NATIONAL ACADEMY OF SCIENCES

JEROME BERT WIESNER
1915–1994

A Biographical Memoir by

LOUIS D. SMULLIN

Biographical Memoirs, VOLUME 78

PUBLISHED 2000 BY
THE NATIONAL ACADEMY PRESS
WASHINGTON, D.C.

JEROME BERT WIESNER

May 30, 1915–October 21, 1994

BY LOUIS D. SMULLIN

JEROME WIESNER—JERRY to almost everybody—led an exciting and productive life and, more than most, he made a difference. His career, the offices he held and the honors he received are spelled out in the MIT obituary notice at the time of his death. As interesting and impressive as is the list of offices and honors, even more interesting is his transformation from a young engineer just out of college to an "electronic warrior" during World War II, to a "cold warrior" during the early days of the "missile gap," and finally to a leading spokesman for the nuclear test ban and a worker for nuclear disarmament.

Jerry and his younger sister, Edna, were the children of Joseph and Ida Wiesner, each of whom had come to the United States at about the turn of the century. To escape having to take violin lessons, at age nineteen, Joseph had run away from his parents in Vienna in about 1892 and had shipped out to places as far away as Alaska and the California gold fields before landing in New York. (Edna remembers her father telling stories about meeting and drinking with Jack London in Alaska.) Ida had come from Romania to New York with her younger sister. She worked in the garment industry and then as a housekeeper until she and

Joseph met and married in 1914. Shortly thereafter, they moved from New York to Dearborn, Michigan. Jerry was born in nearby Detroit on May 30, 1915. In the early days of their marriage Ida and Joseph helped Ida's four brothers immigrate to the United States. Sometime during the 1920s, Ida and Joseph opened a small "mom and pop" dry goods store in Dearborn, and the two children grew up and went to the public schools there.

Jerry went on to study electrical engineering and mathematics at the University of Michigan in Ann Arbor. While there, he met Laya Wainger, a fellow student majoring in mathematics. They married in 1940, and developed a deep and abiding lifelong partnership. Besides being the mother of their four children—Steven, Zachary, Lisa, and Joshua—Laya was one of Jerry's primary intellectual companions. Together they explored issues and ideas. She critiqued many of his most important documents (beginning with his Ph.D. thesis). Laya was very active in community and national civic affairs, and they entertained and worked with leaders from the academic, arts, media, business, civic, and governmental arenas.

Throughout his life, Jerry's glass was always at least half full, as is illustrated by his sister's recollection of his teenage efforts as a radio ham in Michigan. Just after he got his first receiver working and on the air, he burst out of his bedroom to announce that he had picked up a station from a foreign country. Not much later, he came out to amend his announcement. He had, in fact, tuned into a Polish language station in Hamtramck, a small city about 10 miles from Dearborn.

The story illustrates his abiding optimism about the power and possibilities inherent in technical things, and in his later years about the possibility of saving the world from a nuclear disaster. As noted by MIT's news office, Jerry was "a

leading voice for decades in international efforts to control and limit nuclear arms . . . a key figure in the establishment of the Arms Control and Disarmament Agency, in achieving a partial nuclear test ban treaty, and in the successful effort to restrict the deployment of antiballistic missile systems."

WORLD WAR II AND THE POSTWAR YEARS

Jerry's life, as for so many engineers and scientists of his generation, was shaped by his World War II experience in the MIT Radiation Lab, where he worked on the development of radar, and by his work at Los Alamos directly after the war. Through these experiences, he learned new scientific and engineering ideas and techniques, he learned about the needs of the military, he learned how to deal with the military, he learned how to manage large group projects, and he met the people who helped shape his career.

In the Radiation Lab, he began his weapon systems work on a 3-cm radar for a Navy night fighter. This was followed by his taking over the job of directing the final stages of development of Project Cadillac, an airborne early warning (AEW) radar for the Navy. It was a very big and complex system that brought him into close contact with the highest levels of the Navy command structure. The AEW system played an important role in the Battle of the Pacific.

At the end of the war, Professor Jerrold Zacharias was recruited from the Radiation Lab to set up a new nuclear weapons engineering group at Los Alamos; among those he brought with him was Jerry Wiesner. In his autobiographical notes, Jerry indicates that due to the postwar letdown at Los Alamos, he was not very gainfully employed, but he was able to attend many of the heated discussions about the future peacetime control of atomic weapons and of atomic energy. These made a deep and lasting impression on him: "It was for me an interesting and sometimes exciting period.

In later years I realized that the understanding I gained, both about the bomb and the controversy surrounding its use, had provided me with a valuable education on issues that were to occupy a large part of my life . . . .”

Before it was known as such, the Cold War began almost immediately after the end of World War II. Poland, Hungary, and Czechoslovakia were put under Soviet control. The Marshall Plan and the North Atlantic Treaty Organization came into being, and the attention of the military was now directed towards the new situations. The wall was erected between East and West Germany, and the Berlin blockade and airlift were symbols of the growing danger of conflict between the Soviet Union and the West.

In 1945, as MIT was moving into its peacetime mode of operation, Professor Harold Hazen, head of the Department of Electrical Engineering asked that Wiesner be appointed to the faculty. President James R. Killian sent the official letter. In his book *The Education of a College President* Killian wrote:

> The last paragraph of my letter was more dramatically prophetic than I realized in 1945. Herewith the letter:
>
> Dear Dr. Wiesner:
>
> . . . We look forward with much pleasure to having you join us at the Institute. We believe opportunities here over the coming years in your field of interest will be of ample scope to your work.

Jerry accepted the invitation and returned to MIT in 1946 as a faculty member in electrical engineering, conducting his research in the Research Laboratory of Electronics (RLE), the peacetime successor to the Radiation Lab.

After his return to MIT, Jerry was a participant in many of the summer studies on military problems (anti-submarine warfare, the distant early warning [DEW] line, etc.). In these studies a selected group of scientists and engineers from

industry and academia were briefed by appropriate military officers and civilians on the detailed nature of the problems, and various solutions were proposed and discussed. Many important recommendations were made and implemented. In this way Jerry (and his colleagues) began the move from purely technical matters into the broader domain of policy making.

The beginnings of the Cold War were symbolized by a number of important technical events. Among these were the race between the United States and the Soviet Union to copy the German ballistic missile technology, the explosion of the first Soviet atomic bomb, and the successful launching of *Sputnik*.

Faced with the threat of the Soviet atomic bomb, the MIT Lincoln Laboratory was established in 1951 to work on the problems of air defense of the continental United States. One of its projects was to set up a distant early warning chain of radar stations to warn of an attack by Soviet bombers coming across the North Pole. To get the maximum warning time, the line would be located along the shore of the Arctic Ocean. However, radio communication in these high latitudes was uncertain and could be blacked out for long periods due to intense electrical activity in the ionosphere. In about 1953 Wiesner and some of his colleagues proposed the use of forward scattering from the troposphere for reliable (but narrow band) communication. For many years, these systems provided secure communication from the DEW line to the North American Air Defense Command in Colorado.

In 1952 Wiesner became the third director of RLE, succeeding professors Jay Stratton and Albert Hill in that role. Under their successive leaderships, RLE developed into a multidisciplinary, interdepartmental center. The joint services (Army, Navy, and Air Force) contract under which

RLE was organized, specified that it should "do research in the field of electronics, physics, and communication, and publish."

Inspired by Professor Norbert Wiener, Jerry recognized that communication included psychology, language, and sensory physiology. Thus it was that from its earliest days, the lab brought in linguists, psychologists, and neurophysiologists, as well as information theorists, radio engineers, and physicists. Much later, when he became provost and then president of MIT, he played a similar role in stimulating the growth of the humanities and the arts at MIT.

THE WASHINGTON YEARS

Concern about the threat implied by the Soviet A-bomb was very real in Washington. In 1954 the Office of Defense Management set up a Technical Capabilities Panel (TCP) to study the capabilities of the Air Force. MIT President James Killian was asked to head the study, and he invited Wiesner to join the panel as head of the Overseas Military Communications group. The launching of *Sputnik* produced a scare in Washington that the Soviet Union already had an arsenal of ICBMs at a time when we had almost none. This awareness and fear was summarized in one short phrase: the missile gap. In 1957 President Eisenhower set up a committee (later known as the Gaither Committee) to study the implications of a nuclear war. Both the TCP study and the Gaither study showed that an all-out nuclear war would be catastrophic, and that there would be no winners. Both sides would suffer millions of deaths, destruction of their cities and infrastructures, and would be ruined beyond repair.

In his book *Making Weapons, Talking Peace* Herbert York describes the early steps towards achieving a nuclear test ban (pp. 116-18) in the Eisenhower administration. There was a special meeting of the President's Scientific Advisory

Committee (PSAC) at Ramey Air Force Base in Puerto Rico. Eisenhower had specifically asked for advice about the proposed test ban. Except for York, there was general agreement for the idea of a test moratorium. York says,

I argued that the matter was essentially a political and strategic issue and that a group made up entirely of scientists wasn't appropriate for dealing with such matters . . . After the meeting, Jerry Wiesner took me aside and patiently explained several things to me. One was that the President could ask anyone any question he wished. Another was that there really was no one else; it was us or no one, be that plausible or not . . . I later learned that Wiesner himself actually did have such doubts . . . In a speech made two years later in 1960, he said, "I've been billed as an expert on arms control, and I think I am an example of what's wrong with the American posture in this field . . . My background is primarily in the field of military technology . . . I come to the arms control field with all the biases, prejudices, and skepticism of someone who has been working very hard on military weapons."

In his own (unpublished) autobiographical notes, Jerry later commented about the Gaither Report:

As we began to write the report, it became clear that a part of the group regarded its ingredients as recommendations that they felt very strongly about while others of us (certainly myself) found it impossible to differentiate between a war that had only 60 million casualties instead of 100 million at a cost of many billions of dollars. I also wondered whether such an increased spending for war preparations might make a war more likely. The Gaither study just made me even more certain than I had been before that nuclear weapons were not useable weapons.

The following paragraphs by MIT Professor Carl Kaysen summarize this period:

Jerry Wiesner, like so many of "the best and brightest" in science and engineering, spent World War II in contributing to the development of military technologies. He worked on both of the two largest scientific technological efforts of the time: first on radar at the Radiation Lab at MIT, then on the atomic bomb at Los Alamos. Out of these experiences grew his

lifelong concern with, and action on, the technologies of war and their redirection to peace.

At first, he continued to direct his efforts to improving the U. S. arsenal. In 1954 he served on the Technical Capabilities Panel chaired by James Killian, which recommended to the Pentagon the initiation and vigorous pursuit of an intercontinental ballistic missile program. When in response to the Soviet launch of *Sputnik* in 1957, President Eisenhower appointed Killian to the newly created post of science advisor to the President, and made him chairman of the President's Scientific Advisory Committee (PSAC), Wiesner was among its initial members.

In 1957 a panel of PSAC, the Gaither Committee, was convened to survey the comparative military capabilities of the United States and the Soviet Union for offense and defense. Wiesner served as its staff director. The Committee came to a pessimistic conclusion. That experience convinced Wiesner that the intense competition with the Soviets in improving weapons technologies and procuring arms would reduce rather than increase America's security. Only programs of arms limitations and other kinds of arms control could make us more secure.

These conclusions were reinforced in the summer of 1958, by Wiesner's participation in the Geneva Conference on Preventing Surprise Attack. There he also experienced the difficulty of securing any kind of agreement on arms limitations or arms control in the face of the profound mutual hostility and suspicion between the United States and the Soviets.

In 1961 the newly elected President Kennedy chose Wiesner to be his science advisor. During his tenure in that post for the three years of the Kennedy Administration and the first year of Johnson's, arms control in various forms was at the center of the agenda. Wiesner had both successes and failures.

Wiesner's outstanding success was his role in the achievement of the Partial Test Ban Treaty of 1963, by which the United States, the United Kingdom, and the Soviet Union agreed to cease nuclear weapons testing in the atmosphere and underwater, and to ban testing in space. The failure to achieve a complete test ban ending underground tests as well was a great disappointment to Jerry and to the administration. The two sides never succeeded in bridging the gap on what quota of on-site inspections in their respective territories was adequate to provide effective verification of a complete test ban.

An equally great, but not then public, disappointment was Wiesner's inability to persuade the President and the Defense Department that the

rapid build-up of ICBMs and submarine launched BMs proposed in the President's first full budget was both unnecessary and undesirable: unnecessary because the new satellite reconnaissance systems showed that the Soviet missile forces were very much smaller than the United States had believed; undesirable because our build-up would be matched by the Soviets, with the result of greater insecurity for both sides.

Three other areas in which Wiesner's arms control efforts succeeded were in civil defense, the installation of permissive links on nuclear weapons carried by aircraft and ICBMs and the non-deployment of anti-ballistic missile systems.

Wiesner helped to persuade the President in 1961 to call for a very modest civil defense program of fall-out shelters rather than the large program of blast shelters that many in the military and some of Kennedy's political adversaries were calling for. Wiesner saw the desirability and technical feasibility of installing electronic locks—permissive action links or PALs—on nuclear warheads. These made more certain positive control that prevented launches without presidential authorization. Further, he drove the program through to realization in a remarkably short time, although he never succeeded in overcoming the Navy's resistance to the use of PALs on submarine launched missiles.

PSAC's strong technical criticisms of the Anti-Ballistic Missile (ABM) systems available in 1961 helped lead to a decision against deployment. Wiesner argued forcefully for the undesirability of deploying even much improved systems, pointing out that technological improvements would continue to give the advantage to the offense. He continued his advocacy after he left Washington to return to MIT and made a major contribution to the achievement of the ABM treaty of 1972.

More broadly, Wiesner's leadership of PSAC was outstanding. His closeness to the President, and his ability to persuade its distinguished and busy members to contribute significant time and effort led to PSAC's effective engagement with a broad range of issues.

Wiesner remained active on arms control and disarmament issues for the rest of his life. A member of the MacArthur Foundation's Board of Trustees from the time of its organization, he co-chaired its Committee on International Security. In that capacity, he was instrumental in getting the Foundation to fund the establishment and operation of programs of research and teaching on arms control in a number of universities, including Harvard, Stanford, MIT, Michigan, Cornell, and Illinois. He participated in the Soviet-American Disarmament Study Group between 1965 and 1975; it was an

important forum for the discussion of ABM and other arms control issues. He wrote and spoke publicly on these issues whenever opportunity offered.

Following the death of President Kennedy, and after serving as President Johnson's science advisor for about a year, Jerry's three-year leave from MIT came to an end, and in 1964 he returned with his family to Cambridge and to their home in Watertown. His re-entry into academic life began with his appointment as dean of the School of Science. However, his connections to national and world affairs were too numerous to be severed, and there were too many unsolved problems that demanded his attention. Primary among these was the continuing danger of nuclear war.

PROVOST AND PRESIDENT OF MIT

When Howard W. Johnson became MIT's twelfth president in July of 1966, he appointed Wiesner as provost, beginning a number of years of close teamwork. These were the years of international student unrest, and of the growing protest against the war in Viet Nam. Johnson and Wiesner by dint of their cool but steady style were able to keep open communications with the protesting students and faculty. Unlike the experience at many other universities in this period, it was never necessary to call the police onto the campus.

In July of 1971 Wiesner became the thirteenth president of MIT, succeeding Howard Johnson, who became chairman of the MIT Corporation. When Jerry became president, he had many unusual assets in addition to his technical competence. He, of course, had a thorough knowledge of MIT gained during the postwar decades. He knew personally many members of the faculty and administration, as well as of the national executive and congressional branches.

By the time he became president, the troubles of the 1960s had subsided sufficiently to allow him to turn his attention to the job of building and developing MIT. As president, Jerry pursued educational reforms and the cultivation of fields not previously represented or represented at less than MIT's potential level of excellence. Professor Paul E. Gray served with Jerry as the Institute's chancellor during this period, and later succeeded him as president. Reflecting on that era, Gray wrote:

As dean, provost, and president, Jerry expanded MIT's teaching and research programs in health sciences, humanities, and the arts. And he strengthened the Institute's undergraduate educational programs through creative employment of a fund for educational innovation, which had been provided by his close friend Edwin H. Land, the founder of the Polaroid Corporation.

This resource was used in 1970 to enable the late Professor Margaret L. A. MacVicar to start the Undergraduate Research Opportunities Program. This program, now used year after year by approximately three-quarters of the undergraduates at MIT, is widely regarded as the most important educational innovation at the Institute in this half-century.

He sought new ways to bring MIT's expertise in science and engineering to bear on social issues, such as health care, urban decay, mass transportation, and housing. He was instrumental in establishing the MIT Program in Science, Technology, and Society, which focuses on ways in which science and technological and social factors interact to shape modern life. This interdisciplinary program has become a highly respected component of the Institute's academic structure.

In his later years, Jerry was centrally involved, together with Professor Nicholas Negroponte, in the creation of the Program in Media Arts and Sciences and the Media Laboratory, which are housed at MIT in the Jerome and Laya Wiesner Building.

He was deeply committed to the goals of this nation's civil rights movement, and the period of his leadership of MIT produced the greatest progress up to that time in bringing women and minorities to the student body and the faculty.

Jerry served as president until June 30, 1980, when he retired and resumed the title of institute professor, a position reserved for a handful of the Institute's most distinguished faculty, and which he had held from 1962 to 1971. Paul Gray summed up the influence of Jerry's leadership of MIT in this way: "This special place has benefitted beyond acknowledgment from his fierce belief in the value of racial, ethnic, and gender diversity in this community, from his insistence on intellectual quality in our programs, and from his vision of the ways in which science and technology and the arts and humanities reinforce each other."

Laya Wiesner (1918-98) was an important partner in these latter areas in particular. She provided the inspiration and leadership for the MIT Workshop on Women in Technology that took place in May 1973 with grants from the Carnegie Corporation, the GE Foundation, and the Alfred P. Sloan Foundation. This led to the WITS Project (Women in Technology and Science), a program that recruited MIT faculty members and engineers and scientists from Massachusetts industry to speak to high school students on science and technology careers. Subsequently, the project worked intensively with Boston schools to foster minority participation in scientific and technical education endeavors.

In civil rights Laya's activities covered much ground, but two of them bear special mention. She was one of the original organizers of METCO, a system for busing black students from Boston to schools in the more affluent suburbs. She was one of a group of women from around the country who went to Mississippi in the 1960s to observe and report on voter registration activities in that state. They hoped that their presence would lessen the danger of police violence, and it did.

Starting in about 1970 a progressive muscular disease polymyositis began to seriously affect Laya's ability to travel and

even to move around. At the time of Jerry's death she was already confined to a wheel chair, but she continued to maintain a lively interest in her family and in world and public affairs. When Laya died in September 1998, Catherine M. Stratton, widow of MIT's eleventh president, Julius, said: "Laya Wiesner was a remarkable woman with an indomitable spirit. She was incredibly courageous, allocating her energy to the causes which mattered most to her—civil rights, mentoring MIT women students in the fields of science and engineering, and being a sparkling, creative partner to her husband."

THE MACARTHUR FOUNDATION

MIT was not the only institution to benefit from Jerry's special talents. Throughout his career, Jerry was active in community affairs and was a frequent advisor to public and private agencies, foundations, educational institutions, and industry. The following recollection by Ruth Adams (first director of the MacArthur Foundation's Peace and Security Program from 1984 to 1994) describes the range of Jerry's activities and contributions as a member of the board of the MacArthur Foundation:

The John D. and Catherine T. MacArthur Foundation was created in l978. Its founder, John D. MacArthur, bequeathed his large estate to the foundation without specifying its purposes. A year later five members were added to the originally narrow corporate board of the Foundation, among them was Wiesner. This fortuitously brought together a foundation in search of a comprehensive vision of its larger purposes and a man who would supply one.

From l979 until his death in l994, Jerry persuasively engaged his colleagues on the board in discussions leading to the opening of many innovative new programs and ideas. A suggestion of the ambitiousness of his vision is provided by a memo he wrote to the board at the time: "I believe humanity is living through a crisis of vast dimensions brought on by the scientific and technological revolution which is reshaping relationships between

individuals and their societies, and between nations. The opportunities are enormous and so are the dangers."

Consistent with this, Jerry often spoke of the duties as well as privileges of foundation directors. Their responsibility, he felt, was to guide a foundation in responding both creatively and flexibly to a wide range of social as well as political needs and problems. Indicative of his approach was the way in which the Mental Health Program was created during the Foundation's first years. As Jerry wrote: "We spent hundreds of hours listening to experts in many areas of mental health before deciding that mental health problems were perhaps the most serious and least understood health problems of the world. When we finally decided to do something about it, we realized that people in related areas were not communicating effectively, so we began an imaginative plan of networking, an idea that has infused the entire Foundation . . . ."

By any reckoning, the MacArthur Fellows Program quickly became an important feature of the American intellectual landscape, and Jerry was proud to have been one of its architects. The same could be said of other major undertakings in which he had a central part, including the establishment of the World Resources Institute, the Energy Foundation, and the Chicago Education Initiative.

In l983 the MacArthur Board appointed a committee to explore prospects for an international program on security issues, with Jerry as its chair. Other members included Jonas Salk, Murray Gell-Mann, and two staff members James Furman and Ruth Adams. As a first step, the committee invited McGeorge Bundy to head an independent study of existing programs in the field and to enlist the advice and counsel of specialists. Its report led to the establishment of an International Security Program that, in its first decade, contributed more than $200 million in support of young researchers, educational institutions, international collaborative projects, and public interest organizations. Wiesner's collaboration with Andrei Sakharov and other Russian scientists led to the establishment of the Foundation for the Survival and Development of Humanity, the first private foundation in the Soviet Union. That, in turn, paved the way for the creation of a MacArthur program in Russia, directed by a Russian scholar, and the unprecedented opening of a permanent Moscow office for the Foundation.

FINAL YEARS

In 1988 Wiesner suffered a heart attack and stroke. The

stroke affected his left side and left him with almost no speech. Jerry took his rehabilitation seriously and worked very hard at the various available therapies. Within about a year and a half he had recovered much of his speech, and he was able to drive a suitably modified car. The recovery was enough to allow him to attend meetings, to speak in public, and to travel. He was able to make several trips from Watertown to Chicago for MacArthur Foundation board meetings. During this period, he devoted part of his time to writing a biographical memorandum.

Former MIT President Howard W. Johnson, at the time of Jerry's death, said: "Jerome Wiesner was a creative force at MIT for the last half century. With his great technical and social inventiveness he made notable contributions in a number of fields as a professor, an administrator, and a corporation member. Beyond MIT he made significant impacts in arenas ranging from arms control to the arts. He will be deeply missed at MIT. And for those of us who worked with him closely for many years, the loss is immeasurable."

I have tried to capture here some of the ways Jerry Wiesner made a difference in the world, and to trace his transformation from young engineer to a leader of international stature. Sometimes prose just doesn't do it. Jerry had a long friendship with the poet Archibald MacLeish. They first met when Jerry came to the Library of Congress in 1940 to work with Alan Lomax on the recording of indigenous American folk music. As Jerry said in his memoirs, "My title was chief engineer of the Library of Congress. I was also its entire engineering staff." At the time of Jerry's inauguration as MIT president in 1971, MacLeish wrote a poem in tribute to his old friend. It is a fitting conclusion to this memoir as well:

A good man! Look at him against the time!
He saunters along to his place in the world's weather,
Lights his pipe, hitches his pants,
Talks back to accepted opinion.

Congressional committees hear him say:
"Not what you think: what you haven't thought of."

He addresses presidents. He says:
"Governments even now still have to govern:
No one is going to invent a self-governing holocaust."

The Pentagon receives his views:
"Science," he says, "is no substitute for thought.
Miracle drugs perhaps: not miracle wars."

Advisor to presidents, the papers call him.
Advisor, I say, to the young.
It's the young who need competent friends, bold companions,
Honest men who won't run out,
Won't write off mankind, sell up the country,
Quit the venture, jibe the ship.

I love this man,
I rinse my mouth with his praise in a frightened time.
The taste in the cup is mint,
Of spring water.

IN THE PREPARATION OF this essay we received help, critical advice, and encouragement from the following people:

Mildred Dresselhaus, MIT
Joshua Wiesner
Edna Wiesner McNeal
Walter and Judy Rosenblith (Walter and Jerry had been very close friends after Walter came to MIT in 1948; he served as MIT provost under Wiesner. Their advice about the organization of this memoir was extremely helpful.)

Kathryn A. Willmore, vice-president and secretary of the MIT Corporation

Edith Ruina, who worked with Laya Wiesner on women's issues at MIT

Kosta Tsipis, retired director of the Program in Science and Technology for International Security, MIT

J. Y. Lettvin, professor emeritus, MIT

Frances Tenenbaum, a close friend of Laya's since University of Michigan days

Peter Bartes, Library of Congress

Anna Kariotakis, Alan Lomax's daughter.

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