Psychiatric Division. Some of his American colleagues do remember that Szilard made ^a ~~some~~ prediction concerning the strategy which the Russians would adopt if there is no general disarmament, but they remember only that he had predicted something rather crazy without recalling what it was that he had predicted. After his death,

Szilard appears to have received some recognition, however, on the part of his Russian colleagues, who named a small crater after him - on the back side of the moon.

Following the Iraq crisis there were two rival schools of thought in America.

One of these held that America ought to follow Russia's example, cut down on her arms expenditure by reducing the army, navy and the air force and adopt the Russian strategy of relying on long-range rockets.

The other school argued that operating with the threat of demolishing cities would favor Russia rather than America, because the American Government was more responsible to the will of the people and the people did not like to see their cities demolished. They urged therefore that an all-out effort be made to develop an anti-missile missile, capable of destroying incoming Russian rockets in flight and stressed that a defence system based on such missiles would nullify the Russian strategy of demolishing cities.

The President's Science Advisory Committee took a dim view of the development of an effective anti-missile ~~missile~~ defence system but in the end the views of the Department of Defense prevailed; thus, an appropriation of \$20 billion per year for the development of such a defence system was included in the Budget and unanimously passed by Congress.

Most of those who urged the development of the anti-missile missile also urged that America cease to rely on atomic bombs used against troops in combat and be fully prepared to fight limited wars with conventional weapons. They argued, convincingly, that a war in which atomic weapons would be used against troops in combat would not be likely to remain limited and might end up in all-out atomic destruction. Since the enemy must know this also - so they further argued - it would not resort to the use of atomic bombs against troops in combat, as long as America would limit herself to fighting with conventional weapons.

Taking its cues from this school of thought, the American Government adopted the position that it would be immoral to use atomic energy for purposes of destruction and it urged that all use of atomic bombs in warfare be outlawed. The Government proposed that, until such time as atomic bombs can be eliminated from the armaments of the nations under satisfactory safeguards, each nation pledge unilaterally not to use atomic bombs either against troops in combat or for the purposes of destruction. If such pledges were given, then America would use the atomic bombs it retained, in retaliation only, and only, if America or one of her allies were attacked with atomic bombs.

The position of the American Government was generally supported by the press. Noted columnists pointed out that, even though outlawing the atomic bomb would not necessarily prevent the use of such bombs in time of war, it would preclude nations from resorting to the threat of using atomic bombs in order to attain their objectives.

The American proposal that the use of atomic bombs be outlawed represented the main theme of most of the programs of "The Voice of America" which received an appropriation of \$1 billion a year, and the American proposal for outlawing the bomb received world wide support. But even though, during the post-war period, the outlawing of the bomb had been persistently urged by Russia, the Russians showed no interest in this approach. They stood fast in the face of adverse world public opinion and no indication was forthcoming that Russia would go along with outlawing the use of atomic energy for purposes of destruction.

Pending the completion of the development of the anti-missile missile, America followed a triple policy of maintaining long-range rockets, to be used in retaliation in case America were attacked by means of such rockets, a small but mobile military force equipped to use small atomic bombs against troops in combat, and also a large combat-ready military force capable of fighting local wars by means of conventional weapons. Since maintaining such a triple system was costly, America had an arms budget of around \$70 billion. This cut down the amount invested in capital goods, serving the consumer goods industry, to about 3% of the national income and it slowed the

rise in the standard of living to about 1% per annum. Such a stagnation in the standard of living was not deemed to be a very serious detriment, however, since the standard of living was high enough as it stood; moreover, a high defence expenditure was regarded as an insurance against the possibility of a recession.

The depression which hit America in 1975 began with unemployment in the construction industry, which subsequently spread to other industries. In the hope of inducing the Federal Government to finance large-scale construction, in the second year of the depression the construction industry established a lobby in Washington. But, in spite of large-scale Federal construction, there was no marked economic improvement by 1978, at the time when the Iranian upheavals occurred.

The Government responded to these upheavals by promptly proclaiming that if Russia should send troops into Iran, America would not fight her in the contested area, but, instead, two Russian cities of about one million each would be demolished, after receiving four weeks of warning. Americans understood fully that should Russia actually invade Iran, not only Russia but also America would lose two cities. It was generally felt however that, because of the large-scale unemployment, prevailing in the construction industry, America would be in a position to rebuild, in short order, the cities which she might lose.

The Government's proclamation had strong support in Congress. It would be uncalled for, however, to attribute this to the influence of the lobby of the construction industry. Undoubtedly, Congressmen realized that, with the development of the anti-missile missile still lagging, the Government had no other recourse but to adopt the "Russian Strategy". Moreover, there was some reason to believe that Russia might not be willing to sacrifice two cities for the sake of Iran.

In fact, Russia did not send troops into Iran. Whether she refrained from doing so because she would have lost two of her cities or whether she never really had any serious intentions of militarily intervening in Iran, may be regarded today as debatable. At that time, however, the press in America stressed that the Russians had an emotional attitude towards property and abhorred the destruction of property, particularly public property. They also stressed that the loss of a city would mean much more to Russia than just the loss

of property, that it would disrupt the social fabric and cause dislocations which the precariously balanced Russian social system could not easily stand.

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The Iranian incident was followed by a period of quiet and many people began to believe that the strategic stalemate had reached a stage where it was virtually stable. The map appeared to be frozen, at least in the sense that such changes as came about, came about through genuine internal revolutions and no nation sent its troops across the frontier of another nation, in an attempt to increase the territory under its control.

Around 1980, however, there appeared a new kind of instability which developed into a serious threat to the world by 1985, the year in which the twenty-fifth Pugwash Conference convened in Vienna. In order to understand the problems that confronted the world in that critical year, it is necessary to consider how the world situation had changed in the interval from 1960 to 1985.

Changes in the World Situation from 1960 to 1985

The years that followed the Second World War brought unprecedented changes in the Far East. What was really novel and unique about China was not so much that China had a Communist government but that - for the first time since the days of the Emperors - she had a government. By 1960, it was clear that the Chinese would be able to greatly raise production, but it was not as yet clear whether they would succeed in getting the rate of population increase under control - at the time when this would become necessary. Had they failed in this, no amount of economic progress, within the limits of the obtainable, could have appreciably raised their standard of living.

It seems that by 1960, most Americans realized the foolishness of opposing the seating of China in the UN and of pursuing a policy of "No Speak" towards China. Szilard's diary (see Appendix 1), recently reprinted by Simon & Schuster, contains an entry made in 1960 to the effect that he did not know personally anyone who still thought that America ought to persist in opposing the seating of China in the United Nations. In contrast to this, virtually all of those who ran for elected office, in that year, went on record against the

seating of China.

This is not so surprising, as it might seem, if one recalls to what extent the American two-party system favors minority rule. A few percent of the voters who feel strongly enough on an issue, to be willing to throw their vote, on that single issue, from the Democratic to the Republican candidate, or vice versa, may well be in the position to determine which of the two candidates shall win. This explains why, under the American political system, a minority may force its will on the nation as a whole. Thus America's long-sustained opposition to the seating of China in the UN was forced upon her by an emotional minority of the voters, representing apparently less than 5% of the votes.

America never actually changed her vote on the issue of the seating of China in the United Nations but, in 1970, she allowed herself to be out-voted by a two-thirds majority in the General Assembly.

The American attitude towards China started to change even prior to 1970 when China was seated in the United Nations.

As the world moved closer and closer to the long-range rocket stage of the stalemate, nations like France, Italy, Western Germany and Japan realized more and more clearly that they could not count on American protection if they got involved in a war with Russia; America could hardly have been expected to risk the loss of her own cities for the sake of protecting theirs. This consideration led to an increasingly strong demand on the part of these nations to have under their own control hydrogen bombs and means for their delivery. America might have resisted such demands had it not been for the fact that by then America had begun to look upon her allies more and more as potential liabilities rather than potential assets. America felt inclined to provide her allies with bombs, which they could use in their own defence, if the necessity arose, and thus to free herself from any moral commitment to defend them.

Not long after American undertook to provide France, Germany, Italy and Japan with ~~their own nuclear planes, and~~ bombs, Russia decided to provide China with the bombs and rockets that China felt she needed for her security. The Central African Federation, which was initially formed to constitute a Non-Nuclear Block, was not provided

with bombs and rockets until about ten years later.

Soon after China became an atomic power, there was a marked change in attitude on the issue of the islands of Quemoy and Matsu. Up to that time, the American press urged the Chinese Nationalists to hold on to these islands for reasons of expediency. Afterwards, however, it was said, with increasing frequency, that it would be morally wrong for America to encourage the Nationalists to persist in the occupation of these islands.

Just about the time when American policy towards China became more conciliatory, the Chinese attitude began to harden. When the Chinese population ~~became stationary~~^{ceased to increase rapidly}, the standard of living in China began to rise rapidly and, with increasing prosperity, there was an increase in China's expansionist tendencies.

This is quite understandable, even though it is the exact opposite of what people had generally predicted. All individuals and nations who believe that they are in possession of the truth are in a sense dangerous and in this sense, for a while China became dangerous.

But, just as the zest of British imperialism persisted only as long as the English thought that by extending their system to other nations, they could bring them the blessings of civilisation, thus also the expansionist tendencies of China persisted only until the Chinese began to realize their inability to bring about a betterment of the lot of the Indians.

It is curious that, of all nations, India should play this role of bringing disenchantment to imperialism. It is even more curious that she should play this role twice within the century and under such different circumstances. No one has done more to disenchant British imperialism than Gandhi and he did it because he was the incarnation of the highest virtues of the Indians. The disenchantment that India brought to China, however, was not due to any virtues, but rather to the absence of virtues.

When India became Communist, China went all out to make Communism in India a success. After fifteen years of Communist rule in India, it began to dawn on the Chinese, however, that the success of their own regime in China may have been due, to a large extent, to the civic virtues of the Chinese which the Indians were totally lacking. The recognition of this

greatly increased China's national pride, but at the same time, it decreased her zeal to extend her political and economic system to other nations.

After Chiang Kai-Shek's untimely death, the "Formosa for Formosans" movement began to gather strength rather rapidly. Formosa had been separated from China for two generations and Formosans liked neither the Chinese on the mainland nor those who had come to Formosa from the mainland. There were rumours that the American Government secretly encouraged the "Formosa for Formosans" movement; there is no evidence, however, that any Government funds were in fact involved, even though funds for cultural activities may have come from private sources in the United States, such as the Rockefeller Cousins Fund.

After a while, the situation became rather uncomfortable for the remnants of the Chinese Nationalists and most of them wanted to leave Formosa. China, which had a severe shortage of clerical workers, offered asylum to all those born on the Mainland; a law enacted by Congress made it possible for those of them who wanted to come to America to do so, provided they did not take up residence in California.

Most people expected that China would thereafter occupy Formosa, but China appeared to have somehow lost interest in that island. Apparently, Chinese national pride having reached a climax, the Chinese came to look ^{down} upon the native Formosans ~~as semi-barbarians~~. The Americans, the English, the Germans and the Russians have always been regarded as barbarians by the Chinese, whereas the Japanese were looked upon as semi-civilised. Formosa had been under Japanese rule for two generations, and the Chinese came to regard the native Formosans as no more civilised than the Japanese.

When it became manifest that China was not interested in Formosa any longer, the stage was set for the possibility of a political settlement in the Far East, based on the freezing of the map in South East Asia.

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At the same time, however, a political settlement in Europe appeared to be as far off as ever. In Germany, united since 1980, the Social Democrats, being the largest party in

Parliament, were in office. But there were four parties holding seats in the German Parliament and the position of the Government was precarious. All Germans were united in their determination to recover from Poland the territories which Germany lost to her at the end of the Second World War, but there was violent disagreement ^I between the political parties, as to the method of accomplishing this. The Social Democrats and the Christian Democrats wanted to force Poland to return these territories to Germany, through negotiations, conducted under such economic pressure as Germany was now capable of bringing to bear. The People's Party, however, (which had been rapidly increasing in strength, ~~in the years prior to the raising of the gold price and~~ ^{and} came to control 45% of the votes in Parliament) advocated the use of force - if necessary.

Poland had made it abundantly clear that she would in no circumstances attempt to fight a war on the Polish-German border and that if German troops were to invade her territory she would exact a high price from Germany by demolishing two German cities, of an as yet unspecified size, for every 10 miles depth of penetration of her territory by German troops. Following Russia's classic example, she proclaimed that she ^{would} not retaliate, if Germany demolished no more than one Polish city of equal size for every city demolished by Poland.

The People's Party advocated that Germany should resort to force and should be willing to pay whatever price may be set by the Poles. They argued that Germans being industrious, as well as prosperous, would be in a better position to rebuild their cities than would be the Poles. They contended that the return of ^{the} former German territories was not a matter which could be discussed in terms of loss, or acquisition, of property, because it was essential to the spiritual integrity of the German Nation.

This rather ominous political development in Europe, was paralleled by an equally ominous "military" development the world over. As the Russian rockets increased in numbers and became capable of carrying larger bombs the situation of the United Kingdom, France, Germany, Italy and Japan became precarious. Up to 1980, these nations had based their security on rockets which were constantly moved around within their territory. Rockets are guided by delicate instruments, however, which are ruined if the rockets get badly shaken up.

All these countries were *Small*, and had Russia exploded about one-fourth of her rockets in a sudden attack say over France and Germany, the French and German rockets would have been so badly shaken up that neither of these two countries would have been capable of striking a counter-blow. In these circumstances, all the atomic nations, with the exception of America, Russia and China, felt compelled to shift their defence, from land based rockets to rockets based on submarines, equipped for the launching of rockets.

This solved the problem of surprise attack with which these nations were faced, but it created a new problem for the world. If a city were destroyed by a rocket launched from a submarine, it might be possible to trace the orbit of the rocket back to a point at sea; with the submarine submerged, it would not be possible however to determine the nation responsible for the attack. The possibility of such an "anonymous" attack was particularly serious in view of the political frustration not only of Germany, but also of Japan.

As the result of the high tariffs, which America had promulgated to balance her military budget, Japan found herself in economic difficulties which brought the Japanese militarists into office. The power of China blocked the possibility of a Japanese adventure in South-East Asia, but Japan, having built up a powerful navy, could have moved into the Philippines if America had lost her ability to protect these islands. Thus Japan, while potentially expansive, was, for the time being, bottled up.

Fears were growing, both in America and in Russia, that one day a bomb might be launched from a German or a Japanese submarine and destroy, say an American city. Since the identity of the attacker would remain concealed America might counter-attack Russia, with the result that Russia would counter-attack America.

To what extent such fears were justified is difficult to say, but it is certain that if Russia and America had mutually destroyed each other, this would have left both Germany and Japan in a much better position to pursue their aspirations.*

*Footnote: The reader may recall that during the Second World War, a few days after Germany went to war against Russia, there was an attack from the air against the Hungarian city of Kaschau. The Hungarians examined the bomb fragments and found that the bombs were of

Russian manufacture. As we know today, the bombs were dropped by the German Air Force to create the impression that Russia was the attacker and of thus to induce Hungary to declare war on Russia. This ruse was successful.

Apprehensions reached such a level that wealthy Americans went to live in Arizona and New Mexico, where they built luxurious homes, equipped with air conditioned shelters capable of storing a year's supply of food, and with attics, complete, with machine guns mounted in the windows. Many Americans transferred funds to Switzerland and this movement of funds reached such proportions that Swiss banks ceased to pay interest on deposits and levied a 2% annual "carrying charge".

This flight of capital forced America to raise the price of gold. Ostensibly America did this in order to render economic help to South Africa where, as the result of a revolution, an all-black government took over, which America was quick to recognise. In fact, however, the chief beneficiary of the rise in the gold price was Russia, which up to then refrained from exporting gold at the prevailing low prices, and had begun to line the walls of her public toilets with sheets of gold, in token fulfilment of a prophecy once made by Lenin.

By 1985 there was strong sentiment in America for general and total disarmament, whereas Russia was more in favor of controlled arms reduction and appeared to be reluctant to accept general and total disarmament until such time as it would be possible to set up an international armed force under the United Nations, which would guarantee the status quo.

1985 was the year in which the twenty-fifth Pugwash Conference was convened in Vienna.

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In order to be able to appraise the contribution made by this conference to the achievement of disarmament, it is necessary to recall the political thinking that prevailed on this subject at that time. This thinking is reflected in articles which appeared over a period of years in the Bulletin of the Atomic Scientists, by American, Russian and Chinese authors.

Most of the American authors favored general and total disarmament. They took it more or less for granted that a world disarmed down to machine guns would be a world at peace, but they were less certain about the feasibility of such disarmament. Some Americans held the view that there would be no way to make reasonably certain that bombs and rockets, which a nation might want to hide, could be detected.

Most of the Russian authors, while favouring, in principle, general and ~~total~~ ^{complete} disarmament, took the position that such disarmament must follow rather than precede the establishment of an international armed force, capable of protecting the security of smaller nations such as Poland. The Russians pointed out that even if all heavier weapons were eliminated and all armies were disbanded, in the western countries as well as in Russia, an improvised German army equipped with machine guns could spring up so to speak overnight. If such a German army were to invade Poland, Russia, having disbanded her own army, would be unable to protect her.

American authors did not favor the establishment of an international armed force, presumably because they assumed that such an armed force would be set up under the United Nations, where America might be out-voted.

More and more often America was forced to use her veto in the Security Council. The Russians frequently accused America of misusing the veto, but no Russian has ever been able to define the difference between the use of the veto and the misuse of it. Also, Russia sometimes succeeded in depriving America of her right to the veto, by managing to shift the controversial issue - under the 'Uniting for Peace' resolution - to the General Assembly, where she was, at times, able to count on a two-thirds majority.

Some American authors suggested that, in place of setting up an international armed force, the nations of the world should enter into a covenant and pledge themselves to apply stringent economic sanctions against an "aggressor". The Russians doubted that nations who entered into such a covenant would live up to their commitments if, by doing so, they would have to pay a high price in terms of their own economic welfare. The Russians pointed out that when Italy attacked Abyssinia, it proved to be impossible to embargo the supply of oil to Italy, because American oil interests were opposed to America's participation in such an embargo. They reminded the Americans that when Japan attacked China, the United States continued to supply oil and scrap iron to Japan and that she stopped ~~the supply of oil~~ only when she was ready to enter the Second World War herself.

Concerned with Europe, more than any other continent, the Russians stressed that, while Germany was economically integrated with Western Europe, politically she was not; they stressed that Western Europe was politically incapable of restraining Germany from taking armed action against Poland, and that Western Europe could not apply economic sanctions against Germany, without suffering staggering economic losses.

The Special Disarmament Number of the Bulletin of the Atomic Scientists of June 1985 contained a number of remarkably lucid articles by American, Chinese and Russian authors.

Those who read these articles today gain the very definite impression that the Americans were willing to go much further towards total disarmament than were the Russians.

The Russians were willing to consider controlled arms limitations, the idea being that, in return for a total elimination of all submarines capable of launching rockets, America, Russia and China would cut down the number of their long-range rockets and bombs below the shake-up level* of the small atomic countries. Apparently, this was as far as

*Footnote: If a sufficiently large number of sufficiently large bombs were detonated at a suitable height above countries like, France, Italy or Germany, the explosions would shake up the rockets on the ground to the point where their guidance system would be affected and the rockets would become unusable.

they were willing to go - in the absence of a reliable world security system.

The Americans wanted to go much further. They stressed that the problem that the bomb posed to the world could be solved only by eliminating the possibility of war between the Great Powers and that the kind of controlled arms limitations which the Russians favored would not accomplish this. They drew a sharp distinction between controlled arms reductions of the kind which the Russians had in mind, and virtually total disarmament which would eliminate the possibility of war between the Great Powers.*

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*Footnote: The first disarmament conference of the League of Nations convened in 1925(?). It so happened that Albert Einstein passed through Geneva during this conference and when they discovered his presence, reporters asked him how he was impressed by the progress the conference was making. "What do you think, Einstein asked, "about a meeting of a town council which is convened because an increasing number of people are knifed to death each night in drunken brawls, and which proceeds to discuss how long and how sharp shall be the knife that the inhabitants of the city may be permitted to carry?" After a somewhat shocked silence, one of the reporters asked Einstein, "Do you mean to convey that the disarmament conference is bound to fail?" And Einstein said: "Yes, I do."

.....

~~In a major article, a distinguished Chinese scientist took the position that if the nations each retained legitimately a certain number of bombs and rockets, this ought not to be objectionable, as long as these are retained only as an insurance against a surprise attack that might be launched against them by some other nation that has illegally and secretly retained a substantial number of bombs and rockets. The dividing line between controlled arms limitations and genuine disarmament is set - so this Chinese scientist pointed out - not so much by the number of bombs and rockets which the nations may be permitted to retain, as by the purpose for which these bombs and rockets are retained. Even if the number legally retained is substantial, this would still be perfectly compatible with genuine disarmament, as long as the bombs and rockets are retained merely as an~~

~~insurance. But if they are retained in order to be used as a threat, which might deter other nations from pursuing their legitimate, or illegitimate, territorial aspirations, then their retention would defeat the purpose of genuine disarmament. The article proposed that at the same time when an agreement is concluded that fixes the number of bombs and rockets which each nation may be permitted to retain, each nation should unilaterally pledge not to resort to the use of bombs unless bombs are used against it first. Such pledges, so the Chinese scientist pointed out, would not necessarily prevent the actual use of the bombs in case of war, but they would prevent any nation from threatening to use the bombs which it has legitimately retained, except in retaliation for an atomic attack.~~

This special number of the Bulletin reflected the political ideas prevailing on the subject of disarmament at the time of the twenty-fifth Pugwash Conference.

The Steering Committee of the Pugwash Conference invited a number of Russian, American and Chinese scientists, who were advising their governments on policy, and also some non-scientists who were active in a policy advisory role, but they did not invite anyone holding a formal governmental position.

Because of the political tension in Europe, the Conference was generally regarded as badly timed in Russia, and up to the very last minute it was uncertain whether any Russians would turn up at the conference. However, the Russians did come, and they came in time to permit the conference to start on schedule.

The agenda of the conference called for informal discussions of the working papers which would be submitted from time to time by the Steering Committee. These informal discussions were to last two weeks and to be followed by an intermission of ten days' duration. The members of the conference were supposed to spend these ten days in the Semmering Mountains, conversing with each other, unencumbered by any agenda.

The key note of the conference was set by an introductory document prepared by the Steering Committee.

This "Introduction" took the position that in previous negotiations, concerned with the problem of disarmament, major difficulties were encountered because the nations were apprehensive of secret violations of the agreement. These difficulties appeared almost

insurmountable at the time of the ill-fated Geneva negotiations of 1960, because people were thinking in terms of an agreement to which Russia, America, as well as the other Great Powers would be irrevocably committed. If this were the case, then the agreement would have to spell out in detail the methods of inspection, to which all nations must submit. Possible secret evasions are innumerable, however, and as time went on there would arise new forms of evasion, which were not previously apparent. Thus, in 1960 many Americans had doubted that there would be any way for America to make sure that Russia would not retain a large number of bombs and rockets, hidden away in secret.

The "Introduction" stressed that it lies in the very nature of an agreement providing for arms limitations, that it could remain in force only as long as Russia, America and China each wanted to keep it in force. Therefore, the agreement would not be weakened by giving these three nations, and perhaps also to the other permanent members of the Security Council, the legal right to abrogate the agreement at any time, and without cause. Quite on the contrary, the agreement might ~~in fact~~ be strengthened by giving the Great Powers the right to abrogate, because there would then be no need to spell out in the agreement any specific measures of inspection. Instead, it would then be understood that if Russia, for instance, were unable to convince America that there were no major evasions on her territory, America would have no choice but to abrogate the agreement. The same would, of course, hold, in the reverse, for Russia.

If the problem is presented in this manner, then clearly the issue is no longer what rights of inspection America should demand from Russia or Russia from America, but rather in what manner Russia might choose to convince America that there were no secret evasions on her territory, and in what manner America might choose to convince Russia.

~~The Steering Committee proposed, at the outset of the meeting, that the simplest questions be discussed first and that the conference ~~therefore~~ assume - for the sake of argument - an agreement providing for virtually complete disarmament and discuss on this basis in what manner Russia and America could convince each other that they do not secretly evade the agreement.~~

The Steering Committee proposed to the Conference that it assume, for the sake of argument, an agreement that would provide for virtually complete disarmament. In that case, there would be no military secrets left that would need to be safeguarded, and therefore the nations would presumably have no objections to admitting foreign inspectors in virtually unlimited numbers.

Most Americans seemed to dislike the idea that Russian inspectors might roam the territory of the United States in large numbers. They said that they would recommend that every boat or plane capable of carrying a bomb across the Atlantic or the Pacific should carry a team of inspectors on board, in order to reassure all nations that the plane or ship did not carry illicit bombs. Otherwise, however, they showed little inclination to recommend reliance on foreign inspectors. They took the position that Russia could not convince them that she did not illegally retain rockets or bombs, even if she were to admit foreign inspectors in unlimited numbers. They held that if the Russian government wanted to hide bombs or rockets, as long as she had the wholehearted cooperation of her scientists and engineers in such an endeavour, foreign inspectors would not be able to discover hidden bombs and rockets.

One of the Americans proposed that, rather than to admit foreign inspectors in large numbers, America reassure Russia and the other powers on the issue of secret evasion by adopting the following approach:

When the disarmament agreement had been signed and published, the President of the United States would address the American people over television, radio and through the newspapers. He would explain why the American government had entered into this agreement, and why it wished to keep it indefinitely in force. He would make it clear that any secret violations of the agreement might lead to an abrogation of the agreement

by the Russians or the Chinese, and that the American government would not condone such violations. The President would admit that violations might occur, and state that if they did occur, they would have to be regarded as the work of over-zealous subordinate governmental agencies whose comprehension of America's true interests and purposes were rather limited. The President would make it clear that in these circumstances it would be the patriotic duty of American citizens in general, and of American scientists and engineers in particular, to try to discover such secret violations of the agreement, and to report them to the International Control Commission. In addition to having the satisfaction of fulfilling a patriotic duty, the informant who discloses a major violation of the agreement would receive an award of one million dollars from the President's Contingency Fund. The President would announce that no income tax would be levied on such an award, and that the recipient of such an award, who wished to enjoy his wealth by living a life of leisure and luxury abroad and would want to leave America with his family, would not be hampered by currency restrictions in transferring the award abroad.

Several Americans challenged the Russians to say whether Russia would be willing to create conditions in which America could rely on Russian citizens reporting secret violations of the agreement, rather than having to rely on foreign inspectors. In particular, the Americans wanted to know whether the appeal of the President of the United States to the American people (described above) might also be made by the Chairman of the Council of Ministers to the Russian people.

The Russians said that the Soviet government would be willing to create conditions in which America could rely on Soviet scientists and engineers to report secret violations. They pointed out, however, that

the Chairman of the Council of Ministers of the Soviet Union could not very well follow the example of the President of the United States and say that secret violations of the agreement might be committed by overzealous subordinate governmental agencies acting against the orders of the Soviet government. In this respect, conditions were quite different in the Soviet Union from those prevailing in the United States and, in the Soviet Union, people would find it difficult to believe that any agency of the Government would act against orders of the Soviet government.

The Russians thought that, from time to time, the Chairman of the Council of Ministers could go before the people of the Soviet Union and speak to them as follows: Upon the conclusion of the agreement providing for general and complete disarmament, the Soviet Union had to admit a substantial number of foreign inspectors to her territory. Many of these inspectors are bona fide agents of the International Control Commission, but there are also amongst these foreign inspectors agents of the American armaments industry. These circles would like to see Russia engage in secret violations of the agreement, which would lead to an abrogation of the agreement by America. These agents of the American imperialist warmongers will undoubtedly try to persuade honest and patriotic but gullible Soviet citizens that, for the sake of the safety of the Soviet Union, they ought illicitly to retain and to hide bombs and rockets. The Chairman of the Council of Ministers would call on Soviet citizens, particularly on scientists and engineers, to frustrate the machinations of these foreign agents by promptly reporting such violations of the agreement to the International Control Commission. By convincing the Americans that secret violations of the agreement, if they did occur, would not remain hidden for long, Soviet citizens would safe-

guard the agreement and block those American circles who would want to induce the American government to terminate the agreement, and to embark on rearmament.

The Americans received this particular Russian proposal with mixed feelings.

Subsequently, a Chinese scientist proposed that the great powers convince each other of the absence of secret violations of the agreement by entering into a game, which he described in detail in a memorandum that he submitted. This memorandum took the position that, inasmuch as the great powers were not likely to violate the agreement in secret (at least not in the years immediately following the conclusion of the agreement), it would be frustrating for the citizens of these nations to keep looking for violations, and never to find any. In these circumstances, vigilance would soon cease, and if later on one or the other of the governments of the great powers would indulge in secret violations of the agreement, the other powers could not rely on the citizenry for the discovery of these violations. The memorandum pointed out that the only way to be sure that secret violations would be discovered, would be for secret violations to occur, and to be discovered. This could be accomplished by a game, which would be played as follows:

America, as well as the other great powers, would appoint, from within the governmental agencies concerned, committees composed of 3 to 7 men, and each such committee would be assigned the task of hiding a bomb or rocket. These committees would be permitted to lie, to cheat and to threaten, and to do whatever is within their power to keep the location of the hidden bombs or rockets secret. They would be free to tell gullible citizens that it was necessary to keep such rockets or bombs hidden because the government had received secret information

that bombs and rockets are being illegally hidden in substantial numbers by other governments. The members of these committees would receive each year a bonus equal to their regular salaries, and they would continue to receive these bonuses as long as the bomb or rocket which they had hidden, remained hidden.

Whenever a bomb or rocket was hidden by one of the committees appointed for the purpose, the committee would prepare a protocoll describing the circumstances under which the bomb or rocket was hidden, and the measures adopted for keeping it hidden. The government would place each such protocoll in a sealed envelope carrying a code number, and would deposit it with the International Control Commission. In addition, the government would deposit with the International Control Commission a number of similar envelopes, each bearing a code number, but containing an empty sheet of paper instead of a protocoll.

From time to time, the President of the United States would appeal to the American people to participate in the game, which would serve the purpose of convincing other nations that no bombs or rockets are illegally hidden in America. He would point out that it was the patriotic duty of all citizens to try to discover the bombs or rockets, which were being hidden by the committees appointed for the purpose. A substantial reward would be paid to those who report to the International Control Commission the location of a hidden bomb or rocket. Each time the Control Commission receives such a report, the U. S. government would give the Control Commission the code number of the envelope which contains the protocoll that describes the hiding of that particular bomb or rocket.

As long as no bombs or rockets were hidden -- except as a part of the "game" -- each bomb or rocket discovered would be covered by a proto-

coll describing how that particular bobm or rocket had been hidden.

Other nations could, from time to time, check on how effective the American citizenry was in reporting bombs and rockets that were hidden in America. In order to do this, the other nations would select at random, say fifty envelopes deposited by the American government with the International Control Commission, open these envelopes and determine what fraction of the envelopes contained a protocoll relating to a hidden bomb or rocket, and what fraction of the envelopes contained empty sheets. Such a test, performed from time to time, would disclose the rate at which bombs or rockets that have been hidden in America are being discovered, and the nations would be in a position to estimate, on this basis, how long a bomb or rocket hidden in America may be expected to remain hidden.

In this manner, America could reassure other nations on the issue of secret violations of the agreement because, if the American government intended to violate the agreement by secretly hiding bombs and rockets outside of the "game", it could do no better in this respect than it was doing within the framework of the "game." Naturally, if the American government wanted to hide bombs and rockets outside of the "game", it would not deposit with the International Control Commission protocolls with respect to these bombs or rockets. Still, the probability of discovering bombs and rockets that were hidden outside of the "game" would be just as great as the probability of discovering rockets and bombs which were hidden as part of the "game."

Just how great the probability may be within the "game" would be tested in the manner described above and, if it turned out, as it almost certainly would, that bombs and rockets might remain hidden for one or two years, but rarely any longer, then no governmental agency

would risk hiding bombs or rockets outside of the "game".

In much the same manner, Russia could reassure America and China, and China could reassure America and Russia, on the issue of secret violations.

This proposed game evoked much discussion and a number of objections were voiced. Most of the objections amounted to saying that the proposed game was "funny". The author of the memorandum responded by saying that in many Chinese dialects the word "funny" was synonymous with the word "novel", and he thought it might not be wise to rule out "funny" solutions in seeking the solution of a "funny" problem.

~~ruling that such awards would be free from tax. They did not doubt, however, that the Treasury could be prevailed upon to issue such a ruling.~~

~~The Americans also said they would recommend that every boat and plane capable of carrying a bomb across the Atlantic or the Pacific should carry a team of inspectors on board, in order to reassure Russia and China that these planes or ships did not carry any illicit bombs.~~

The discussion of safeguards in the case of virtually total disarmament ended with several participants cautioning the conference against drawing the conclusion that satisfactory safeguards against secret violations would be practicable, under prevailing world conditions. Since Russia would undoubtedly ~~retain~~ ^{insist on retaining} bombs and rockets ~~for~~ her defence - so they pointed out - and since these would be moved about on trucks and railroad cars, their current location would represent an important military secret that needed to be safeguarded. In these circumstances, Russia would not be able to tolerate informants to report the locations of the mobile rocket units.

The discussion of these arguments was deferred to the next series of sessions which was supposed to examine the "feasibility" of controlled arms reduction rather than virtually complete disarmament.

In preparation for that series of sessions, the Steering Committee drafted a memorandum on "Inspecting the Informant". This memorandum assumed that, as a first step, all submarines capable of firing rockets would be destroyed and, at the same time, China, Russia and America would reduce the number of rockets below the shake-up level of the smaller nations. Also, at the same time, all nations would pledge themselves not to use atomic bombs except in retaliation against an atomic attack. The number of bombs and rockets legitimately retained by America, China, Russia and the other nations would be agreed upon. The legitimately retained bombs and rockets would be marked and all the un-marked bombs and rockets retained would be considered illegitimate.

It was assumed that the legitimately retained rockets would be carried by railroad cars or trucks and be constantly moved about. A sufficient number of rocket tracing stations would be set up all over the world and these stations, by locating the origin of the rocket, would be capable of identifying the nation from whose territory the rocket was launched.

It was proposed that the railroad cars or trucks which carry a legitimate rocket also carry an international team of inspectors. In case of an attack by a mobile rocket unit - which was not authorized by its government - the teams of international inspectors, assigned to all the various rocket units, would thus be in a position to exonerate the innocent rocket units and to identify, by elimination, the particular rocket unit that fired the rocket. The individuals responsible for the unauthorized attack could then be brought to justice.

The teams of international inspectors assigned to the mobile rocket units would also serve as "markers" and any would-be informant could know that a rocket unit, not so marked, was not a legitimate unit.

It was made clear that in this stage of arms limitations there would be no secrets left that need to be safe-guarded, except the location of the mobile rocket units. Accordingly, informants would be free to give any information they pleased, concerning bombs and rockets, but would not be permitted to give information concerning the location of any mobile rocket unit. In order to reassure the governments on this particular point they would be permitted to "inspect" informants, engaged in the process of giving information.

The memorandum stressed that even if the number of bombs and rockets, which the nations were initially permitted to retain, was very large, the further reduction of ^{this} ~~these~~ number would be easy to police, because international inspectors could be called in to witness the destruction of each such bomb and rocket.

How fast the initially retained number of rockets and bombs would be reduced would have to depend on the wishes of the participating nations. The reduction would have to take place step by step and the magnitude of each step, as well as the timing of each step, would have to be agreed upon from time to time.

~~During the discussion of this memorandum it became evident that some of the Americans were far from being reassured. They did not doubt that secret violations of the agreement would be detected if the approach proposed by the Russians were in fact adopted, but they were not sure that America would abrogate an agreement even if a rather serious violation were discovered. This provoked the Russians to say that they were prepared to deal with the~~

Finally, the memorandum made it clear that controlled arms limitations of the kind envisaged, would not greatly diminish the danger of clashes between the Great Powers, unless, along with the acceptance of these limitations, went a determination and pledge not to resort to atomic bombs, except in retaliation against an attack with atomic bombs. If the nations were left free to bring pressure to bear on each other by threatening to use their legitimately retained bombs, then the limitation of the number of rockets would not appreciably diminish the danger of a resort to force.

* * *

During the discussion of this memorandum it became evident that some of the Americans were far from being reassured. They did not doubt that secret violations of the agreement would be detected if the approach proposed by the Russians were in fact adopted, but they were not sure that America would abrogate an agreement even if a rather serious violation were discovered. This provoked the Russians to say that they were prepared to deal with the difficulties that may arise from the distrust of the Russian Government by the Americans, but were at a loss how to cope with the problems that arise from the fact that the Americans did not trust their own government.

Notwithstanding this first whimsical response, the Russians understood that the problem of abrogation was rather serious and, when the meeting reached an impasse on this subject, they suggested that the Steering Committee prepare a working paper on "Abrogation" for the consideration of the conference. The paper which was prepared made two basic points:

- (a) the right ~~unilaterally to invoke the right~~ to abrogate shall be retained only by a small number of nations;
- (b) the nations who retain the right to abrogate must not be forced to choose between the two extremes of either tolerating serious violations of the agreement or invoking total abrogation of the agreement. These nations must be able to invoke a partial abrogation of the agreement, but may only choose a partial abrogation, which ~~represents~~ *leads to* one of the "balanced stages of reduced arms levels" which are specified in the agreement.

The working paper "On Abrogation" proposed that the disarmament agreement specify ten such pre-determined "balanced stages of reduced arms levels", which were intermediate between the ^{prevailing} ~~arms level prevailing prior to the conclusion of the agreement~~ and virtually total disarmament. It was assumed that the transition from a higher "balanced stage" to a lower "balanced stage" would require a majority decision of the Security Council to be taken with the concurring vote of the five permanent members. It was proposed that any of the permanent members of the Security Council should have the right to invoke either a limited or an all-out abrogation of the agreement and thereby to raise the arms level from the stage prevailing at the time of the abrogation to one of the higher of the ten balanced stages, specified in the agreement.

The working paper explained that an abrogation, even a partial abrogation, of the agreement would have to be regarded as a matter of last resort and that it was essential to have the possibility of bringing pressure on nations who violate the agreement, short of invoking abrogation. To this end, "On Abrogation" proposed that a certain, sizable, fraction of the amounts saved by the nations in arms cost be paid into a fund, the Fund for Compensations. If a nation that did not retain the right to abrogate, were to violate the agreement, it could then be effectively restrained by economic sanctions, because the nations applying such sanctions could be, and would be, compensated by the Fund, for such economic losses as they themselves would suffer.

* * *

The second part of the Vienna Conference, which convened when the participants returned from the Semmering, was regarded as a flop. Because the existing

political situation in Europe made the discussion of a political settlement appear to be purely academic, this part of the conference disappointed those who expected it to produce concrete suggestions in the domain of practical politics.

A Blue Book, prepared by the Steering Committee was placed before the Conference when it ^{re-}convened. It attributed the difficulties of Europe to the fact that the political structure in Europe did not reflect the economic interdependence of the nations of Europe. It suggested that if Germany were not only economically, but also politically, integrated in Europe, Europe would pose no greater problem to the world than the other continents.

The Steering Committee took a dim view of the possibility of bringing about political integration of Europe through the creation of supra-national political agencies. Instead, it proposed a method of political integration which could be carried out gradually, step by step, and could start out for instance with the integration of France and Germany. As a first step, Germany would be represented in France, in the Parliament of the Seventh Republic, by Delegates who would have 5% of the total votes. Similarly, France would be represented in the German Parliament by delegates having 5% of the total votes. In subsequent years these representations could increase step by step, at a predetermined rate, until they might amount to 15% of the votes in both Parliaments.

In much the same manner, so the ^{Committee} ~~delegates~~ thought, through mutual representation of the nations in each other's Parliament, the whole of Western Europe could be politically integrated.

This proposal encountered much scepticism at the conference. It was pointed out that while such a proposal might be received enthusiastically in France, it would have no chance of being passed by the German Parliament. There, it would be opposed by the People's Party, controlling 45% of the votes, and would thus fall far short of the required two-thirds majority. Those who read the transcript of the conference may notice, in retrospect, that the Chinese and the Americans were much more vocal in expressing these misgivings than were the Russians. The Russians met several times among themselves and they must have discussed this problem, but they kept silent about it during ^{the} formal sessions.

The second part of the conference, having run out to topics that could be usefully

discussed, closed one week earlier than scheduled.

* * *

Governmental negotiations on disarmament started about four months after the close of the Vienna Conference. They did not evoke much enthusiasm either in Russia or in America. The Americans were generally lukewarm and said that these negotiations could at best achieve controlled arms reduction, which would not eliminate the possibility of war between the Great Powers; the Russians had misgivings that world public opinion might push them further towards total disarmament than they felt they ought to go.

The fears of the Russians proved to be groundless, inasmuch as the agreement closely followed the line that the Russians had taken at the Vienna Conference. The agreement reduced the number of rockets and bombs, to be retained by America, China and Russia, below the shake-up level of the smaller nations, and it did eliminate all submarines, capable of launching rockets. It left, however, Russia, America and China each in the possession of 500 long-range rockets, each capable of carrying 10 megaton clean hydrogen bombs. The agreement also fixed the number of rockets and bombs which the other nations were permitted to retain. All nations were pledged not to resort to the use of atomic bombs except in retaliation for an attack with atomic bombs.

As the result of the disarmament agreement, the nations were able to reduce their arms expenditure somewhat, but they were obliged to pay a good portion of what they saved in arms cost into the Fund for Compensation, set up under the provisions of the agreement.

There was nothing in the agreement to offer any assurance that general and virtually complete disarmament would be achieved in the predictable future. True enough, the agreement defined the stages, ten in number, through which the world could go from stage (1), the initial arms level, to the virtually complete disarmament of stage (10). But the date of the transition from one stage to the next lower stage was left to the determination of the Security Council where Russia had the veto, and there was no way of telling when, if ever, progress towards disarmament might take place.

Then three months after the ratification of the agreement, out of the blue sky, Russia offered to cede to Poland each year, over a 25-year period, strips of territory three to ten

miles wide, along Poland's eastern border, on condition that Poland would cede year by year similar strips of territory to Germany, on her western border. Poland declared herself willing to accept such a switch, but demanded a compensation of \$25,00 for each Polish family which had to be relocated. This would have meant an outlay of \$100 billion, payable over a period of 25 years, or about \$4 billion a year.

The Fund for Compensation, set up by the agreement, would have been able to take on this load without too much difficulty, but this would have required approval by the Assembly and many nations were outraged by Poland's demand, which they regarded as extortion.

Still, in the end, the Assembly did approve and since not even the Germans are prepared to go to war for something they can get without war, the approval of the Assembly split the People's Party in the German Parliament. Half of its members seceded from the Party and joined the other parties in Parliament in voting for the constitutional amendment, which seated delegates from France in the German Parliament.

The constitutional amendment provided for French representation in the German Parliament, initially amounting to 5% and - after a lapse of a period of 3 years - amounting to 10%, of the total votes. As could be expected, France reciprocated.

With the adoption of this amendment the danger that the People's Party might gain a majority in the German Parliament receded and two years later the Security Council voted, with the five permanent members concurring, to reduce the arms level from stage (1) to stage (4). Within five years the arms level was down to stage (7).

The disarmament agreement stipulated that mobile international armed forces, equipped with machine guns and light tanks of considerable fire power, shall be set up under United Nations auspices, but it did not say in what manner such forces would be controlled by the UN. In this respect, the stipulation had been left vague on purpose in order to secure acceptance of the agreement. The Russians had been pressing for the setting up of a world armed force under the central command of the United Nations, with the Secretary General being the commander-in-chief of the force. Since three of the previous ~~Secretaries~~ Secretaries had marked pro-Russian leanings, it is not surprising that America opposed a set-up of this type. Most of the other nations rejected the set-up proposed by America on the ground that it ran

counter to sound principles of administration.

After the settlement of the German-Polish issue, negotiations on the setting up of some international armed force were re-opened and it was then agreed to set up a number of regional international armed forces under UN auspices rather than a single world armed force under the central command of the UN Secretariat. It was agreed that each such regional armed force should be under the control of five nations who would appoint, by majority vote, the commander-in-chief. The slate of the five nations to be given control over the armed force in a given region was subject to the approval of the UN Security Council, with the concurring vote of the five permanent members. One-third of the cost of maintaining the regional force was to be borne by the five nations assuming the responsibility for maintaining peace in the region and two-thirds of the cost was to come from the Fund for Compensation.

This agreement did not at first appear to represent any progress, because all slates proposed were vetoed by either Russia, China or America. One year later, however, when Russia and China proposed a slate of five nations for the control of a regional armed force to operate in Africa, where the expansionist tendencies of some of the new African nations represented a constant threat to their neighbours, unexpectedly, America concurred and the slate was approved by the Security Council.*

*Footnote: America, owing to the implacable hostility of the African political leaders towards her, had lost interest in Africa by 1985. This brought to an end a period of American-African relations which started in 1960, when the Kennedy Foundation allocated a modest sum to establish fellowships for Africans and, at Vice President Nixon's initiative, the State Department allocated a similar sum for the same purpose. From these modest beginnings, there grew a vast fellowship program for Africans which brought over thousands of African students every year to America where they received a college education. From among their ranks came most of Africa's political leaders. *Their* subsequent hostility to America is rather puzzling, because, even though they may have been exposed to a certain amount of racial discrimination while studying in America, they could not have been any worse off, in this respect, than the American-born colored citizens of the United States.

The decision of the Soviet Union to concur in the reduction of the arms level from stage (1) to stage (4) followed, within a month, the establishment of the regional armed force in Africa. The subsequent reduction of the arms level from stage (4) to stage (7) followed the establishment of regional armed forces in the Middle East, in South-East Asia and in Central America.

When the possibility of setting up regional police forces under the control of various "groups" of nations was first discussed, many people opposed it on the ground that each such region would be likely to become the sphere of influence of one or the other of the great powers. They conceded that an agreement among the great powers on the "groups" in control of the various regional police forces would represent a political settlement, and they acknowledged that in one form or another a political settlement must be reached, but their conscience recoiled from a political settlement based on an agreement on spheres of influence. It turned out, however, that the regions under the control of the various groups of nations were spheres of non-influence, rather than spheres of influence. For instance, Central America was under the control of Uruguay, Canada, Austria and Australia, and this did not place Central America into the sphere of influence of the United States, but it did exclude Central America from the sphere of influence of the Soviet Union. Quite similarly, the Middle East was excluded from the sphere of influence of the United States without falling into the sphere of influence of the Soviet Union.

The drastic reduction of the arms level to stage (7) resulted for many countries in a considerable saving in arms cost. This did not amount to very much in the case of Russia since Russia had based her

defence almost exclusively on long-range rockets, but it was very substantial in the case of America. It has always been taken for granted that when disarmament makes a substantial reduction in arms cost possible there would be a great increase in aid to under-developed countries. What happened was the opposite. Americans felt that, after a long period of stagnation, the time had come to increase the standard of living. There was a substantial reduction in taxes and wages went up. The annual income of the average American family jumped up by about \$1500. In the first five years following ratification of the disarmament agreement, Congress failed to appropriate any funds for foreign aid. There was retained a modest point 4 program but it did not amount to very much, because, high school education having steadily deteriorated in America, America was in no position to send a substantial number of engineers and physicians abroad.

Russia had retained the six-day working week but had increased the annual paid vacation to three months and was in the process of trying to extend the vacation period to four months. Russia continued to lend funds to under-developed nations even after the conclusion of the disarmament agreement, but she charged 5% on such loans. Russia also continued to make available to under-developed nations the services of her engineers and physicians, and this was being done on a large scale, but after the conclusion of the disarmament agreement, Russia began to charge for these services, whatever the market would bear.

While the events of decades that followed general disarmament are of great historical interest, they do not come within the scope of this dissertation.

THE END

Revised December 1960



AN EXCERPT

from

"THE VOICE OF THE DOLPHINS"

by Leo Szilard

Return to First Lord
Hotel Dupont Plaza
Washington D.C.

Preface to the Excerpt

"The Voice of the Dolphins" deals with the problem the bomb poses to the world. It does not attempt to give a blue print for the solution of this problem but merely states what the real issues are that are involved. Still, when we recognize what the real issues are, we may be taking a long step towards finding the solution.

To me it seems that only by excluding war between the Great Powers can we solve the problem posed by the bomb, because any war in which America and Russia intervene on the opposite sides would be likely to turn into an atomic war. This would hold true even if the Great Powers were to try to turn the clock back and attempt to base their defence on conventional weapons only; for the world may get rid of the bombs that have been stockpiled, but it cannot get rid of the knowledge of how to make the bomb.

Throughout history, the Great Powers have relied on force or the threat of force in their dealings with each other and they might continue to do so for another generation or two. It does not follow, however, that the threat of force must necessarily continue to mean the threat of war, and the threat of force might take on a new form in the so-called atomic stalemate.

In "The Voice of the Dolphins" I describe how this might happen by relating the history of the world from 1960 to 1985. I describe what might happen - if we are lucky - in order to show what it would take to avoid a war that neither Russia nor America wants.

This "Excerpt" has been prepared as a working paper for an international meeting of scientists which was initially scheduled to take place in Moscow early in September of this year. The unabridged version of "The Voice of the Dolphins" will be published in America by Simon & Schuster. No reference is made in this "Excerpt" to the dolphins which play an important part in the unabridged version.

Leo Szilard

September 5, 1960.

Text

Between 1962 and 1965 the world passed through an agonizing transitional phase in the so-called atomic stalemate. At the beginning of this period America had still to rely mostly on bombers, based on airfields located in the proximity of Russia. Because of the possibility of a surprise attack which could have knocked out America's ability to strike a counter-blow, in times of crisis America felt impelled to keep one-third of her bombers in the air, on an around-the-clock basis. Russia, on the other hand, had no foreign bases, nor was she in need of any, since she possessed an adequate stockpile of long-range rockets which could be launched from bases inside of Russia and were capable of carrying hydrogen bombs large enough to demolish a city. By 1965 America had an adequate stockpile of such long-range rockets also and thereafter she was no longer in need of having foreign bases either.

By 1965 America and Russia were capable of destroying each other to any desired degree. Their long-range rockets could be launched from trucks or railroad cars that were kept constantly on the move and thus it would have been impossible for either Russia or America to destroy, by one single sudden blow, the power of the other to strike devastating counter blow. With the fear of a surprise attack thus eliminated, the atomic stalemate began to gain a stability which it did not formerly possess.

~~Bombs and rockets until about ten years later.~~

~~People in America ceased to think in terms of massive retaliation by 1965, because~~

~~At~~ At a time when America and Russia could have destroyed each other to any desired degree, the threat of massive retaliation would have been tantamount to a threat of murder and suicide. Such a threat might be believable if made by a nation whose very existence was at stake in a conflict, but it would not be believable if made by America in a conflict in which American interests were at stake, but not America's existence, as a nation. ~~Therefore,~~ America concluded that for the defence of her national interests she could no longer rely on long-range rockets carrying the large bomb and that she ought to maintain highly mobile forces which could be rapidly transported to almost any part of the globe. It was assumed that, in the case of an armed conflict, America would send troops to the area involved and resist by using small atomic bombs against troops in combat, within the contested area. ~~In~~ In time, Americans came to understand well enough that the "real aim" of such a limited war could not be victory, which clearly might not be obtainable in every case, but rather the exacting of a "price" from the "enemy". If America were able to exact a price higher than the price which the "enemy" would be prepared to pay, then America's capability of fighting a limited atomic war, anywhere on the globe, would effectively deter the "enemy" from attempting to change the map by force. It was recognized of course that, in order to freeze the map, America would have to be prepared to pay a price as high as she proposed to exact, both in money and in lives - the lives of the young men who would die in the fighting.

It was generally taken for granted that the large bombs and the long-range rockets would play no role in any of the foreseeable conflicts. They were kept as an "insurance" for the sole purpose of discouraging Russia or China from attacking America, by means of such large bombs. In this sense, and in this limited sense only, did the large bombs seem to serve a useful purpose as a "deterrent".

* * *
No one had any doubt that the revolution in Iraq, which caught America by surprise, was in fact communist-inspired and America responded promptly by landing troops in the

Lebanon and Jordan. This time she was determined to settle the issue of the control of the Middle East and thus to end, once and for all, the threat that Western Europe might be cut off from its Mid-Eastern oil supply. Egypt and Syria declared that they would regard an invasion of Iraq by American troops as an attack against themselves. Turkish troops were poised to move into Syria, and Russia was concentrating troops on the Turkish border, for the purpose of restraining Turkey.

At this point America proclaimed that she was prepared to send troops into Turkey, to use small atomic bombs against Russia troops on Turkish soil and in hot pursuit perhaps also beyond the pre-war Turkish-Russian boundary.

It would appear that Russia disliked the prospect of fighting an atomic war on her southern border. ~~with~~ ^{There was} little assurance that such a war would not spread and finally end up in an all-out war, ^{and} rather than to take this risk Russia decided to adopt another kind of strategy. In a Note, which was kept very short, she proclaimed that she would not resist locally, by force of arms, an American intervention in the Middle East but would rather seek to deter America by setting a high price. The price would not be set, however, in terms of human life but in terms of property. The Russian Note listed twelve American cities by name. Russia stated that if American troops crossed over into Iraq she would single out one of these twelve cities, give that city four weeks of warning to permit its orderly evacuation - as well as to allow time to make arrangements for the feeding and housing of refugees - and thereafter the city would be demolished with one single long-range rocket.

The American reply indicated that for each city that Russia would demolish in America, America might demolish two cities in Russia.

To this, Russia replied in a second Note - a Note of unprecedented length - that if America were to demolish two cities in Russia for each city that Russia may have demolished in America, and if Russia were to demolish two cities in America for each city that America may have demolished in Russia, then the destruction of one city would trigger a chain of events which would step by step lead to the destruction of all American as well as Russian cities. Since clearly America could not possibly want this result, she may not make such a threat of "two for one" and expect it to be believed. Russia, on her part, would tolerate

that America demolish one Russian city, in return for Russia having demolished one American city. But for each additional city that America might demolish, Russia would demolish one and just one additional city in America.

This second Note made it clear that even though Russia would abide by such a principle of "one for one", this did not mean that America would be free to demolish a large city in Russia in return for a small city demolished in America. What would count in this respect, so the Note stated, would be the size of the city, as expressed by the number of inhabitants, rather than by the number of square miles covered by the city.

Twenty-four hours after this Russian Note was received in Washington, the American members of the Steering Committee of the Seventh Pugwash Conference issued a document which listed the number of inhabitants of all American and all Russian cities. They stated in the preface that if American troops were to invade Iraq and Russia were to demolish one of the twelve cities she had listed, an undesirable controversy might arise on the issue of which American city was equal to which Russian city, unless an authentic list of the number of inhabitants was readily available.

This document was issued so promptly that it aroused Russian suspicion. The Russians thought that somehow the American members of the Pugwash Group Steering Committee might have had inside information about Russian intentions and thus were able to prepare in advance this list of cities. American and British statesmen had so often said that the Russians were unpredictable that finally the Russians themselves came to believe it. There is no reason, however, to think that the Pugwash Group had any advance information. Rather, it seems that the American scientists who were active in the Pugwash Group, being no inferior in intelligence to the men in Moscow who devised Russia's policies, were generally able to predict the moves that Russia would make.

The second Russian Note caused a turmoil in Washington. Various groups urged the Government that it adopt a rigid policy of demolishing two Russian cities for each city demolished in America, or that it accept the principle of "one for one", or that it do neither but just keep the Russians guessing.

At the meeting of the National Security Council several experts expressed the view that were Russia actually to demolish one of the twelve cities she had listed, the public would demand that America retaliate by demolishing a large number of Russian cities. They said that the President would thus not be able to abide by the principle of "one for one", without seriously risking the defeat of his party at the next elections.

The Government thereupon asked Gallup to conduct a poll on an emergency basis. Residents of the thirty largest cities were asked whether if Rochester, N.Y., one of the twelve cities named, were demolished, America ought to retaliate by demolishing just one Russian city, or whether she ought to retaliate by demolishing more than one Russian city. To the surprise of the Government, 85% of those who had an opinion declared themselves against America demolishing more than one Russian city.

In retrospect, this response does not appear to be so very surprising; the people polled knew very well that if America were to demolish two Russian cities in retaliation for Rochester, Russia would demolish one additional American city and this additional city might be their own.

Some of the members of the National Security Council declined to take this poll at its face value and said that the people would react differently if Rochester were actually

demolished.. The rather involved psychological argument they cited in support of this view was never put to a test, however, for America did not intervene militarily in Iraq.

Within a few days after the receipt of the first Russian Note which listed the twelve cities, people began to register in Washington as lobbyists for one or other of the twelve cities, and ten days later there was not a hotel room to be had in the whole city. It was the most powerful lobby that ever hit Washington. With steadily increasing editorial support across the nation, after an initial period of uncertainty, this lobby succeeded in forcing a re-examination of the whole Mid-Eastern issue. Doubts were raised as to whether Western Europe was really in danger of losing its supply of oil, since there was no other market for mid-eastern oil. It was said that, while the price of oil from the Middle East could be raised, it could not be raised very much, since it could be replaced by oil from the the Sahara. As the result of a re-examination of the whole Mid-Eastern issue, America decided to withdraw her troops from the Lebanon and Jordan:

This decision was reached in the face of strenuous opposition on the part of a small, but vocal, and influential, group of opinion makers. There were prophets of doom who declared that if America yielded to Russia's threat on this occasion, then from here on Russia would be in a position to get her way on any issue; she would be in a position to change the map at will, simply by threatening to demolish a limited number of American cities, in case America should try to resist locally, by force of arms.

Fortunately, these prophecies proved to be incorrect. For the time being at least, Russia appeared to be quite satisfied with the map as it stood. True enough, a number of nations in South-East Asia went communist and so did several nations in Africa. On the other hand, the Communist Government of Iraq broke diplomatic relations with Russia, in protest against Russia's supplying oil at cut-rate prices to Western Europe, thus demonstrating once more that the capitalist nations have no monopoly in feuding with each other.

Russia did derive great economic benefit from her decision to forego war. In short order, she abolished her air force and her entire navy, including her fleet of submarines; she also reduced her army and retained only a comparatively small number of highly mobile

units equipped with machine guns and light tanks. Russia continued to maintain, of course, a large number of long-range rockets mounted on trucks and on railroad cars, which were constantly moved around, along her highways and railroad tracks.

As the result of the economies thus achieved, Russia was able to invest 25% of her national income in capital goods, serving her consumer goods industry, and her standard of living was increasing at the rate of 8% per annum. Her per capita consumption of meats and fats rapidly approached that of America ~~and~~, as the result, deaths from coronary attacks rose very markedly and were approaching the American figures.

Propaganda-wise the Russians stressed the moral issue involved and made the most of it. All over the world Communists and Russian sympathisers proclaimed that wars, which initially merely meant the killing of soldiers, but in the end came to mean the wholesale killing of civilians - men, women and children - as well as soldiers, were now a thing of the past, thanks to Russia's decision to forego, abrogate and abolish war. They said, over and over again, that Russia was the only truly Christian nation, since she alone, among the Great Powers, was upholding the Fifth Commandment.*

*Footnote: The possibility that it might be to Russia's advantage to adopt this type of strategy was discussed by Szilard in an extensive article which appeared in the February issue of the Bulletin of the Atomic Scientists in 1960. It is not known whether Szilard's article elicited any response other than a notice in Newsweek, in America, and in Crocodile, in Russia. Newsweek condensed this article beyond recognition and managed to convey the impression that Szilard had proposed that Russia and America ought to demolish each other's cities in exchange - to no sensible purpose. Taking its information from Newsweek, Crocodile suggested in its issue of April 20, 1960 that Newsweek carry an ad for Szilard offering to exchange his room 812 in the Medical Division of Memorial Hospital, New York, for a bed in Ward 6 in the Psychiatric Division. Some of his American colleagues do remember that Szilard made ^a ~~some~~ prediction concerning the strategy which the Russians would adopt if there is no general disarmament, but they remember only that he had predicted something rather crazy without recalling what it was that he had predicted. After his death,

Szilard appears to have received some recognition, however, on the part of his Russian colleagues, who named a small crater after him - on the back side of the moon.

Following the Iraq crisis there were two rival schools of thought in America.

One of these held that America ought to follow Russia's example, cut down on her arms expenditure by reducing the army, navy and the air force and adopt the Russian strategy of relying on long-range rockets.

The other school argued that operating with the threat of demolishing cities would favor Russia rather than America, because the American Government was more responsible to the will of the people and the people did not like to see their cities demolished. They urged therefore that an all-out effort be made to develop an anti-missile missile, capable of destroying incoming Russian rockets in flight and stressed that a defence system based on such missiles would nullify the Russian strategy of demolishing cities.

The President's Science Advisory Committee took a dim view of the development of an effective anti-missile ~~missile~~ defence system but in the end the views of the Department of Defense prevailed; thus, an appropriation of \$20 billion per year for the development of such a defence system was included in the Budget and unanimously passed by Congress.

Most of those who urged the development of the anti-missile missile also urged that America cease to rely on atomic bombs used against troops in combat and be fully prepared to fight limited wars with conventional weapons. They argued, convincingly, that a war in which atomic weapons would be used against troops in combat would not be likely to remain limited and might end up in all-out atomic destruction. Since the enemy must know this also - so they further argued - it would not resort to the use of atomic bombs against troops in combat, as long as America would limit herself to fighting with conventional weapons.

Taking its cues from this school of thought, the American Government adopted the position that it would be immoral to use atomic energy for purposes of destruction and it urged that all use of atomic bombs in warfare be outlawed. The Government proposed that, until such time as atomic bombs can be eliminated from the armaments of the nations under satisfactory safeguards, each nation pledge unilaterally not to use atomic bombs either against troops in combat or for the purposes of destruction. If such pledges were given, then America would use the atomic bombs it retained, in retaliation only, and only, if America or one of her allies were attacked with atomic bombs.

The position of the American Government was generally supported by the press. Noted columnists pointed out that, even though outlawing the atomic bomb would not necessarily prevent the use of such bombs in time of war, it would preclude nations from resorting to the threat of using atomic bombs in order to attain their objectives.

The American proposal that the use of atomic bombs be outlawed represented the main theme of most of the programs of "The Voice of America" which received an appropriation of \$1 billion a year, and the American proposal for outlawing the bomb received world wide support. But even though, during the post-war period, the outlawing of the bomb had been persistently urged by Russia, the Russians showed no interest in this approach. They stood fast in the face of adverse world public opinion and no indication was forthcoming that Russia would go along with outlawing the use of atomic energy for purposes of destruction.

Pending the completion of the development of the anti-missile missile, America followed a triple policy of maintaining long-range rockets, to be used in retaliation in case America were attacked by means of such rockets, a small but mobile military force equipped to use small atomic bombs against troops in combat, and also a large combat-ready military force capable of fighting local wars by means of conventional weapons. Since maintaining such a triple system was costly, America had an arms budget of around \$70 billion. This cut down the amount invested in capital goods, serving the consumer goods industry, to about 3% of the national income and it slowed the

rise in the standard of living to about 1% per annum. Such a stagnation in the standard of living was not deemed to be a very serious detriment, however, since the standard of living was high enough as it stood; moreover, a high defence expenditure was regarded as an insurance against the possibility of a recession.

The depression which hit America in 1975 began with unemployment in the construction industry, which subsequently spread to other industries. In the hope of inducing the Federal Government to finance large-scale construction, in the second year of the depression the construction industry established a lobby in Washington. But, in spite of large-scale Federal construction, there was no marked economic improvement by 1978, at the time when the Iranian upheavals occurred.

The Government responded to these upheavals by promptly proclaiming that if Russia should send troops into Iran, America would not fight her in the contested area, but, instead, two Russian cities of about one million each would be demolished, after receiving four weeks of warning. Americans understood fully that should Russia actually invade Iran, not only Russia but also America would lose two cities. It was generally felt however that, because of the large-scale unemployment, prevailing in the construction industry, America would be in a position to rebuild, in short order, the cities which she might lose.

The Government's proclamation had strong support in Congress. It would be uncalled for, however, to attribute this to the influence of the lobby of the construction industry. Undoubtedly, Congressmen realized that, with the development of the anti-missile missile still lagging, the Government had no other recourse but to adopt the "Russian Strategy". Moreover, there was some reason to believe that Russia might not be willing to sacrifice two cities for the sake of Iran.

In fact, Russia did not send troops into Iran. Whether she refrained from doing so because she would have lost two of her cities or whether she never ~~really~~ had any serious intentions of militarily intervening in Iran, may be regarded today as debatable. At that time, however, the press in America stressed that the Russians had an emotional attitude towards property and abhorred the destruction of property, particularly public property. They also stressed that the loss of a city would mean much more to Russia than just the loss

of property, that it would disrupt the social fabric and cause dislocations which the precariously balanced Russian social system could not easily stand.

* * *

The Iranian incident was followed by a period of quiet and many people began to believe that the strategic stalemate had reached a stage where it was virtually stable. The map appeared to be frozen, at least in the sense that such changes as came about, came about through genuine internal revolutions and no nation sent its troops across the frontier of another nation, in an attempt to increase the territory under its control.

Around 1980, however, there appeared a new kind of instability which developed into a serious threat to the world by 1985, the year in which the twenty-fifth Pugwash Conference convened in Vienna. In order to understand the problems that confronted the world in that critical year, it is necessary to consider how the world situation had changed in the interval from 1960 to 1985.

Changes in the World Situation from 1960 to 1985

The years that followed the Second World War brought unprecedented changes in the Far East. What was really novel and unique about China was not so much that China had a Communist government but that - for the first time since the days of the Emperors - she had a government. By 1960, it was clear that the Chinese would be able to greatly raise production, but it was not as yet clear whether they would succeed in getting the rate of population increase under control - at the time when this would become necessary. Had they failed in this, no amount of economic progress, within the limits of the obtainable, could have appreciably raised their standard of living.

It seems that by 1960, most Americans realized the foolishness of opposing the seating of China in the UN and of pursuing a policy of "No Speak" towards China. Szilard's diary (see Appendix 1), recently reprinted by Simon & Schuster, contains an entry made in 1960 to the effect that he did not know personally anyone who still thought that America ought to persist in opposing the seating of China in the United Nations. In contrast to this, virtually all of those who ran for elected office, in that year, went on record against the

with bombs and rockets until about ten years later.

Soon after China became an atomic power, there was a marked change in attitude on the issue of the islands of Quemoy and Matsu. Up to that time, the American press urged the Chinese Nationalists to hold on to these islands for reasons of expediency. Afterwards, however, it was said, with increasing frequency, that it would be morally wrong for America to encourage the Nationalists to persist in the occupation of these islands.

Just about the time when American policy towards China became more ^cconiliatory, the Chinese attitude began to harden. When the Chinese population ~~became stationary~~ *ceased to increase rapidly*, the standard of living in China began to rise rapidly and, with increasing prosperity, there was an increase in China's expansionist tendencies.

This is quite understandable, even though it is the exact opposite of what people had generally predicted. All individuals and nations who believe that they are in possession of the truth are in a sense dangerous and in this sense, for a while China became dangerous.

But, just as the zest of British imperialism persisted only as long as the English thought that by extending their system to other nations, they could bring them the blessings of civilisation, thus also the expansionist tendencies of China persisted only until the Chinese began to realize their inability to bring about a betterment of the lot of the Indians.

It is curious that, of all nations, India should play this role of bringing disenchantment to imperialism. It is even more curious that she should play this role twice within the century and under such different circumstances. No one has done more to disenchant British imperialism than Gandhi and he did it because he was the incarnation of the highest virtues of the Indians. The disenchantment that India brought to China, however, was not due to any virtues, but rather to the absence of virtues.

When India became Communist, China went all out to make Communism in India a success. After fifteen years of Communist rule in India, it began to dawn on the Chinese, however, that the success of their own regime in China may have been due, to a large extent, to the civic virtues of the Chinese which the Indians were totally lacking. The recognition of this

greatly increased China's national pride, but at the same time, it decreased her zeal to extend her political and economic system to other nations.

After Chiang Kai-Shek's untimely death, the "Formosa for Formosans" movement began to gather strength rather rapidly. Formosa had been separated from China for two generations and Formosans liked neither the Chinese on the mainland nor those who had come to Formosa from the mainland. There were rumours that the American Government secretly encouraged the "Formosa for Formosans" movement; there is no evidence, however, that any Government funds were in fact involved, even though funds for cultural activities may have come from private sources in the United States, such as the Rockefeller Cousins Fund.

After a while, the situation became rather uncomfortable for the remnants of the Chinese Nationalists and most of them wanted to leave Formosa. China, which had a severe shortage of clerical workers, offered asylum to all those born on the Mainland; a law enacted by Congress made it possible for those of them who wanted to come to America to do so, provided they did not take up residence in California.

Most people expected that China would thereafter occupy Formosa, but China appeared to have somehow lost interest in that island. Apparently, Chinese national pride having reached a climax, the Chinese came to look ^{down} upon the native Formosans ~~as semi-barbarians~~. The Americans, the English, the Germans and the Russians have always been regarded as barbarians by the Chinese, whereas the Japanese were looked upon as semi-civilised. Formosa had been under Japanese rule for two generations, and the Chinese came to regard the native Formosans as no more civilised than the Japanese.

When it became manifest that China was not interested in Formosa any longer, the stage was set for the possibility of a political settlement in the Far East, based on the freezing of the map in South East Asia.

* * *

At the same time, however, a political settlement in Europe appeared to be as far off as ever. In Germany, united since 1980, the Social Democrats, being the largest party in

Parliament, were in office. But there were four parties holding seats in the German Parliament and the position of the Government was precarious. All Germans were united in their determination to recover from Poland the territories which Germany lost to her at the end of the Second World War, but there was violent disagreement ^I between the political parties, as to the method of accomplishing this. The Social Democrats and the Christian Democrats wanted to force Poland to return these territories to Germany, through negotiations, conducted under such economic pressure as Germany was now capable of bringing to bear. The People's Party, however, (which had been rapidly increasing in strength, ~~in the years prior to the raising of the gold price and~~ ^{and} came to control 45% of the votes in Parliament) advocated the use of force - if necessary.

Poland had made it abundantly clear that she would in no circumstances attempt to fight a war on the Polish-German border and that if German troops were to invade her territory she would exact a high price from Germany by demolishing two German cities, of an as yet unspecified size, for every 10 miles depth of penetration of her territory by German troops. Following Russia's classic example, she proclaimed that she ^{would} not retaliate, if Germany demolished no more than one Polish city of equal size for every city demolished by Poland.

The People's Party advocated that Germany should resort to force and should be willing to pay whatever price may be set by the Poles. They argued that Germans being industrious, as well as prosperous, would be in a better position to rebuild their cities than would be the Poles. They contended that the return of ^{the} former German territories was not a matter which could be discussed in terms of loss, or acquisition, of property, because it was essential to the spiritual integrity of the German Nation.

This rather ominous political development in Europe, was paralleled by an equally ominous "military" development the world over. As the Russian rockets increased in numbers and became capable of carrying larger bombs the situation of the United Kingdom, France, Germany, Italy and Japan became precarious. Up to 1980, these nations had based their security on rockets which were constantly moved around within their territory. Rockets are guided by delicate instruments, however, which are ruined if the rockets get badly shaken up.

All these countries were *small*, and had Russia exploded about one-fourth of her rockets in a sudden attack say over France and Germany, the French and German rockets would have been so badly shaken up that neither of these two countries would have been capable of striking a counter-blow. In these circumstances, all the atomic nations, with the exception of America, Russia and China, felt compelled to shift their defence, from land based rockets to rockets based on submarines, equipped for the launching of rockets.

This solved the problem of surprise attack with which these nations were faced, but it created a new problem for the world. If a city were destroyed by a rocket launched from a submarine, it might be possible to trace the orbit of the rocket back to a point at sea, with the submarine submerged, it would not be possible however to determine the nation responsible for the attack. The possibility of such an "anonymous" attack was particularly serious in view of the political frustration not only of Germany, but also of Japan.

As the result of the high tariffs, which America had promulgated to balance her military budget, Japan found herself in economic difficulties which brought the Japanese militarists into office. The power of China blocked the possibility of a Japanese adventure in South-East Asia, but Japan, having built up a powerful navy, could have moved into the Philippines if America had lost her ability to protect these islands. Thus Japan, while potentially expansive, was, for the time being, bottled up.

Fears were growing, both in America and in Russia, that one day a bomb might be launched from a German or a Japanese submarine and destroy, say an American city. Since the identity of the attacker would remain concealed America might counter-attack Russia, with the result that Russia would counter-attack America.

To what extent such fears were justified is difficult to say, but it is certain that if Russia and America had mutually destroyed each other, this would have left both Germany and Japan in a much better position to pursue their aspirations.*

*Footnote: The reader may recall that during the Second World War, a few days after Germany went to war against Russia, there was an attack from the air against the Hungarian city of Kaschau. The Hungarians examined the bomb fragments and found that the bombs were of

Russian manufacture. As we know today, the bombs were dropped by the German Air Force to create the impression that Russia was the attacker and of thus to induce Hungary to declare war on Russia. This ruse was successful.

Apprehensions reached such a level that wealthy Americans went to live in Arizona and New Mexico, where they built luxurious homes, equipped with air conditioned shelters capable of storing a year's supply of food, and with attics, complete, with machine guns mounted in the windows. Many Americans transferred funds to Switzerland and this movement of funds reached such proportions that Swiss banks ceased to pay interest on deposits and levied a 2% annual "carrying charge".

This flight of capital forced America to raise the price of gold. Ostensibly America did this in order to render economic help to South Africa where, as the result of a revolution, an all-black government took over, which America was quick to recognise. In fact, however, the chief beneficiary of the rise in the gold price was Russia, which up to then refrained from exporting gold at the prevailing low prices, and had begun to line the walls of her public toilets with sheets of gold, in token fulfilment of a prophecy once made by Lenin.

By 1985 there was strong sentiment in America for general and total disarmament, whereas Russia was more in favor of controlled arms reduction and appeared to be reluctant to accept general and total disarmament until such time as it would be possible to set up an international armed force under the United Nations, which would guarantee the status quo.

1985 was the year in which the twenty-fifth Pugwash Conference was convened in Vienna.

* * *

In order to be able to appraise the contribution made by this conference to the achievement of disarmament, it is necessary to recall the political thinking that prevailed on this subject at that time. This thinking is reflected in articles which appeared over a period of years in the Bulletin of the Atomic Scientists, by American, Russian and Chinese authors.

Most of the American authors favored general and total disarmament. They took it more or less for granted that a world disarmed down to machine guns would be a world at peace, but they were less certain about the feasibility of such disarmament. Some Americans held the view that there would be no way to make reasonably certain that bombs and rockets, which a nation might want to hide, could be detected.

Most of the Russian authors, while favouring, in principle, general and ~~total~~ ^{complete} disarmament, took the position that such disarmament must follow rather than precede the establishment of an international armed force, capable of protecting the security of smaller nations such as Poland. The Russians pointed out that even if all heavier weapons were eliminated and all armies were disbanded, in the western countries as well as in Russia, an improvised German army equipped with machine guns could spring up so to speak overnight. If such a German army were to invade Poland, Russia, having disbanded her own army, would be unable to protect her.

American authors did not favor the establishment of an international armed force, presumably because they assumed that such an armed force would be set up under the United Nations, where America might be out-voted.

More and more often America was forced to use her veto in the Security Council. The Russians frequently accused America of misusing the veto, but no Russian has ever been able to define the difference between the use of the veto and the misuse of it. Also, Russia sometimes succeeded in depriving America of her right to the veto, by managing to shift the controversial issue - under the 'Uniting for Peace' resolution - to the General Assembly, where she was, at times, able to count on a two-thirds majority.

Some American authors suggested that, in place of setting up an international armed force, the nations of the world should enter into a covenant and pledge themselves to apply stringent economic sanctions against an "aggressor". The Russians doubted that nations who entered into such a covenant would live up to their commitments if, by doing so, they would have to pay a high price in terms of their own economic welfare. The Russians pointed out that when Italy attacked Abyssinia, it proved to be impossible to embargo the supply of oil to Italy, because American oil interests were opposed to America's participation in such an embargo. They reminded the Americans that when Japan attacked China, the United States continued to supply oil and scrap iron to Japan and that she stopped ~~the supply of oil~~ only when she was ready to enter the Second World War herself.

Concerned with Europe, more than any other continent, the Russians stressed that, while Germany was economically integrated with Western Europe, politically she was not; they stressed that Western Europe was politically incapable of restraining Germany from taking armed action against Poland, and that Western Europe could not apply economic sanctions against Germany, without suffering staggering economic losses.

The Special Disarmament Number of the Bulletin of the Atomic Scientists of June 1985 contained a number of remarkably lucid articles by American, Chinese and Russian authors.

Those who read these articles today gain the very definite impression that the Americans were willing to go much further towards total disarmament than were the Russians.

The Russians were willing to consider controlled arms limitations, the idea being that, in return for a total elimination of all submarines capable of launching rockets, America, Russia and China would cut down the number of their long-range rockets and bombs below the shake-up level* of the small atomic countries. Apparently, this was as far as

*Footnote: If a sufficiently large number of sufficiently large bombs were detonated at a suitable height above countries like, France, Italy or Germany, the explosions would shake up the rockets on the ground to the point where their guidance system would be affected and the rockets would become unusable.

they were willing to go - in the absence of a reliable world security system.

The Americans wanted to go much further. They stressed that the problem that the bomb posed to the world could be solved only by eliminating the possibility of war between the Great Powers and that the kind of controlled arms limitations which the Russians favored would not accomplish this. They drew a sharp distinction between controlled arms reductions of the kind which the Russians had in mind, and virtually total disarmament which would eliminate the possibility of war between the Great Powers.*

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*Footnote: The first disarmament conference of the League of Nations convened in 1925(?). It so happened that Albert Einstein passed through Geneva during this conference and when they discovered his presence, reporters asked him how he was impressed by the progress the conference was making. "What do you think, Einstein asked, "about a meeting of a town council which is convened because an increasing number of people are knifed to death each night in drunken brawls, and which proceeds to discuss how long and how sharp shall be the knife that the inhabitants of the city may be permitted to carry?" After a somewhat shocked silence, one of the reporters asked Einstein, "Do you mean to convey that the disarmament conference is bound to fail?" And Einstein said: "Yes, I do."

.....

~~In a major article, a distinguished Chinese scientist took the position that if the nations each retained legitimately a certain number of bombs and rockets, this ought not to be objectionable, as long as these are retained only as an insurance against a surprise attack that might be launched against them by some other nation that has illegally and secretly retained a substantial number of bombs and rockets. The dividing line between controlled arms limitations and genuine disarmament is set - so this Chinese scientist pointed out - not so much by the number of bombs and rockets which the nations may be permitted to retain, as by the purpose for which these bombs and rockets are retained. Even if the number legally retained is substantial, this would still be perfectly compatible with genuine disarmament, as long as the bombs and rockets are retained merely as an~~

~~insurance. But if they are retained in order to be used as a threat, which might deter other nations from pursuing their legitimate, or illegitimate, territorial aspirations, then their retention would defeat the purpose of genuine disarmament. The article proposed that at the same time when an agreement is concluded that fixes the number of bombs and rockets which each nation may be permitted to retain, each nation should unilaterally pledge not to resort to the use of bombs unless bombs are used against it first. Such pledges, so the Chinese scientist pointed out, would not necessarily prevent the actual use of the bombs in case of war, but they would prevent any nation from threatening to use the bombs which it has legitimately retained, except in retaliation for an atomic attack.~~

This special number of the Bulletin reflected the political ideas prevailing on the subject of disarmament at the time of the twenty-fifth Pugwash Conference.

The Steering Committee of the Pugwash Conference invited a number of Russian, American and Chinese scientists, who were advising their governments on policy, and also some non-scientists who were active in a policy advisory role, but they did not invite anyone holding a formal governmental position.

Because of the political tension in Europe, the Conference was generally regarded as badly timed in Russia, and up to the very last minute it was uncertain whether any Russians would turn up at the conference. However, the Russians did come, and they came in time to permit the conference to start on schedule.

The agenda of the conference called for informal discussions of the working papers which would be submitted from time to time by the Steering Committee. These informal discussions were to last two weeks and to be followed by an intermission of ten days' duration. The members of the conference were supposed to spend these ten days in the Semmering Mountains, conversing with each other, unencumbered by any agenda.

The key note of the conference was set by an introductory document prepared by the Steering Committee.

This "Introduction" took the position that in previous negotiations, concerned with the problem of disarmament, major difficulties were encountered because the nations were apprehensive of secret violations of the agreement. These difficulties appeared almost

insurmountable at the time of the ill-fated Geneva negotiations of 1960, because people were thinking in terms of an agreement to which Russia, America, as well as the other Great Powers would be irrevocably committed. If this were the case, then the agreement would have to spell out in detail the methods of inspection, to which all nations must submit. Possible secret evasions are innumerable, however, and as time went on there would arise new forms of evasion, which were not previously apparent. Thus, in 1960 many Americans had doubted that there would be any way for America to make sure that Russia would not retain a large number of bombs and rockets, hidden away in secret.

The "Introduction" stressed that it lies in the very nature of an agreement providing for arms limitations, that it could remain in force only as long as Russia, America and China each wanted to keep it in force. Therefore, the agreement would not be weakened by giving these three nations, and perhaps also to the other permanent members of the Security Council, the legal right to abrogate the agreement at any time, and without cause. Quite on the contrary, the agreement might ~~in fact~~ be strengthened by giving the Great Powers the right to abrogate, because there would then be no need to spell out in the agreement any specific measures of inspection. Instead, it would then be understood that if Russia, for instance, were unable to convince America that there were no major evasions on her territory, America would have no choice but to abrogate the agreement. The same would, of course, hold, in the reverse, for Russia.

If the problem is presented in this manner, then clearly the issue is no longer what rights of inspection America should demand from Russia or Russia from America, but rather in what manner Russia might choose to convince America that there were no secret evasions on her territory, and in what manner America might choose to convince Russia.

~~The Steering Committee proposed, at the outset of the meeting, that the simplest questions be discussed first and that the conference ~~therefore~~ assume - for the sake of argument - an agreement providing for virtually complete disarmament and discuss on this basis in what manner Russia and America could convince each other that they do not secretly evade the agreement.~~

The Steering Committee proposed to the Conference that it assume, for the sake of argument, an agreement that would provide for virtually complete disarmament. In that case, there would be no military secrets left that would need to be safeguarded, and therefore the nations would presumably have no objections to admitting foreign inspectors in virtually unlimited numbers.

Most Americans seemed to dislike the idea that Russian inspectors might roam the territory of the United States in large numbers. They said that they would recommend that every boat or plane capable of carrying a bomb across the Atlantic or the Pacific should carry a team of inspectors on board, in order to reassure all nations that the plane or ship did not carry illicit bombs. Otherwise, however, they showed little inclination to recommend reliance on foreign inspectors. They took the position that Russia could not convince them that she did not illegally retain rockets or bombs, even if she were to admit foreign inspectors in unlimited numbers. They held that if the Russian government wanted to hide bombs or rockets, as long as she had the wholehearted cooperation of her scientists and engineers in such an endeavour, foreign inspectors would not be able to discover hidden bombs and rockets.

One of the Americans proposed that, rather than to admit foreign inspectors in large numbers, America reassure Russia and the other powers on the issue of secret evasion by adopting the following approach:

When the disarmament agreement had been signed and published, the President of the United States would address the American people over television, radio and through the newspapers. He would explain why the American government had entered into this agreement, and why it wished to keep it indefinitely in force. He would make it clear that any secret violations of the agreement might lead to an abrogation of the agreement

by the Russians or the Chinese, and that the American government would not condone such violations. The President would admit that violations might occur, and state that if they did occur, they would have to be regarded as the work of over-zealous subordinate governmental agencies whose comprehension of America's true interests and purposes were rather limited. The President would make it clear that in these circumstances it would be the patriotic duty of American citizens in general, and of American scientists and engineers in particular, to try to discover such secret violations of the agreement, and to report them to the International Control Commission. In addition to having the satisfaction of fulfilling a patriotic duty, the informant who discloses a major violation of the agreement would receive an award of one million dollars from the President's Contingency Fund. The President would announce that no income tax would be levied on such an award, and that the recipient of such an award, who wished to enjoy his wealth by living a life of leisure and luxury abroad and would want to leave America with his family, would not be hampered by currency restrictions in transferring the award abroad.

Several Americans challenged the Russians to say whether Russia would be willing to create conditions in which America could rely on Russian citizens reporting secret violations of the agreement, rather than having to rely on foreign inspectors. In particular, the Americans wanted to know whether the appeal of the President of the United States to the American people (described above) might also be made by the Chairman of the Council of Ministers to the Russian people.

The Russians said that the Soviet government would be willing to create conditions in which America could rely on Soviet scientists and engineers to report secret violations. They pointed out, however, that

the Chairman of the Council of Ministers of the Soviet Union could not very well follow the example of the President of the United States and say that secret violations of the agreement might be committed by overzealous subordinate governmental agencies acting against the orders of the Soviet government. In this respect, conditions were quite different in the Soviet Union from those prevailing in the United States and, in the Soviet Union, people would find it difficult to believe that any agency of the Government would act against orders of the Soviet government.

The Russians thought that, from time to time, the Chairman of the Council of Ministers could go before the people of the Soviet Union and speak to them as follows: Upon the conclusion of the agreement providing for general and complete disarmament, the Soviet Union had to admit a substantial number of foreign inspectors to her territory. Many of these inspectors are bona fide agents of the International Control Commission, but there are also amongst these foreign inspectors agents of the American armaments industry. These circles would like to see Russia engage in secret violations of the agreement, which would lead to an abrogation of the agreement by America. These agents of the American imperialist warmongers will undoubtedly try to persuade honest and patriotic but gullible Soviet citizens that, for the sake of the safety of the Soviet Union, they ought illicitly to retain and to hide bombs and rockets. The Chairman of the Council of Ministers would call on Soviet citizens, particularly on scientists and engineers, to frustrate the machinations of these foreign agents by promptly reporting such violations of the agreement to the International Control Commission. By convincing the Americans that secret violations of the agreement, if they did occur, would not remain hidden for long, Soviet citizens would safe-

guard the agreement and block those American circles who would want to induce the American government to terminate the agreement, and to embark on rearmament.

The Americans received this particular Russian proposal with mixed feelings.

Subsequently, a Chinese scientist proposed that the great powers convince each other of the absence of secret violations of the agreement by entering into a game, which he described in detail in a memorandum that he submitted. This memorandum took the position that, inasmuch as the great powers were not likely to violate the agreement in secret (at least not in the years immediately following the conclusion of the agreement), it would be frustrating for the citizens of these nations to keep looking for violations, and never to find any. In these circumstances, vigilance would soon cease, and if later on one or the other of the governments of the great powers would indulge in secret violations of the agreement, the other powers could not rely on the citizenry for the discovery of these violations. The memorandum pointed out that the only way to be sure that secret violations would be discovered, would be for secret violations to occur, and to be discovered. This could be accomplished by a game, which would be played as follows:

America, as well as the other great powers, would appoint, from within the governmental agencies concerned, committees composed of 3 to 7 men, and each such committee would be assigned the task of hiding a bomb or rocket. These committees would be permitted to lie, to cheat and to threaten, and to do whatever is within their power to keep the location of the hidden bombs or rockets secret. They would be free to tell gullible citizens that it was necessary to keep such rockets or bombs hidden because the government had received secret information

that bombs and rockets are being illegally hidden in substantial numbers by other governments. The members of these committees would receive each year a bonus equal to their regular salaries, and they would continue to receive these bonuses as long as the bomb or rocket which they had hidden, remained hidden.

Whenever a bomb or rocket was hidden by one of the committees appointed for the purpose, the committee would prepare a protocoll describing the circumstances under which the bomb or rocket was hidden, and the measures adopted for keeping it hidden. The government would place each such protocoll in a sealed envelope carrying a code number, and would deposit it with the International Control Commission. In addition, the government would deposit with the International Control Commission a number of similar envelopes, each bearing a code number, but containing an empty sheet of paper instead of a protocoll.

From time to time, the President of the United States would appeal to the American people to participate in the game, which would serve the purpose of convincing other nations that no bombs or rockets are illegally hidden in America. He would point out that it was the patriotic duty of all citizens to try to discover the bombs or rockets, which were being hidden by the committees appointed for the purpose. A substantial reward would be paid to those who report to the International Control Commission the location of a hidden bomb or rocket. Each time the Control Commission receives such a report, the U. S. government would give the Control Commission the code number of the envelope which contains the protocoll that describes the hiding of that particular bomb or rocket.

As long as no bombs or rockets were hidden -- except as a part of the "game" -- each bomb or rocket discovered would be covered by a proto-

coll describing how that particular bomb or rocket had been hidden.

Other nations could, from time to time, check on how effective the American citizenry was in reporting bombs and rockets that were hidden in America. In order to do this, the other nations would select at random, say fifty envelopes deposited by the American government with the International Control Commission, open these envelopes and determine what fraction of the envelopes contained a protocol relating to a hidden bomb or rocket, and what fraction of the envelopes contained empty sheets. Such a test, performed from time to time, would disclose the rate at which bombs or rockets that have been hidden in America are being discovered, and the nations would be in a position to estimate, on this basis, how long a bomb or rocket hidden in America may be expected to remain hidden.

In this manner, America could reassure other nations on the issue of secret violations of the agreement because, if the American government intended to violate the agreement by secretly hiding bombs and rockets outside of the "game", it could do no better in this respect than it was doing within the framework of the "game." Naturally, if the American government wanted to hide bombs and rockets outside of the "game", it would not deposit with the International Control Commission protocols with respect to these bombs or rockets. Still, the probability of discovering bombs and rockets that were hidden outside of the "game" would be just as great as the probability of discovering rockets and bombs which were hidden as part of the "game."

Just how great the probability may be within the "game" would be tested in the manner described above and, if it turned out, as it almost certainly would, that bombs and rockets might remain hidden for one or two years, but rarely any longer, then no governmental agency

would risk hiding bombs or rockets outside of the "game".

In much the same manner, Russia could reassure America and China, and China could reassure America and Russia, on the issue of secret violations.

This proposed game evoked much discussion and a number of objections were voiced. Most of the objections amounted to saying that the proposed game was "funny". The author of the memorandum responded by saying that in many Chinese dialects the word "funny" was synonymous with the word "novel", and he thought it might not be wise to rule out "funny" solutions in seeking the solution of a "funny" problem.

~~ruling that such awards would be free from tax. They did not doubt, however, that the Treasury could be prevailed upon to issue such a ruling.~~

~~The Americans also said they would recommend that every boat and plane capable of carrying a bomb across the Atlantic or the Pacific should carry a team of inspectors on board, in order to reassure Russia and China that these planes or ships did not carry any illicit bombs.~~

The discussion of safeguards in the case of virtually total disarmament ended with several participants cautioning the conference against drawing the conclusion that satisfactory safeguards against secret violations would be practicable, under prevailing world conditions. Since Russia would undoubtedly ~~retain~~ ^{insist on retaining} bombs and rockets ~~for~~ her defence - so they pointed out - and since these would be moved about on trucks and railroad cars, their current location would represent an important military secret that needed to be safeguarded. In these circumstances, Russia would not be able to tolerate informants to report the locations of the mobile rocket units.

The discussion of these arguments was deferred to the next series of sessions which was supposed to examine the "feasibility" of controlled arms reduction rather than virtually complete disarmament.

In preparation for that series of sessions, the Steering Committee drafted a memorandum on "Inspecting the Informant". This memorandum assumed that, as a first step, all submarines capable of firing rockets would be destroyed and, at the same time, China, Russia and America would reduce the number of rockets below the shake-up level of the smaller nations. Also, at the same time, all nations would pledge themselves not to use atomic bombs except in retaliation against an atomic attack. The number of bombs and rockets legitimately retained by America, China, Russia and the other nations would be agreed upon. The legitimately retained bombs and rockets would be marked and all the un-marked bombs and rockets retained would be considered illegitimate.

It was assumed that the legitimately retained rockets would be carried by railroad cars or trucks and be constantly moved about. A sufficient number of rocket tracing stations would be set up all over the world and these stations, by locating the origin of the rocket, would be capable of identifying the nation from whose territory the rocket was launched.

It was proposed that the railroad cars or trucks which carry a legitimate rocket also carry an international team of inspectors. In case of an attack by a mobile rocket unit - which was not authorized by its government - the teams of international inspectors, assigned to all the various rocket units, would thus be in a position to exonerate the innocent rocket units and to identify, by elimination, the particular rocket unit that fired the rocket. The individuals responsible for the unauthorized attack could then be brought to justice.

The teams of international inspectors assigned to the mobile rocket units would also serve as "markers" and any would-be informant could know that a rocket unit, not so marked, was not a legitimate unit.

It was made clear that in this stage of arms limitations there would be no secrets left that need to be safe-guarded, except the location of the mobile rocket units. Accordingly, informants would be free to give any information they pleased, concerning bombs and rockets, but would not be permitted to give information concerning the location of any mobile rocket unit. In order to reassure the governments on this particular point they would be permitted to "inspect" informants, engaged in the process of giving information.

The memorandum stressed that even if the number of bombs and rockets, which the nations were initially permitted to retain, was very large, the further reduction of ^{this} ~~these~~ number would be easy to police, because international inspectors could be called in to witness the destruction of each such bomb and rocket.

How fast the initially retained number of rockets and bombs would be reduced would have to depend on the wishes of the participating nations. The reduction would have to take place step by step and the magnitude of each step, as well as the timing of each step, would have to be agreed upon from time to time.

~~During the discussion of this memorandum it became evident that some of the Americans were far from being reassured. They did not doubt that secret violations of the agreement would be detected if the approach proposed by the Russians were in fact adopted, but they were not sure that America would abrogate an agreement even if a rather serious violation were discovered. This provoked the Russians to say that they were prepared to deal with the~~

Finally, the memorandum made it clear that controlled arms limitations of the kind envisaged, would not greatly diminish the danger of clashes between the Great Powers, unless, along with the acceptance of these limitations, went a determination and pledge not to resort to atomic bombs, except in retaliation against an attack with atomic bombs. If the nations were left free to bring pressure to bear on each other by threatening to use their legitimately retained bombs, then the limitation of the number of rockets would not appreciably diminish the danger of a resort to force.

* * *

During the discussion of this memorandum it became evident that some of the Americans were far from being reassured. They did not doubt that secret violations of the agreement would be detected if the approach proposed by the Russians were in fact adopted, but they were not sure that America would abrogate an agreement even if a rather serious violation were discovered. This provoked the Russians to say that they were prepared to deal with the difficulties that may arise from the distrust of the Russian Government by the Americans, but were at a loss how to cope with the problems that arise from the fact that the Americans did not trust their own government.

Notwithstanding this first whimsical response, the Russians understood that the problem of abrogation was rather serious and, when the meeting reached an impasse on this subject, they suggested that the Steering Committee prepare a working paper on "Abrogation" for the consideration of the conference. The paper which was prepared made two basic points:

- (a) the right ~~unilaterally to invoke the right~~ to abrogate shall be retained only by a small number of nations;
- (b) the nations who retain the right to abrogate must not be forced to choose between the two extremes of either tolerating serious violations of the agreement or invoking total abrogation of the agreement. These nations must be able to invoke a partial abrogation of the agreement, but may only choose a partial abrogation, which ^{leads to} ~~represents~~ one of the "balanced stages of reduced arms levels" which are specified in the agreement.

The working paper "On Abrogation" proposed that the disarmament agreement specify ten such pre-determined "balanced stages of reduced arms levels", which were intermediate between the ^{prevailing} arms level ~~prevailing prior to the conclusion of the agreement~~ and virtually total disarmament. It was assumed that the transition from a higher "balanced stage" to a lower "balanced stage" would require a majority decision of the Security Council to be taken with the concurring vote of the five permanent members. It was proposed that any of the permanent members of the Security Council should have the right to invoke either a limited or an all-out abrogation of the agreement and thereby to raise the arms level from the stage prevailing at the time of the abrogation to one of the higher of the ten balanced stages, specified in the agreement.

The working paper explained that an abrogation, even a partial abrogation, of the agreement would have to be regarded as a matter of last resort and that it was essential to have the possibility of bringing pressure on nations who violate the agreement, short of invoking abrogation. To this end, "On Abrogation" proposed that a certain, sizable, fraction of the amounts saved by the nations in arms cost be paid into a fund, the Fund for Compensations. If a nation that did not retain the right to abrogate, were to violate the agreement, it could then be effectively restrained by economic sanctions, because the nations applying such sanctions could be, and would be, compensated by the Fund, for such economic losses as they themselves would suffer.

* * *

The second part of the Vienna Conference, which convened when the participants returned from the Semmering, was regarded as a flop. Because the existing

political situation in Europe made the discussion of a political settlement appear to be purely academic, this part of the conference disappointed those who expected it to produce concrete suggestions in the domain of practical politics.

A Blue Book, prepared by the Steering Committee was placed before the Conference when it ^{re-}convened. It attributed the difficulties of Europe to the fact that the political structure in Europe did not reflect the economic interdependence of the nations of Europe. It suggested that if Germany were not only economically, but also politically, integrated in Europe, Europe would pose no greater problem to the world than the other continents.

The Steering Committee took a dim view of the possibility of bringing about political integration of Europe through the creation of supra-national political agencies. Instead, it proposed a method of political integration which could be carried out gradually, step by step, and could start out for instance with the integration of France and Germany. As a first step, Germany would be represented in France, in the Parliament of the Seventh Republic, by Delegates who would have 5% of the total votes. Similarly, France would be represented in the German Parliament by delegates having 5% of the total votes. In subsequent years these representations could increase step by step, at a predetermined rate, until they might amount to 15% of the votes in both Parliaments.

In much the same manner, so the ^{Committee} ~~delphin~~ thought, through mutual representation of the nations in each other's Parliament, the whole of Western Europe could be politically integrated.

This proposal encountered much scepticism at the conference. It was pointed out that while such a proposal might be received enthusiastically in France, it would have no chance of being passed by the German Parliament. There, it would be opposed by the People's Party, controlling 45% of the votes, and would thus fall far short of the required two-thirds majority. Those who read the transcript of the conference may notice, in retrospect, that the Chinese and the Americans were much more vocal in expressing these misgivings than were the Russians. The Russians met several times among themselves and they must have discussed this problem, but they kept silent about it during ^{the} formal sessions.

The second part of the conference, having run out to topics that could be usefully

discussed, closed one week earlier than scheduled.

* * *

Governmental negotiations on disarmament started about four months after the close of the Vienna Conference. They did not evoke much enthusiasm either in Russia or in America. The Americans were generally lukewarm and said that these negotiations could at best achieve controlled arms reduction, which would not eliminate the possibility of war between the Great Powers; the Russians had misgivings that world public opinion might push them further towards total disarmament than they felt they ought to go.

The fears of the Russians proved to be groundless, inasmuch as the agreement closely followed the line that the Russians had taken at the Vienna Conference. The agreement reduced the number of rockets and bombs, to be retained by America, China and Russia, below the shake-up level of the smaller nations, and it did eliminate all submarines, capable of launching rockets. It left, however, Russia, America and China each in the possession of 500 long-range rockets, each capable of carrying 10 megaton clean hydrogen bombs. The agreement also fixed the number of rockets and bombs which the other nations were permitted to retain. All nations were pledged not to resort to the use of atomic bombs except in retaliation for an attack with atomic bombs.

As the result of the disarmament agreement, the nations were able to reduce their arms expenditure somewhat, but they were obliged to pay a good portion of what they saved in arms cost into the Fund for Compensation, set up under the provisions of the agreement.

There was nothing in the agreement to offer any assurance that general and virtually complete disarmament would be achieved in the predictable future. True enough, the agreement defined the stages, ten in number, through which the world could go from stage (1), the initial arms level, to the virtually complete disarmament of stage (10). But the date of the transition from one stage to the next lower stage was left to the determination of the Security Council where Russia had the veto, and there was no way of telling when, if ever, progress towards disarmament might take place.

Then three months after the ratification of the agreement, out of the blue sky, Russia offered to cede to Poland each year, over a 25-year period, strips of territory three to ten

miles wide, along Poland's eastern border, on condition that Poland would cede year by year similar strips of territory to Germany, on her western border. Poland declared herself willing to accept such a switch, but demanded a compensation of \$25,00 for each Polish family which had to be relocated. This would have meant an outlay of \$100 billion, payable over a period of 25 years, or about \$4 billion a year.

The Fund for Compensation, set up by the agreement, would have been able to take on this load without too much difficulty, but this would have required approval by the Assembly and many nations were outraged by Poland's demand, which they regarded as extortion.

Still, in the end, the Assembly did approve and since not even the Germans are prepared to go to war for something they can get without war, the approval of the Assembly split the People's Party in the German Parliament. Half of its members seceded from the Party and joined the other parties in Parliament in voting for the constitutional amendment, which seated delegates from France in the German Parliament.

The constitutional amendment provided for French representation in the German Parliament, initially amounting to 5% and - after a lapse of a period of 3 years - amounting to 10%, of the total votes. As could be expected, France reciprocated.

With the adoption of this amendment the danger that the People's Party might gain a majority in the German Parliament receded and two years later the Security Council voted, with the five permanent members concurring, to reduce the arms level from stage (1) to stage (4). Within five years the arms level was down to stage (7).

The disarmament agreement stipulated that mobile international armed forces, equipped with machine guns and light tanks of considerable fire power, shall be set up under United Nations auspices, but it did not say in what manner such forces would be controlled by the UN. In this respect, the stipulation had been left vague on purpose in order to secure acceptance of the agreement. The Russians had been pressing for the setting up of a world armed force under the central command of the United Nations, with the Secretary General being the commander-in-chief of the force. Since three of the previous ~~Secretaries~~ Secretaries had marked pro-Russian leanings, it is not surprising that America opposed a set-up of this type. Most of the other nations rejected the set-up proposed by America on the ground that it ran

counter to sound principles of administration.

After the settlement of the German-Polish issue, negotiations on the setting up of some international armed force were re-opened and it was then agreed to set up a number of regional international armed forces under UN auspices rather than a single world armed force under the central command of the UN Secretariat. It was agreed that each such regional armed force should be under the control of five nations who would appoint, by majority vote, the commander-in-chief. The slate of the five nations to be given control over the armed force in a given region was subject to the approval of the UN Security Council, with the concurring vote of the five permanent members. One-third of the cost of maintaining the regional force was to be borne by the five nations assuming the responsibility for maintaining peace in the region and two-thirds of the cost was to come from the Fund for Compensation.

This agreement did not at first appear to represent any progress, because all slates proposed were vetoed by either Russia, China or America. One year later, however, when Russia and China proposed a slate of five nations for the control of a regional armed force to operate in Africa, where the expansionist tendencies of some of the new African nations represented a constant threat to their neighbours, unexpectedly, America concurred and the slate was approved by the Security Council.*

*Footnote: America, owing to the implacable hostility of the African political leaders towards her, had lost interest in Africa by 1985. This brought to an end a period of American-African relations which started in 1960, when the Kennedy Foundation allocated a modest sum to establish fellowships for Africans and, at Vice President Nixon's initiative, the State Department allocated a similar sum for the same purpose. From these modest beginnings, there grew a vast fellowship program for Africans which brought over thousands of African students every year to America where they received a college education. From among their ranks came most of Africa's political leaders. *Their* subsequent hostility to America is rather puzzling, because, even though they may have been exposed to a certain amount of racial discrimination while studying in America, they could not have been any worse off, in this respect, than the American-born colored citizens of the United States.

The decision of the Soviet Union to concur in the reduction of the arms level from stage (1) to stage (4) followed, within a month, the establishment of the regional armed force in Africa. The subsequent reduction of the arms level from stage (4) to stage (7) followed the establishment of regional armed forces in the Middle East, in South-East Asia and in Central America.

When the possibility of setting up regional police forces under the control of various "groups" of nations was first discussed, many people opposed it on the ground that each such region would be likely to become the sphere of influence of one or the other of the great powers. They conceded that an agreement among the great powers on the "groups" in control of the various regional police forces would represent a political settlement, and they acknowledged that in one form or another a political settlement must be reached, but their conscience recoiled from a political settlement based on an agreement on spheres of influence. It turned out, however, that the regions under the control of the various groups of nations were spheres of non-influence, rather than spheres of influence. For instance, Central America was under the control of Uruguay, Canada, Austria and Australia, and this did not place Central America into the sphere of influence of the United States, but it did exclude Central America from the sphere of influence of the Soviet Union. Quite similarly, the Middle East was excluded from the sphere of influence of the United States without falling into the sphere of influence of the Soviet Union.

The drastic reduction of the arms level to stage (7) resulted for many countries in a considerable saving in arms cost. This did not amount to very much in the case of Russia since Russia had based her

defence almost exclusively on long-range rockets, but it was very substantial in the case of America. It has always been taken for granted that when disarmament makes a substantial reduction in arms cost possible there would be a great increase in aid to under-developed countries. What happened was the opposite. Americans felt that, after a long period of stagnation, the time had come to increase the standard of living. There was a substantial reduction in taxes and wages went up. The annual income of the average American family jumped up by about \$1500. In the first five years following ratification of the disarmament agreement, Congress failed to appropriate any funds for foreign aid. There was retained a modest point 4 program but it did not amount to very much, because, high school education having steadily deteriorated in America, America was in no position to send a substantial number of engineers and physicians abroad.

Russia had retained the six-day working week but had increased the annual paid vacation to three months and was in the process of trying to extend the vacation period to four months. Russia continued to lend funds to under-developed nations even after the conclusion of the disarmament agreement, but she charged 5% on such loans. Russia also continued to make available to under-developed nations the services of her engineers and physicians, and this was being done on a large scale, but after the conclusion of the disarmament agreement, Russia began to charge for these services, whatever the market would bear.

While the events of decades that followed general disarmament are of great historical interest, they do not come within the scope of this dissertation.

THE END

AN EXCERPT

from

"THE VOICE OF THE DOLPHINS"

by Leo Szilard

Preface to the Excerpt

An unabridged version of "The Voice of the Dolphins" will be published in book form by Simon and Schuster in the first half of 1961. This book deals with the problem that the bomb poses to the world. It does not attempt to give a blueprint for the solution of this problem but merely states what the real issues are that are involved. Still, when we recognize what the real issues are, we may be taking a long step towards finding the solution.

To me it seems that only by excluding war between the Great Powers can we solve the problem posed by the bomb, because any war in which America and Russia intervene on the opposite sides would be likely to turn into an atomic war. This would hold true even if the Great Powers were to try to turn the clock back and attempt to base their defence on conventional weapons only; for the world may get rid of the bombs that have been stockpiled, but it cannot get rid of the knowledge of how to make the bomb.

Throughout history, the Great Powers have relied on force or on the threat of force in their dealings with each other and they might continue to do so perhaps for another generation. It does not follow, however, that the threat of force must necessarily continue to mean the threat of war, and the threat of force might take on a new form in the so-called atomic stalemate. In "The Voice of the Dolphins" I describe how this might happen by relating the history of the world from 1960 to 1985.

But even though for a period of time the so-called atomic stalemate might become stable and the threat of war might virtually disappear, it is not likely that such a stalemate would remain stable for long. "The Voice of the Dolphins" describes how - as the character of the stalemate changes and begins seriously to threaten the security of the Great Powers - there may arise by 1985 an irresistible desire for general and virtually complete disarmament.

The sequence of historical events described in "The Voice of the Dolphins" does not necessarily represent the most likely course of events. Rather, this particular sequence of events was chosen in order to demonstrate what it might take to avoid a war that neither

(Preface - continued)

Russia nor America wants. "The Voice of the Dolphins" describes a course of events which leads to general and virtually complete disarmament in 25 years. But, if events should actually move in the direction described in the "Dolphins", then they will probably move at a much faster pace and disarmament may well come sooner than anyone today would dare to predict.

LEO SZILARD

October 13, 1960