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**Public Policy and the
Boston Elbow**

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Public policy plays a part in the distribution of the Boston Elbow and its alternatives. The design and implementation of disability policy especially exert considerable influence on the way(s) in which someone who loses a limb may compensate for it. U.S. disability policy is complex, not the least because it is actually many policies addressed to different classes of disabled persons. Adults with disabilities seem to fall, for public pol-

icy purposes, into three major groups—veterans, workers, and citizens—each with eligibility criteria set by law. These classes of beneficiaries and the disability benefits to which they are entitled will be discussed more fully below. Suffice it to say here that the group(s) into which an amputee falls determines both his or her eligibility for the Boston Elbow and the availability of alternative measures for coping with the loss of an arm.

THE AMPUTEE= VETERAN

All veterans with honorable or general discharges are eligible for veterans benefits. Although the exact number of above-elbow amputee-veterans is not known, there were about 4,600 receiving service-connected disability compensation for loss of one or both upper extremities in 1980 (45). (A service-connected disability is one that results from an injury or illness suffered while in the armed services.) According to the Veterans Administration (VA), approximately 135 above-elbow amputees are reported to have externally powered prostheses of some kind, but Liberty Mutual reports that only two or three could be Boston Elbows. The Veterans Administration offers its own Elbow and has not yet approved the Boston Elbow for general distribution by the VA.

The veteran-amputee receives prosthetic services through amputee clinics in VA hospitals. Clinic teams of physicians, physical/occupational therapists, prosthetists, and counselors meet with the amputee to decide which if any prosthesis should be prescribed. They choose primarily among devices that have been approved for contract, i.e., for purchase at a specific price, by the Prosthetic and Sensory Aids Service (PSAS) of the VA. The PSAS decides on contract items on the basis of evaluative research conducted by the VA and other investigators. In some cases, amputee-clinic staff may recommend a prosthesis that has not yet been evaluated. VA Central Office (in Washington, DC) is asked to rule on these cases

individually and may approve unapproved devices on a case-by-case basis (38).

The PSAS is said to be evaluating the Boston Elbow and other externally powered arms at this time. One VA official suggested that the Boston Elbow was not evaluated sooner because of the VA's commitment to its own Elbow. More than one member of the VA's Prosthetic Technology Evaluation Committee expressed favorable attitudes toward the Boston Elbow and the Utah Arm. They were less positive about the VA Elbow.

Like other amputees, the veteran has nonprosthetic alternatives. First, the VA provides monetary compensation for functional loss and pays both indemnities and income maintenance. The veteran whose amputation is service-connected receives veterans' "compensation," a monthly sum scaled to the amount of disability suffered. As an indemnity, veterans' compensation is received regardless of the beneficiary's financial situation and whether or not he or she wears a prosthesis. Amputee-veterans who have lost a dominant arm above the elbow while in the service are rated 90 percent disabled and as of October 1982 received \$729 a month in tax-free compensation (11,44).

On the second track of VA cash benefits, "pensions" are provided to some disabled veterans. Low-income veteran-amputees whose amputations are not service-connected and whose age and

functional loss constitute total and permanent disability receive monthly payments that vary inversely with income. Unlike disability compensation described above, pensions are means-tested (and so unlikely to accrue to service-connected disabled veterans, who receive relatively large indemnities); the recipient must file only a simple yearly income report that is generally not subject to investigation by the VA. Although annual pensions are admittedly small, with a maximum for veterans without dependents of about \$5,000 (46), they are relatively easy to obtain and keep (27,34). Pensions, like veterans' compensation, do not bear directly on the use of prostheses, but they do represent another way to compensate for the same functional loss.

Disabled veterans are eligible for environmental modifications, as well as monetary benefits. Upper extremity, service-connected amputees are entitled to as much as \$4,400 for the purchase of an automobile or other vehicle plus adaptive equipment (46). When the veteran is a unilateral amputee injured on the right side and not using a prosthesis, for example, the VA believes he or she can operate an automobile with an automatic transmission and left-handed steering knob, directional signals, and parking brake (36). The amputee-veteran's social environment, which comprises interactions with people and institutions, is also modified. The Vietnam Era Veterans' Readjustment Assistance Act of 1974 (Public Law 98-77), for example, requires that all Federal agencies establish affirmative action plans to facilitate the

disabled veteran's reemployment (46). Section 402 of the act extends to discrimination in the private sector. Employers with Federal contracts of \$10,000 or more may not discriminate against disabled veterans and must take affirmative action to employ and advance them. Among the benefits of veteran-amputees, then, are "concessions" regarding their physical and social environments, adaptations that may lessen the necessity or desire for a prosthesis.

The final nonprosthetic alternative to the Boston Elbow is learning to function with one arm. There are incentives that weaken or strengthen the likelihood that the amputee-veteran will choose this course. The veteran is entitled to a prosthesis and encouraged to wear one. If his or her amputation is service-connected, the benefit is two prostheses of the same or different types and their replacements (38). But veteran-amputees are also entitled to long-term physical or occupational therapy and vocational rehabilitation (46), and so have the opportunity to maximize their functioning without a prosthesis.

In either case, the amputee-veteran has a great many alternatives to the Boston Elbow, including an externally powered prosthesis originating at the VA. As things stand now, amputees and their physicians may request approval for Boston Elbows on a case-by-case basis. Once PSAS has completed its evaluation, the Elbow's status in the VA system will be resolved.

THE AMPUTEE-WORKER

The amputee-worker encounters public disability policy under three sets of circumstances. First, almost all workers with work-related injuries or disease are eligible for workers' compensation benefits. Secondly, workers with total long-term disabilities who have paid into the Social Security system receive Disability Insurance benefits including Medicare. Finally, disabled individuals judged to be potential workers are entitled to enter the Federal/State Vocational Rehabilitation Program and receive the services their rehabili-

tation requires. The Boston Elbow is treated differently in each set of circumstances.

The Workers' Compensation Beneficiary

Workers' compensation is a State program. (Although the U.S. Congress has on several occasions considered setting Federal standards for workers' compensation benefits, legislation to this effect has never been passed.) The program varies greatly from State to State, but in most places, private

companies, such as Liberty Mutual, write and handle workers' compensation insurance policies. Employers pay premiums that cover the cost of the program and in turn are represented in all claims by their insurers. Benefits are paid when an individual can show that illness or injury has resulted from his or her work; payment is predicated on the understanding that illness and injury result in functional loss and that this functional loss is compensable (25).

Amputee-workers receiving workers' compensation benefits are almost always eligible for prosthetic devices. (Specific examples below are drawn from Massachusetts workers' compensation law.) It is usually the amputee's physician who decides in favor of one prosthesis or another, and the State in which the injury occurred is relevant to his or her decision. In some States, workers are entitled to a single prosthesis only, even if it fails. In others, such as Massachusetts, prostheses are provided for the rest of a worker's life. Not only is a wornout device replaced, but changes in the amputee's stump are accommodated. The amputee-worker from a one-prosthesis State may not derive much benefit from an externally powered device such as the Boston Elbow, with a service life of only 5 years. Similarly, such a sophisticated arm is more likely to require expert repair. Thus, the Boston Elbow is probably not appropriate for an amputee who has neither a backup prosthesis nor the availability of expert repair (16,21).

Still, workers' compensation is the program for which the Boston Elbow was designed. As detailed in chapter 2, the device was conceived at the Liberty Mutual Insurance Co. when the firm's orthopedist resolved to improve the rehabilitation of above-elbow amputees. Liberty Mutual is the largest writer of workers' compensation insurance in the world. Glimcher treated mostly beneficiaries of this program, who are still more likely than other amputees to wear a Boston Elbow. Liberty Mutual's interest in prosthetics is most clearly viewed through the lens of the workers' compensation benefits and the competitiveness of the insurance market itself.

Cash benefits are the mainstay of workers' compensation. In Massachusetts, they take the two forms previously mentioned: indemnity and in-

come maintenance. First the disabled worker receives payment for his or her specific anatomical loss, which itself is considered in two parts: functional loss and disfigurement. In the case of the amputee-worker, functional loss of the dominant arm means a fixed payment, or indemnity, which in 1983 was \$9,000. The maximum disfigurement benefit for an above-elbow amputee was \$6,600 in 1983. (Note that Massachusetts workers' compensation benefits acknowledge multiple aspects of the lost arm.) Neither wearing a prosthesis nor returning to work bears on the size of this one-time award (18,21).

The second form of workers' compensation cash benefits is weekly income maintenance, temporary and permanent. Usually the amount received is a percentage of the recipient's former wage up to some cumulative maximum. In Massachusetts, the benefit for temporary total disability is two-thirds of the workers' average weekly wage or about \$300 (in 1983), whichever is less. Temporary partial disability is considered to exist when beneficiaries are capable of working, but at lower wages than they were being paid when they became disabled. The benefit in this case is the difference between the old and the new wage. After 250 weeks of temporary income maintenance payments, a worker must be judged permanently and totally disabled or be dropped from the workers' compensation rolls (18,21).

An important difference between the two forms of workers' compensation cash benefits is that income maintenance is paid only as long as the amputee-worker is unable to work. If a prosthesis such as the Boston Elbow can return an amputee to work or mean the difference between partial and total disability, the workers' compensation insurer stands to gain from the availability of the device. Moreover, since workers' compensation premiums are experience-rated—i.e., employers' premiums vary with the amount of benefits paid to their employees—firms are likely to choose an insurer who in whatever way minimizes benefits paid. Income maintenance might serve as a disincentive to wear a Boston Elbow. If the device means a reduced level of benefits, the amputee might choose not to wear it. But according to a member of the Massachusetts In-

dustrial Accidents Board, a workers' compensation beneficiary whose employability is enhanced with a prosthesis is expected to wear one.

The Boston Elbow is good for Liberty Mutual in another way. The company has for many years distinguished itself by conducting research on industrial and automobile safety. Similarly, the firm has its own Rehabilitation Center, located in Boston but open to workers of all Liberty Mutual clients. In this context, the Boston Elbow maybe taken as evidence of the company's commitment to research and restoration. Potential clients are undoubtedly drawn to such an insurer, and Liberty Mutual personnel in several capacities deem the Boston Elbow a successful effort to differentiate Liberty Mutual from other insurers. On the other hand, Liberty Mutual may hesitate to diffuse the device to competing workers' compensation insurers. One Liberty Mutual official describes the situation as "touchy," one that evokes the firm's mixed motives: to diffuse the Elbow and to protect its distinctiveness. Similarly, other insurers have not been willing to buy the Boston Elbow; that would make them customers of a competitor.

The Social Security Disability Insurance Beneficiary

Workers who suffer total, long-term disability are eligible for Social Security Disability Insurance (SSDI) benefits if they have paid into the Social Security system during at least half the 40 quarters preceding their claims. SSDI beneficiaries receive cash payments based on past earnings and after 2 years are also eligible for the Medicare program. Unlike VA and workers' compensation programs described above, SSDI does not recognize partial disability. Claimants are either totally disabled or not disabled at all. If the disability is expected to last at least 12 months or result in death, the claim is paid. An average wage-earner with a nonworking spouse and two children received an annual SSDI benefit of \$4,470 in 1978 (5).

Medicare provides the SSDI beneficiary with prostheses and occupational or physical therapy. Outpatient therapy and medical devices are covered at 80 percent of their "reasonable" cost under Medicare Part B, and the beneficiary may choose

to wear a prosthesis or learn to function with one arm. Medicare, however, will not pay for every prosthesis. A device must be "medically necessary"—it must provide functional replacement for a lost limb, it must be the most basic replacement strategy, and it must be medically necessary in the case for which it is being prescribed (33).

Is the Boston Elbow a "medically necessary" prosthetic device? It might be, especially for individuals with amputations so high as to preclude the use of a conventional prosthesis. But Medicare's Boston Elbow policy will not be formulated until a claim for the device has been made, and no such claim has been filed, at least in Massachusetts. In that State, requests for items for which there are no policies are referred to Physician Advisory Panels. Medicare decisionmakers at the Federal level consider the reimbursability of devices that, like the CT scanner, will probably be of major significance to the program. Another influence on Medicare prosthetics coverage is the providers' professional association, the American Orthotics and Prosthetics Association (AOPA). In 1983 AOPA was negotiating with Medicare to expand the program's "procedures codes" for prosthetics. One addition to the very limited codes in use at this time would be "externally powered, above-elbow prosthesis," but this would not guarantee reimbursability. The reimbursement question would be more clearly defined, but even a coded Elbow might not be covered (3,33). And even a covered Elbow is covered for only 80 percent of its cost.

As noted above, Medicare benefits are extended to SSDI recipients only after they have received cash benefits for 2 years. The SSDI beneficiaries are by definition people who have worked; it is likely that they have private medical insurance when they are first disabled. If that insurance does not provide for the Boston Elbow, however, the 2-year Medicare lag may incline the amputee away from the device. It is widely thought that the period immediately following amputation is the best time for a prosthetic fitting. This not only has a strong restorative effect on the amputee, but makes the prosthesis part of his or her body image. Moreover, many amputees whose fittings are delayed find they can function well enough with one arm and therefore never wear a prosthesis.

The new Medicare beneficiary, then, may already have adapted to life without a device or with one less costly than the Boston Elbow. A Medicare-reimbursable Boston Elbow might still be chosen as a replacement device.

The Federal/State Vocational Rehabilitation Client

The Federal/State Vocational Rehabilitation (VR) Program provides work-related training and services to disabled individuals who are potential workers, i.e., who are deemed employable by program staff. Clients come to the program from many situations. Some have long work histories, others do not. Some are receiving cash benefits, others are not. What distinguishes VR clients is that they qualify for vocational rehabilitation on two counts: 1) their disability prevents them from functioning satisfactorily in the workplace, and 2) there is reason to believe that VR services will solve the problem. In other words, the VR client is impaired enough to need help, but not so impaired as to be unemployable (41).

Unlike workers' compensation and SSDI, Vocational Rehabilitation is not an insurance program. Neither the recipients of VR services nor their employers pay into its operation directly. The Federal/State VR Program receives 80 percent of its funds from general Federal revenues allocated to the Rehabilitation Services Administration (RSA), currently in the Department of Education. The remaining 20 percent of the program's funds are raised by the individual State agencies through which VR services are delivered (41).

Vocational rehabilitation services include prosthetic devices when these are expected to facilitate employment. Not infrequently, the State VR agency will contribute to the cost of a desirable prosthesis by paying, for example, the 20 percent Medicare coinsurance. But the VR Program is also mandated to pay for devices other programs do not cover and to buy environmental technologies when these are appropriate. A client's home might be modified to make it easier to go to and come from a job, and a vehicle might be adapted to make transport to and from work possible. These are large, one-time expenditures, expected to

enhance the client's earning power enough to pay for their replacement (1,2).

A modified social environment is another feature of the VR Program. Potential workers form relationships with rehabilitation counselors who act in the clients' interests and secure for them access to other professionals, vocational training programs, and the world of work generally. A second kind of social adaptation has been achieved through the Rehabilitation Act of 1973 (Public Law 93-112). This legislation calls for many compensatory measures, among them affirmative action by the Federal Government and its contractors. Federal agencies and all firms holding Federal contracts for \$2,500 or more (as of 1983) are required to take affirmative action in hiring and promoting people with disabilities. Employers are expected to make a "reasonable accommodation" to the special needs of disabled employees.

Many clients of the VR Program receive monetary compensation, but the public sources of these moneys are usually SSDI and Supplemental Security Income (SSI) (see below). The real cash benefits of vocational rehabilitation are eventual salary checks, and wages are the unambiguous goal of the VR Program. The term "rehabilitation" is itself defined by the program as employment in the competitive labor market or a sheltered work setting. Of the approximately 370,000 cases closed nationally in fiscal year 1982, 61 percent or about 227,000 were rehabilitations; 39 percent of the clients who finished the program were unable to find jobs they could do and keep (42). The Massachusetts Rehabilitation Commission (MRC) successfully closed more than 4,600 cases in fiscal year 1982. Four hundred and forty of them were public assistance recipients—now able to leave the rolls (22)—and while rehabilitation of these individuals is especially gratifying to public officials and taxpayers, the Vocational Rehabilitation Program in general derives its legitimacy from the number of wage-earners it contributes to the economy. The rehabilitation literature offers many cost-benefit analyses indicating that vocational rehabilitation is a good investment (26). The program confers economic benefits on both worker and society, and this end might justify the cost of a Boston Elbow. Liberty Mutual knows of at least one case in which it did.

On the other hand, the Boston Elbow remains an expensive device, and VR funds are limited. As of 1983, basic State grants had not been cut back under the current Administration, but neither had they been increased. Moreover, the mandate of the program seems to be getting costlier to fulfill. In fiscal year 1981, the percentage of rehabilitations not only fell from the previous year but constituted the lowest success rate since 1946. The RSA cites as a factor in this decline the policy, set by the 1973 Rehabilitation Act, that people with severe disabilities be served first (41). In Massachusetts, severely disabled people were 80 percent of all rehabilitants in 1982 (22), and at least some of these individuals received services more intensive and expensive to provide than those delivered to less disabled clients. A related influence on the use of the Boston Elbow in the VR Program is that hard choices among technologies have to be made. Clients who use wheelchairs, for example, can also benefit from sophisticated devices. Although body-powered and

sometimes even electric wheelchairs are provided through such programs as Medicare and Medicaid, what is “medically necessary” may not allow for participation in the work force. Wheelchair users are thus in a position similar to that of the above-elbow amputee. There are many more of the former, however, and their technological alternatives are probably more widely understood and appreciated.

To summarize, amputee-workers may wear Boston Elbows. If injured on the job, they are more likely to be fitted with the device if their employers’ insurer is Liberty Mutual. If disabled under other circumstances, they may receive Boston Elbows from Medicare, but only after 2 years on SSDI. And potential workers are entitled to Boston Elbows if the devices will increase their employability, but they must compete for limited VR dollars with other clients who benefit from sophisticated technologies.

THE AMPUTEE= CITIZEN

Every amputee is an amputee-citizen. This status does not thereby entitle a person to a prosthesis (except in some States under the Medicaid program) but there are several Federal policies that bear on his or her securing a prosthesis from some other source. These represent common Federal concerns—research, regulation, and civil rights.

The amputee’s experience with prosthetics is shaped by federally funded research in the fields of rehabilitation and rehabilitation technology. Agencies as diverse as the National Aeronautics and Space Administration and the National Institutes of Health have participated in this research, and the VA has long studied questions of importance to veterans. At present, the National Institute of Handicapped Research (NIHR) has primary responsibility for rehabilitation research. The agency was created by the 1978 Amendments (Public Law 95-602) to the Rehabilitation Act of 1973 and sited in the Rehabilitation Services Administration. When in 1980 RSA was moved to the newly created Department of Education,

NIHR was separated from RSA and made a sister agency within the department. NIHR”does not have its own research capacity. Rather the institute sets priorities and enters into cooperative agreements with researchers, usually at universities (28). The NIHR budget for fiscal year 1983 exceeded \$30 million.

Research conducted for NIHR is largely applied and includes development and evaluation of devices. The institute funds four kinds of projects, but most of its resources are expended on Research and Training Centers (RTCS) and Rehabilitation Engineering Centers (RECS). Each of the former focuses on a single disability or group of disabilities and does research that may not be immediately applicable but from which applications may be drawn. The RECS are more directly concerned with hardware. Center staff design and build prototypical equipment-embodied technologies and improved prostheses, including externally powered above-elbow prostheses, are an explicit objective in NIHR’s Long-Range Plan. In

fiscal year 1983 the institute did fund research broadly relevant to the Boston Elbow. But NIHR's mission is wide-ranging—to improve the quality of life of all Americans with disabilities—and prosthetics is only one of the agency's 14 areas of "prioritized technology research." The agency's funding is clearly inadequate to its task and has in fact been decreasing from its 1981 level of \$35 million (40,42).

At the other end of the research and development process stands the Food and Drug Administration (FDA), but the agency has had little effect on the development and distribution of the Boston Elbow. The FDA considers prostheses medical devices, and they fall within its mandate to classify and regulate. Prosthetic parts are assigned to Class I, where controls include regulation of manufacturing practices, recall and seizure authority, etc., but not the (as yet unspecified) performance standards found in Class II. Prosthetic limbs are usually fabricated from components by prosthetists and technicians. As long as the prosthetist "customizes" the device in this way, the FDA does not require that the components meet specific performance standards. When a manufacturer sells a fully assembled prosthesis, however, it falls into Class II, and the potential of performance standards does apply. The Boston Elbow has not yet been classified and may be assigned to Class II. In any case, Class I controls apply in Class II as well and are unlikely to pose a problem for Liberty Mutual.

The amputee-citizen may actually be provided with a prosthesis if he or she is eligible, on the basis of income, for SSI and the Medicaid benefits that in most States accompany it. SSI pays cash benefits to citizens with low incomes whose disabilities are total and expected to last at least 12 months or result in death. The 1978 annual SSI benefit for a man with a nonworking wife and two children was \$3,864 in California and \$2,273 in Texas (5). SSI parallels SSDI, although the former is not an insurance program and is financed through general revenues. SSI also offers Medicaid rather than Medicare, and, because Medicaid is a State-administered program, it varies significantly from State to State. Prosthetic and rehabilitation services (e.g., learning to function with one arm) may be among a State's Med-

icaid benefits but need not be. All prostheses funded through the program must be "medically necessary" (39).

In Massachusetts, the Medicaid program does provide prosthetic devices. Medical necessity is asserted and defended by the physician prescribing the prosthesis and confirmed by the Medicaid officials who review the claim. Unlike durable medical equipment, which may not be "substantially more costly than medically appropriate and feasible alternatives" (8), prostheses are covered if there is an adequate "medical justification" for their expense (13). Medicaid officials are unable to say whether a Boston Elbow has ever been approved or disapproved, and they claim they would seriously consider providing an Elbow if its advantages could be shown to have a medical purpose (13). Still, it seems unlikely that Medicaid, which has been labeled "welfare medicine" (35), would purchase a prosthesis as costly in both absolute and relative terms as the Boston Elbow. An exception might be made in the case of a very high amputation that makes use of a cable-operated device impossible, but according to one Massachusetts physiatrist, Medicaid has a reputation for expending its resources conservatively. He does not prescribe more than basic rehabilitation technology for his patients on Medicaid.

Amputee-citizens have an additional alternative to the Boston Elbow. It is the considerable modification of their environment by the rehabilitation legislation of 1973 and 1978. The Rehabilitation Act of 1973 made significant changes in both the human and manmade environments, creating for people with disabilities points of access to mainstream America. Section 502 established the Architectural and Transportation Barriers Compliance Board to ensure the physical accessibility of Federal buildings and those built with Federal funds since 1968. As noted in *The Amputee-Worker*, section 503 requires Federal contractors to take affirmative action in employing disabled people. And section 504 prohibits discrimination against people with disabilities by organizations receiving Federal aid of any kind.

This mandate to achieve accessibility can be (and is being) interpreted more or less generously. In either case, it represents a break with the tradi-

tional vocational orientation of rehabilitation policy. The Federal/State Vocation Rehabilitation Program served many clients between 1920 and 1970, but its success was modest among individuals with severe disabilities. In the early 1970s, some severely disabled people began to challenge the apparent strategy of the VR Program: to place as many clients as possible in jobs by accepting the least severely disabled people as clients. This critique ultimately took the form of the Rehabilitation Act of 1973, which targeted people with severe disabilities for VR services. But the 1970s were also the beginning of the post-Progressive Era (29), when social welfare came to be thought of less as a matter of services and more as a matter of rights. The Rehabilitation Act of 1973—clearly an instance of post-Progressive legislation—not only reallocated services, but broadened “rehabilitation” to mean the integration of people with disabilities into the larger society.

The 1978 Amendments to the 1973 Act further modified the disabled person’s environment through title VII, the independent living program. Title VII mandates State rehabilitation agencies to establish independent living centers (ILCS) where severely disabled people without the potential for employment can be assisted to live as independently as possible. The legislation grew out of the independent living movement, which began in the early 1970s among disabled people living in institutions. They believed that even people with very serious impairments could, with training and support, live in a deinstitutionalized setting. The ILC, then, was designed to be the locus of whatever services would prove necessary in attaining maximum independence.

Title VII has never been fully funded. Federal and State moneys have been made available for the establishment and operation of ILCs—including skills training, advocacy, and out-reach—but not the purchase of services per se. As a result, an independent living center is highly unlikely to provide a Boston Elbow, even if the prosthesis promises an amputee more independence. Instead, center staff will assist him or her in finding other sources of funds for the device. ILCs also provide skills training in daily activities, such as homemaking and financial management and help in finding accessible housing, transportation, and social activities (10,24,47).

The rehabilitation legislation of 1973 and 1978 has had an indirect but not inconsequential effect on the Boston Elbow. By redefining services as rights, the Rehabilitation Act envisions disabled people independent of their service-givers and raises expectations about how much independence is possible. By providing support for independent living, the amendments further increased the disabled individual’s chances for self-determination. Thus, there has been renewed interest in “technology the enabler”—compensatory technology that extends independent functioning. Paradoxically, this same affirmation of the disabled person’s humanity has led some amputees to give up the prostheses that they felt they were expected to wear.

The amputee-citizen, in summary, is only tenuously connected to the Boston Elbow. But Federal research, regulation, and restatement of old issues do contribute to the fate of the Boston Elbow and other rehabilitation technologies.