

# **Social Justice in Architecture: Promoting Universal Design and Human Diversity in Architecture Education and Practice Through the Accreditation Process**

A Position Paper for 2003 National Architectural Accrediting  
Board (NAAB) Validation Conference  
Adaptive Environments, Boston, MA<sup>1</sup>

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## **Social Justice in Architecture: Promoting Universal Design and Human Diversity in Architecture Education and Practice Through the Accreditation Process**

### **Executive Summary**

This paper highlights the issues facing architecture students with disabilities as well as the lack of attention to human diversity in architectural education. It emphasizes the extraordinary demographic and societal changes that demand more enlightened designers and design. The paper identifies the existing NAAB Conditions and Procedures that can begin to address these issues and suggests slight modifications in language that can further respond to these needs. It offers some suggestions for the site visit and preparation of members of accreditation visiting teams.

Generally, we address these major concerns:

- 1) There is a need to create universally designed environments in the architecture academy workplace so that students and faculty with disabilities will be comfortable and welcomed.
- 2) There is a need to include people with disabilities as part of an overall strategy for recruiting diverse students and faculty.
- 3) There is a need to infuse universal design strategies into both the curricula and the teaching methods in schools of architecture.
- 4) There is a need to shift accessibility issues from an add-on compliance issue to an integral part of the design process.

Several of the authors and reports referenced in the Background section will be familiar to the Validation Conference participants. However, the seminal work in accessibility and in universal design by the late Ron Mace, FAIA, may be less well known. His design advocacy and teaching inspired the National Endowment for the Arts (NEA) to address universal design as one of its Leadership Initiatives. Much of the research and experience cited in this paper about the efficacy of a built environment for human potential was generated from projects and national meetings supported in part by the NEA. The NEA began its investigations into universal design in 1990 with the Universal Design Leadership Initiative. The recommendations from the first meeting of national experts led to several of the projects in design education cited in this paper. They include the Universal Design Education Project involving 30 US schools of design, documented in *Strategies for Teaching Universal Design*.<sup>1</sup> Jane Alexander, who was then Chairman of the NEA, said in her introduction to the book, “The concept of universal design goes beyond the mere provision of special features for various segments of the population. Instead, it asks at the outset of the design process how a product, graphic communication, building, or public space can be made most aesthetically pleasing and functional for the greatest number of users.” Reviewer Sherry Ahrentzen said, “The beauty of this book –as well as the Universal Design Education Project itself -- is how on every page it embodies the powerful idea and materiality of diversity...”

Another recommendation to involve people with disabilities in the design fields led to the Access to Design Professions project begun in 1999. The initial research conducted in the project led to one of the two overarching concerns addressed in the paper – the lack of equity and opportunities for students with disabilities in design schools.

Access to Design Professions conducted key-informant research with designers around the world. Most were architects. The summary conclusion in the report of this research states, “Access to educational programs and professional life in all fields of study is problematic for people with disabilities. Studio based education in architecture, landscape architecture, interior architecture and industrial design is often inaccessible to students with disabilities. Teaching the techniques and goals of universal or inclusive design in design school programs is an ironic endeavor when design schools themselves are inaccessible, and design professionals see people with disabilities as a user group, rather than as potential peers and colleagues. Design education is improved when people with disabilities participate, and the practice of design will also improve when people with disabilities are recruited, educated and supported in the design professions.”

The second overarching issue is within the curriculum. The curriculum of design education continues to treat universal design as a peripheral issue of code compliance, rather than a fundamental starting point in all design activities. This lack of educational emphasis is played out in professional work, where access is more often treated as an ADA code compliance towards the end of the design process rather than as a fundamental issue of civil rights that needs to inform the entire design process, from the initial design programming phases through the finishing details.

Finally, the readers of the paper should note that the impetus to consider the accreditation process came from a 2002 planning meeting with senior architecture faculty during which there was a strong consensus regarding both the lack of attention in the accreditation process to the existing student performance criteria for accessibility and for diversity as well as the lack of data. The meeting is discussed in I.D.

## **I. Background**

This paper, like many NAAB initiatives and critiques, is informed by the Carnegie Foundation report, *Building Community: A New Future for Architecture Education and Practice*. In it, authors Boyer and Mitgang state:

“To enrich their mission, we urge that architecture practitioners and educators assume greater leadership in studying how environments affect human well-being, productivity, and happiness. The curricula and design sequences at architecture schools should foster a climate of caring for human needs by including more frequent contact with clients and communities and by placing more emphasis on ‘environment-behavior.’...Further, the profession and the academy should collaborate on producing new knowledge aimed at clarifying how architects can create more effectively environments that enhance these goals...Building to meet human needs

means helping architecture students become effective teachers and listeners, able to translate the concerns of clients and communities into caring design.”<sup>2</sup>

Robert Ivy, FAIA and Editor, *Architectural Record*, also said it well in the Foreword to the *Universal Design Handbook*.<sup>3</sup> “The operative point of view for designers, (whether architects, landscape architects, interior designers, engineers, industrial designers, web designers, or wayfinders), becomes one of empathy for the human condition; in universal design, solutions reflect the diversity of human abilities--throughout the range of life. Although codes may help ensure compliance where the society has proved intransigent, the ultimate answer to universal design lies in employing our full imaginative and aesthetic gifts in a new way of seeing.”

Ron Mace, FAIA built on his years of teaching architects about accessibility regulations when he evolved his thinking to a universal design approach nearly 20 years ago. He urged architects to consider the design of **all** products and places to be usable by people of all ages and abilities, to the greatest extent possible. Federal law mandating equal access to higher education for people with disabilities has been in place for over 25 years, the Fair Housing Amendments Act has covered private and public multifamily housing since 1988, and the far-reaching Americans with Disabilities Act has covered nearly every other aspect of the built environment since 1990. Worldwide, the rapidly changing demographics with unprecedented numbers of people living longer along with changing social norms require a rethinking of the average user.

The concept of universal design grew out of earlier barrier-free discussions combined with a sense of political activism in disability rights, but it has developed into a much broader design philosophy that promotes meeting the physical and cultural needs of the broadest range of users possible. It includes much more than mere physical access. It is a way of designing for a more just and equitable built environment for all people. Universal design is not a trend but an enduring design approach that assumes that a broad range of human ability and cultural expression is ordinary, not special. It is an approach to design that is much more than a narrow code compliance to meet the specialized needs of a few. It is an inclusive design process for everybody.

Ron Mace noted that minimum standards are an important part, but not the definition of universal design. To make the distinction between accessibility standards and universal design, Elaine Ostroff writes, “Universal design is not a synonym or a euphemism for accessibility standards. Universal design can be distinguished from meeting accessibility standards in the way that the accessible features have been *integrated* into the overall design. This integration is important because it results in better design and avoids the stigmatizing quality of accessible features that have been added on late in the design process or after it is complete, as a modification. Universal design also differs from accessibility requirements in that accessibility requirements are usually prescriptive whereas universal design is performance based. Universal design does not have standards or requirements but addresses usability issues.”<sup>4</sup>

The *Principles of Universal Design*, published by the Center for Universal Design in 1997, articulate the breadth of the concept and provide guidelines for designers. The principles are:

- 1) Equitable Use
- 2) Flexibility in Use
- 3) Simple and Intuitive Use
- 4) Perceptible Information
- 5) Tolerance for Error
- 6) Low Physical Effort
- 7) Size and Space for Approach and Use

The succinct definition for universal design published by the Center for Universal Design is, “*The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.*” (See this definition and the seven principles and their 29 associated guidelines online at [http://www.design.ncsu.edu/cud/univ\\_design/princ\\_overview.htm](http://www.design.ncsu.edu/cud/univ_design/princ_overview.htm).)

Professor Leslie Weisman challenges, “If we are to design a society in which all people and all living things matter, we will have to move beyond the politics of human and environmental exploitation that defined the 20th century. The restoration of deteriorated and unhealthy cities, the ending of placeless sprawl, the loss of wilderness and rural landscapes, the increasing separation by race and income, the fights to end environmental racism and gender discrimination, and to create an environment in which the talents of disabled and older people can find full expression and their needs be met, are all interrelated community building challenges.”<sup>5</sup>

Unfortunately, architectural education has been slow to respond to these trends and mandates in the larger society. Students with disabilities are rarely seen in design studios, and the design studios themselves remain physically inaccessible in most schools. Disability services personnel on many campuses have had limited contact with design studios or design faculty, and have little understanding of the physical needs of students in studio based education. Furthermore, design faculty may not be aware of what services their campuses actually have available to them in meeting the needs of students with a range of learning and physical disabilities. Design faculty also may not have the education or expertise necessary for preparing lessons and activities that meet the needs of students with a variety of learning styles, including those with disabilities. Students and designers with disabilities have reported that principles of universal design, and even basic standards of access, are rarely if ever discussed in the design curricula unless the students themselves initiate the topic. The connection between human rights and equal access in the built environment is rarely made in design education. The connection between creating sustainable communities and integrating those with disabilities in those communities is not made, even though building and planning practices that continue to isolate people and that are in constant need of retrofitting are certainly not sustainable.

These conclusions are derived from concerns expressed at several national

multidisciplinary task force meetings and workshops over the past twelve years, and have been well documented by rigorous research. The following key events and publications explain the issues.

### **I.A. National Endowment for the Arts, Leadership Initiatives in Universal Design**

In 1990, the National Endowment for the Arts convened the Universal Design Leadership Initiative, with a national meeting of leaders in architecture, landscape architecture, industrial design and design advocacy. Recommendations from this meeting included:

- Convene a meeting/symposium of accreditation organizations along with representatives from the ACSA and the AIA to discuss the current status of universal design teaching and methods for evaluating this important component of design education, with an emphasis on learning what the accreditation teams need to do their job.
- Include people with disabilities in the accreditation process.
- Develop and distribute design problems that could be used by any number of educators in their studios and classes, a series of case studies documenting real world situations that call for resolutions using universal design.
- Enlist, recruit, and encourage students with disabilities to enter the design professions.<sup>6</sup>

In June 1999, National Endowment for the Arts convened a follow-up national meeting to review universal design activities initiated during the previous decade and to identify future needs. At that time, Bill Ivey, Chairman of the NEA, wrote, "When we look at the accomplishments in universal design since 1990, it's obvious that the concept is finding growing support, but as we all know, there is still much to be done. We need to talk about ways we can infuse the concept of universal design into the thinking and practices of those who plan and build communities, own businesses, and teach in the important field of design." The report noted the accomplishments of the Universal Design Education Project as an incentive approach to support academic innovations. There were many recommendations from this meeting, including:

- Develop new educational products using new technologies such as on-line training, continuing education for practitioners, distance education, and design competitions with an educational component. At the same time reintroduce into design curricula the notion of human interaction within a social context.
- Raise and discuss the question whether we are creating a field called universal design or are we integrating universal design into the entire design universe of professions.
- Emphasize to practitioners that universal design is not a set of codes or standards but a process of creating an environment informed by principles of inclusion.<sup>7</sup>

Later in 1999, the NEA awarded a Universal Design Leadership Initiative grant to Adaptive Environments to begin the funding for Access to Design Professions. Access to Design Professions supports the involvement of people with disabilities in the design professions as another strategy to increase universal design. The initial research cited below provided the background for action planning with a national task force with representatives from the professional design societies.<sup>8</sup> Some project accomplishments include an International Network of Designers with Disabilities, an E-Mentoring program that pairs design professionals with interested young people and a pilot survey of design schools. *Building a World Fit for People: Designers with Disabilities at Work*, a book building on the research was published in print and online.<sup>9</sup> The NEA continues to fund the project to support inclusionary approaches in design education. The current award, among other activities, supports the Architecture for Social Justice Awards: Partnerships in Teaching as well as the preparation of this position paper for NAAB.

### **I.B. Access to Design Professions Research Report**

In 1999, the Access to Design Professions Project conducted in-depth interviews by phone and by e-mail with 33 designers with disabilities from around the world, most of whom were architects. They were asked questions about:

- Childhood development and early interests in design,
- Transition from secondary school to college,
- College experiences and professional development,
- Transitions from college to professional practice,
- Experience of disability in relation to professional practice, and
- Views about mentoring and networking as designers with disabilities.

The researcher had recently completed a bachelor's degree of landscape architecture in a studio-based program, and was a graduate student at the time. He also has multiple disabilities, and uses a wheelchair. Participants were assured confidentiality and they knew that someone who shared the experience of disability, and understood studio-based education and practice was interviewing them. Many spoke of sharing thoughts that they had never expressed to anyone else. Notably, their isolation as people with disabilities within the profession was evident. Major conclusions from this study relevant to discussions of architectural education and studio culture follow in Section III.

First, the majority of respondents did not think that equal access and equal opportunity were provided to students with disabilities in their professional education programs. There was not a consensus about the balance between the individual's responsibility to adapt, and the program's responsibility to provide equal services. There was no discernible difference by decade in how accessible the programs were. One student from the 1950's with multiple disabilities reported having no access problems, while another from the late 1990's said the program was not accessible. Administrative attitudes and approaches were mentioned as influential in what quality of services was provided.

Second, discussions of ideas such as *barrier-free design* or *universal design* were not part of formal education in design programs unless originated by the student. One assumption often expressed was that programs now are improved in this respect. However, no trend in the increase of actual instruction of these issues can be noted by the reported experience of the more recently educated designers, though an awareness of disability issues by design students as a matter of civil rights was shown to have changed over the decades. Individual programs varied greatly in terms of access issues, and the decade of instruction did not seem to be a significant factor in this regard. There was a tension reported about wanting to be seen first as a designer rather than being seen as an access expert. Caution was expressed about the dangers of creating a disability ghetto within the design professions. Some moved the conversation from *universal design* specifically, to the idea that *good design* is always fundamentally accessible. However, it was clearly reported that access in educational and design practices are often ignored if not addressed specifically.

All of the reported barriers and adaptations in education and professional practice are enumerated in a longer report where they are categorized into three types: *physical*, *programmatically* and *attitudinal*. Many obvious needs such as accessible door widths of rest rooms, or communication services for the deaf during studio reviews, were only met at the student's request or insistence. The conclusion of the report of this research states, "Access to graduate programs and professional life in all fields of study is problematic for people with disabilities. Studio based education in architecture, landscape architecture, interior architecture and industrial design is often inaccessible to students with disabilities. Teaching the techniques and goals of universal or inclusive design in design school programs is an ironic endeavor when design schools themselves are inaccessible, and design professionals see people with disabilities as a user group, rather than as potential peers and colleagues. Design education is improved when people with disabilities participate, and the practice of design will also improve when people with disabilities are recruited, educated and supported in the design professions."

### **I.C. Baseline Survey, Design Schools**

In the summer of 2001, Access to Design Professions conducted a baseline survey with a pilot group of design professors and related disability services personnel at 72 schools around the world. The list was primarily comprised of design educators who had attended Adaptive Environments' conferences on universal design; disability services personnel were identified at the listed schools with the assistance of AHEAD, the Association on Higher Education and Disability. The survey included questions about the numbers of students with disabilities currently enrolled, school policies related to accommodations for students with disabilities, and the basic accessibility of the school. The survey questions grew out of the information and concerns identified in the research with designers with disabilities in 1999 as they discussed their collegiate experiences.

Responses were returned from 30 schools, including 17 accredited schools of architecture from the United States. Some findings relevant to this discussion include:

- Eight of the accredited schools identified no students with disabilities in their design programs. Of the remainder, most identified three or less, with the exception of two schools that reported large numbers. The majority of those students had learning disabilities.
- Several accredited schools of architecture noted improvements in basic access and support services.. Most respondents had suggestions for improving the situation further. Design faculty tended to be more specific about necessary changes in studio than were the disability services staff (we would like to see design faculty lead on this issue).
- The coordination of services or accommodations for students with disabilities seems to depend on the students' initiative in most programs (we see a need to survey students to get a more accurate picture).

There is potential to collaborate with the Association of Collegiate Schools of Architecture (ACSA) and the American Institute of Architects Students (AIAS) to coordinate a survey of architectural schools that builds on the baseline survey. This information would be useful to new students as well as to the larger architectural education community.

#### **I.D. NEA/ACSA Access to Design Professions Meeting**

A planning meeting in July 2002, cosponsored by the National Endowment for the Arts, the ACSA, and the Access to Design Professions Project generated recommendations to address both the curriculum in schools of architecture as well as equity for students with disabilities. Key issues identified at the meeting that are relevant to this discussion included:

- Lack of data regarding people with disabilities; the NAAB annual data collection does not include questions on students or faculty with disabilities (See Appendix: NAAB Data Collection Form, Proposed Revision);
- Access is seen as an add-on code compliance issue not a design consideration;
- Misunderstanding of universal design as a mainstream process, with universal design seen too often as a specialty rather than as a philosophy;
- The marginalization of universal design and the need to link with other issues of social responsibility, especially sustainability.
- Most students have had little or no contact with people with disabilities;
- Lack of attention in the accreditation process to the existing student performance criteria for accessibility and for diversity;
- Too much responsibility placed on the student with disabilities for

making accommodations rather than placed on the educational program for providing equal opportunities.

In summary, there is work to be done in infusing universal design into architecture curriculum, in recruiting and supporting students with disabilities in professional education, and in making studios universally accessible both in educational and professional settings. Though the latter two efforts were mandated by federal civil rights legislation in 1973 and again in 1990, architectural education remains relatively unchanged.

## **II. Changes in the Academy and in the Profession**

A few signs of readiness for change in the academy and in the profession regarding attention to issues of students with disabilities and to a universal design approach in teaching have been seen in the past year. Notably, the ACSA cosponsored the planning meeting in July 2002, as described above. Brad Grant, 2002 ACSA President, helped arrange the meeting that included Geraldine Forbes, the ACSA president-elect and seven professors of architecture along with practitioners and design advocates. Also, Casius Pealer, co-editor of ArchVoices, an online Think Tank with over 12,000 subscribers, brought the perspective of recent graduates and interns.

As a result of that meeting, ArchVoices published a resource issue devoted to universal design and issues of disability in student studios.<sup>10</sup> The ACSA October 2002 Newsletter published *A Manifesto*, written by Daniel Hunter, ASLA from his perspective as a graduate student who used a wheelchair while working in a student studio taught by professors of architecture and landscape architecture. Other follow-on activities addressed the growing convergence of universal design with issues of sustainability and diversity. The 2002-2003 ACSA design competition posters all included a tagline: "The ACSA is committed to principles of universal and sustainable design." The annual American Institute of Architects (AIA)/ACSA Teachers Conference at Cranbrook on sustainability included a universal design component.

The ACSA welcomed a Special Focus Session on Architecture and Social Justice at the 2003 annual meeting in Louisville that highlighted the connections between universal, sustainable and affordable design. Elaine Ostroff, co-founder of Adaptive Environments, was honored by the ACSA at this conference by as an honorary member for her long-standing commitments to design education.

The AIA 2003 conference also increased visibility of designers with disabilities. The AIA Diversity Committee sponsored a panel at the San Diego convention that included two women, one was a researcher and author on diversity in design, one was a Hispanic architect, and two men, an architect and a landscape architect, both with disabilities. The first meeting of the International Network of Designers with Disabilities, an informal gathering at the 2003 AIA meeting was a historic moment, bringing together many people who had only been in contact by email. The AIA/Housing and Urban

Development (HUD) award to Erick Mikiten, AIA, a disabled architect, from Berkeley for his multi-unit complex for low-income disabled people highlighted its design qualities and contextual fit.

The AIA Diversity Committee, in conjunction with the Boston Society of Architects, is hosting 2020 Vision, a conference for design professionals in Boston in November 2003. The conference includes several sessions in which designers with disabilities are co-presenting with other diversity sub-groups. One session in particular, Debunking the typical consumer myth: expanding the definition of the user, was inspired by Harold Kiewel, AIA and member of the International Network of Designers with Disabilities.<sup>11</sup> The AIA Diversity website lists the book, *Building a World Fit for People: Designers with Disabilities at Work*, and an article on *Technology Helps Disabled Architects* from Architectural Record.

Most recently, the Access to Design Professions Project of the Adaptive Environments Center (Boston, MA) initiated the **Architecture for Social Justice Awards: Partnerships in Teaching** program in response to concerns about traditional design studio pedagogy, content, and culture, as described in several recent publications and reports on architectural education. **Architecture for Social Justice Awards** will recognize and support faculty who are leading studios that address human equity for both students as well as those who inhabit or experience the built environment. The awards program will document the creative ways that faculty are engaged in teaching architecture as a socially embedded discipline and practice and fostering an atmosphere of collaboration and respect in their classrooms. Five senior architecture faculty are among the national jury who will announce their selections by September 1.<sup>12</sup> Never before have we seen so many indicators that the profession is open to growth and change in regards to issues of disability and universal design.

What remains unchanged is significant, however. First and foremost, as noted earlier, unlike other underrepresented groups in architecture, NAAB does not collect data on the number of students or faculty with disabilities in architectural programs. We do not have a clear idea of how many students with disabilities or faculty with disabilities actually participate in design programs, and we have no data on the retention of such students or faculty, nor of reasons why some leave professional studies. Next, no one routinely tracks design studios for even the minimum of Americans with Disabilities Act (ADA) compliance, let alone for the development of truly universally designed studios and equipment. We are not aware of any existing programs sponsored by schools or professional organizations for the recruitment and retention of people with disabilities in architecture programs.

**The curriculum of design education continues to treat universal design as a peripheral issue of code compliance, rather than a fundamental starting point in all design activities. This lack of educational emphasis is played out in professional work, where access is more often treated as an ADA code compliance towards the end of the design process rather than as a fundamental issue of civil rights that needs to inform the entire design process, from the initial design programming**

**phases through the finishing details.** For example, Santiago Calatrava’s recent compromise on his design for a new inaccessible bridge over the Grand Canal in Venice is a good *bad example* of how new construction will become retrofit...before it is even built. To overcome the stairs at both sides of the bridge that connects the railway station with the bus terminal, Calatrava will add a horizontal elevator. We are saddened that this brilliant architect and engineer did not use his considerable talents in the design of a wonderful AND accessible bridge that everyone could use equitably.

### III. Studio Culture/Office Culture

We endorse the findings and recommendations in the *Redesign of Studio Culture by the American Institute of Architecture Students*.<sup>13</sup> This section notes a few of the sections that are most relevant to the issues we address. It also discusses aspects of the report from earlier related work and it highlights the experience of designers who participated in the research noted above in I.B.

*Redesign of Studio Culture* is the most recent report that recognizes the design studio as both a challenge and potential venue for increasing awareness of human equity issues. The report cites Thomas Dutton and Kathryn Anthony’s reflection that the consequences of studio culture are the “hidden curriculum” of student learning. It calls for change throughout its detailed critique of current practices in design studio education, offering numerous ways to reform, and thereby enhance, the studio atmosphere. One section of the report restates the need for increased diversity in architectural education. “In addition to issues of race and gender, architectural education constantly ignores other groups who are less often cited as minorities, but clearly qualify. Acceptance of all individuals regardless of race, gender, creed, religion, sexuality, socio-economic background, or physical disability must be sought. Through exposure to those groups of people with whom we may be less familiar, the architectural discipline will be strengthened through understanding how to design for everyone. There can be no argument as to the value of that experience (page 18).”

The report also emphasizes the importance of design as a process. It asks, “How effective is our current studio culture at developing graduates with strong design- thinking processes?” We strongly endorse the discussion about process in the design studio, along with the critical need for experience of working with real clients. “Without first-hand experience of working with a client, do students graduate with the necessary skills to practice architecture effectively? (Page 11).” Ray Lifchez’ work in the late 1970s at Berkeley was the first documentation of architecture faculty bringing consultants with disabilities into the design studio in order to help students “design for someone unlike themselves.”<sup>14</sup> In reporting the evaluation of the Universal Design Education Project in *Strategies for Teaching Universal Design* (Welch, 1995) we learned that contact with diverse users was the most important aspect of the project in the initial 21 schools.

Hunter describes the studio from his vantage point as a researcher and a person who has firsthand experience with disability as well as the design studio. Living successfully with disability in the midst of studio culture is a design skill in itself, and successful architects

with disabilities report that their development of that skill has enhanced their abilities as designers. We recognize the need for individual students to learn how to negotiate the studio environment to their benefit, and we are not contending that studio-based education needs to be made less rigorous. However, we do see a need to remove a multitude of unnecessary barriers encountered by students with disabilities in design studios.

The majority of designers with disabilities interviewed in 1999 who had positive design studio experiences said that they had one or two professors or administrators in their programs who understood their needs and concerns, and who helped them remove unneeded barriers and negotiate for appropriate adaptive methods, tools and policies. Very few reported systems-wide equal opportunity and equal access in their design programs. One noted that the best skill to have in order to succeed in studio is to make friends with the dean. On a systems level, it seems that each new student with disability needs to “reinvent the wheel.” Some designers reported having to make the same battles and the same negotiations term after term, with the institution retaining no memory of what needed to be provided.

The transition from educational studio culture to professional office culture was often problematic when students were unable to find accessible offices for completing an internship. Very rarely did any program assist a student with disabilities in this transition. Even when programs offered adaptations for an individual to work in studio, they largely failed to solve the group work access problem, providing spaces and services so that a student with disabilities could participate fully with a group. Some respondents reported problems with field trips and site work, suggesting the need for professors to have some foresight about the term’s activities in order to assist students in advance planning. Often, adaptations were left up to the student, and by the time the student could make the arrangements, it was too late to participate in the activity.

Designers with disabilities reported many unnecessary barriers in architectural education and professional practice. When asked about ways that the studio environment challenged them physically, 25% of the respondents mentioned fatigue caused by lack of time for rest, and unduly long or inappropriate hours. 25% mentioned lack of access caused by stairways, building level or location of studio. 25% mentioned inappropriate height or size of drafting boards and desks. 10% mentioned lack of elevators or lifts, inaccessible parking and unreasonable demands of speed, or lack of time given to complete a task. Of these most commonly mentioned barriers, it must be noted that nondisabled peers in studios often share the same complaints, and if the studio environment were improved for students with disabilities, all students would benefit.

Other barriers mentioned included unwieldy size of models and presentation boards, inadequate work space, lack of sign interpreters, unskilled note takers, lack of planning for field trips and site visits, studio furnishings set too high or in inaccessible locations, support services in inaccessible locations, bicycles routinely blocking ramped access, no interpreters for studio conversations, confusing paths of access, inadequate sound levels for lectures, inaccessible group meeting spaces, field trip vehicles with no lifts, invasive

noises or echoes in studio, lack of addressing access issues in courses and studios, lack of communication between professors and student, lack of computers in studio and inaccessible computer labs, lack of visual stimulation, poor lighting, narrow doorways, no method to plan ahead, crowded studio layout, inaccessible toilet stalls, inaccessible transportation systems on campus, poor window placement, unsafe workshops and inaccessible power tools.

When asked if they had any prior understanding of studio-based education in order to make appropriate requests for accommodations in advance of studio work, a third of those interviewed said they had no idea what would be required. A third reported having some idea, and a third did not respond to the question or gave a mixed response. Clearly, design faculty and disability services personnel need to learn how to supply accommodations to studio-based education.

Designers with disabilities mentioned several adaptations that were provided for them in college studios. However, only 10% reported the program providing any accommodation prior to a spoken request. The accommodations mentioned were addressing some of the barriers we reported previously. Sometimes the most valued “accommodation” reported was simply an administrator or professor demonstrating an understanding of the needs of the student. Almost 40% of respondents said no accommodations were made or offered. Accommodations made without the prior request of the student included the relocation of some lectures and some studios to the ground floor, modifying a stool, adapting a table, installing a ramp, being offered the use of elevators not available to the general public, being allowed to work at home, accessible parking places, accessible dorm location, providing a note-taker, being offered the possibility of designing a particular program of study that took account of the disability. One mentioned having made a friend in the right places prior to entering the program.

The designers with disabilities that we interviewed reported 41 different specific suggestions when asked, “*Do you have suggestions for improving access and opportunity in design education for students with disabilities?*” While we will not enumerate those here, we can say that all these suggestions are reasonable and readily attainable. Many of them involve changing policies and practices, and do not involve a major financial investment. Again, many of these suggestions would benefit the studio environment for all students, not just for the disabled population.

No discussion of studio culture as it relates to disability can avoid the issue of physical health, and the fundamental question of whether or not people with disabilities can reasonably handle the demands of a professional life in architecture. When asked questions related to their personal experience of their bodies during studio-based education, only one third reported any problems relating to their disability. Of those, some mentioned excess pain, and some mentioned needing more time than nondisabled peers to complete the same activities. Other problems reported were a lack of stamina, the need for flexible scheduling in order to deal with pain management, and the need to invent ways to complete tasks requiring fine motor skills.

In all cases, quality of work was not an issue as long as they were allowed the flexibility to manage pain and rest, and were allowed to use equipment appropriate to their disability. No one reported an inability to work professionally in design, though a few were having difficulty securing interviews, and they believed this was due to nondisabled employers prejudicially applying a false assessment of their abilities. Many were self-employed in order to avoid dealing with prejudicial employment policies and practices. Again, it must be stressed that the majority of these designers reported having no significant or insurmountable problems in meeting the demands of their profession physically. And the majority reported that living successfully with disability improved their skills as designers.

#### **IV. NAAB Conditions & Procedures/Student Performance Criteria**

There are significant opportunities in the current Conditions and Procedures, and in the detailed Student Performance Criteria to dramatically improve issues of disability and universal design within schools of architecture. There is need for some more specificity within the Conditions, and more guidance for visiting teams as they conduct the site visit. The existing documents have great relevance for issues of disability and a universal design approach. It is our opinion that review teams could conceivably use the existing language to look for the presence of universal design in the curriculum, to look for the participation and inclusion of students with disabilities in design studios, and to look for equitable physical access to design school facilities and programs. Given the data we received in our meeting with architecture faculty in 2002, it appears that visiting teams are not enforcing existing criteria in a manner that is conducive to improving access for all, or for improving the instruction of students in universal design principles.

Both the opportunities and our concerns can be connected to existing language in Conditions 1, 4, 7 and 12, and will be reviewed in that order. Specific recommendations for changes follow in Section V.

#### **Condition 1: Program Response to the NAAB Perspectives**

*Section 1.2, "Architecture Education and the Students", states:*

- *"...it provides an interpersonal milieu that embraces cultural differences" and*
- *"...how they are encouraged to cooperate with, assist, share decision making with, and respect students who may be different from themselves." Also,*
- *"...how students' diversity, distinctiveness, self-worth, and dignity are nurtured."*

The visiting team would benefit from examples of indicators that they could look for; unlike many other issues in the academy, the Visiting Team may not have had any experience with these issues. This section could be used to look for the support services that may or may not be available to students with disabilities. It could be interpreted to

check how studios integrate students with disabilities in all activities, rather than isolating them to adapted desks here and there. A true test of any social group's commitment to *"how students' diversity, distinctiveness, self-worth, and dignity are nurtured"* will be found in how it treats people with disabilities. Also, this section opens the door to design education for the work done in the humanities in identifying and promoting Disability Culture. Disability art and culture could be used in a similar way as any ethnic culture is used as inspiration in design activities and curriculum.

*Section 1.4, "Architecture Education and the Profession"*, states:

- *"The program must demonstrate how it prepares students to practice and assume new roles within a context of increasing cultural diversity, changing client and regulatory demands, and an expanding knowledge base."* Also,
- *"...how students learn to reconcile the conflicts between architects' obligations to their clients, the public, and the demands of the creative enterprise; and how students acquire the ethics for upholding the integrity of the profession."*

The outside margin of *"increasing cultural diversity"* is the recognition of disability culture and disability identity. Universal design needs to be discussed as an issue of civil and human rights, and should be in the mix of any discussion about ethics in the profession. It should also be a part of any discussion about architects' obligations to the public. A practice of universal design in architecture or in architectural education would be a highlight of professional integrity.

*Section 1.5, "Architecture Education and Society,"* states:

*"...how students gain an informed understanding of architecture as a social art, including the complex processes carried out by the multiple stakeholders who shape built environments; the emphasis given to generating the knowledge that can mitigate social and environmental problems; how students gain an understanding of the ethical implications of built environment decisions; and how a climate of civic engagement is nurtured, including a commitment to professional and public service."*

The practice of universal design is the best approach to understanding architecture as a social art. The inclusion of people with disabilities as equal stakeholders in shaping the built environment would be a hallmark of practicing architecture as a social art. Students can readily learn *"the ethical implications of built environment decisions"* by evaluating how their designs include or exclude people with disabilities. An interest in the social needs for integration of people with disabilities in private and public spaces would be a hallmark of a true *"commitment to professional and public service."*

The AIA Grassroots 2001 Issues Forum, in its discussion of Objective 6 of AIM (Aligning the Institute for the Millennium), provides another strong recommendation for action in response to Condition I.5: "Promote entry into architecture schools and the profession into all members of society. Support ACSA's 1990 'Code of Conduct' for

architectural education, which advocates promoting social justice, improving the climate of architectural education for all, recruiting the best talent from the widest possible pool, increasing sensitivity to the full range of future clients, teaching students to work in a global marketplace, and fostering diversity within the profession. Endeavor to shape public policies affecting access to higher education.”<sup>15</sup>

#### **Condition 4: Social Equity**

This entire section relates to issues of including students with disabilities in design education, and it reads:

*“The program must provide all faculty, students, and staff-irrespective of race, ethnicity, creed, national origin, gender, age, physical ability, or sexual orientation-with equitable access to a caring and supportive educational environment in which to learn, teach, and work. It must have a clear policy on demographic diversity that is communicated to current and prospective faculty, students, and staff; this policy must be reflected in the distribution of the program's human, physical, and financial resources; and faculty, staff, and students must have equitable opportunities to participate in program governance.*”

*The Architecture Program Report (APR) must include the following information:*

- *Criteria and procedures for achieving equity and diversity in faculty appointments, re-appointments, and promotions*
- *Criteria and procedures for achieving equity and diversity in student admissions, advancement, retention, and graduation*
- *Description of the means by which faculty, students, and staff are given access to the formulation of policies and procedures, including curriculum review and program development.*”

This Condition speaks clearly for itself, but NAAB reviewers need to be made aware of how to include people with disabilities in evaluating every detail of this particular Condition. Given that no data is presently collected on disability, the underrepresented group that is most likely to be ignored in any evaluation of this Condition is people with disabilities. Another aspect of accommodating diversity might be that sign language interpreters are made available for studio discussions and studio reviews where deaf students are present and able to use this service. The system needs to have this in place well in advance of a student needing the service, and not be scrambling at the last minute for a service that the faculty should have known to request in advance.

#### **Condition 7: Physical Resources**

The following description of Condition 7 should be read from the perspective of meeting the spatial needs of students and faculty with disabilities.

*“The program must provide physical resources that are appropriate for a professional degree program in architecture, including design studio space for the exclusive use of*

*each full-time student; lecture and seminar spaces that accommodate both didactic and interactive learning; office space for the exclusive use of each full-time faculty member; and related instructional support space. The facilities must be in compliance with the Americans with Disabilities Act and with local building, fire, and life-safety codes.”*

Many schools assume that providing a ramp for access and a 5-foot turning radius provides full access. It must be noted that the ADA will allow lecture and seminar spaces that do not accommodate interactive learning. If the goal is truly “*interactive learning*”, then all spaces must be universally designed, which goes far beyond compliance with the ADA. This includes light, ventilation and acoustics as well as paths of access and levels of desks and drafting boards. Evaluating this Condition should be undertaken from a universal design perspective, not simply a code-compliance perspective. It must also be remembered that any space used by faculty should be universally designed. If a faculty member with disabilities can use the space, so can a design student with disabilities. Given the interactive nature of studio-based education, any space a faculty person uses may also be one that a student will use.

This applies to audio-visual rooms, storage spaces, computer labs, lecture podiums, media libraries, machine shops, etc. It means that every student and professor needs to be able to visit the desk of every studio participant. It means that field trips and site visits should involve group problem solving to enable all students to participate fully in the “*interactive*” learning experience. This Condition also means that attempts at isolated “separate but equal” accommodations for students with disabilities are unacceptable in that they lack the interactive nature of design studio education.

As part of ongoing federal requirements both public and private colleges and universities are required to have completed reports on their accessibility to programs and facilities. Architecture programs will have contributed data to these school-wide reports. These reports can be a resource in preparing the APR as well as to the Visiting Team. Public universities have had a requirement since 1978 to gather barrier removal data under Section 504 of the 1973 Rehabilitation Act. More recently, since 1992, the ADA regulations require state and local institutions to develop a Transition Plan regarding access improvements to assure full access to all programs; this is to be kept on file. Institutions could update their 504 Plan to create the Transition Plan. Private universities had a similar obligation under Section 504, if they received federal funding. Under the ADA all private institutions are required to evaluate existing facilities for ‘Readily achievable barrier removal.’ New construction and alterations have much more stringent access requirements.

### **Condition 12: Student Performance Criteria**

The following existing Student Performance Criteria relate to issues of disability and universal design.

*Section 12.8, “Human Diversity”, states:*

*“Awareness of the diversity of needs, values, behavioral norms, and social and spatial patterns that characterize different cultures, and the implications of this diversity for the societal roles and responsibilities of architects...”*

People with disabilities and disability culture have their unique spatial and social needs. Witness any gathering of the Society for Disability Studies where academics with disabilities control the planning and execution of the conference, and one may see clearly how disability culture uses space. Architects have a social responsibility to learn this, and the tools and forums are available to do so.

*Section 12.14, “Accessibility”, states:*

*“Ability to design both site and building to accommodate individuals with varying physical abilities...”*

This section speaks for itself. We also encourage students to also develop the ability to critique the learning spaces in which they are studying and the professional design studios they encounter in terms of access and universal design.

*Section 12.23, “Legal Responsibilities”, states:*

*“Understanding of architects' legal responsibilities with respect to public health, safety, and welfare; property rights; zoning and subdivision ordinances; building codes; accessibility and other factors affecting building design, construction, and architecture practice...”*

Designing for access must deal with the discussion of property rights, as this is often where the true resistance lies in professional practice.

*Section 12.30, “Program Preparation”, states:*

*“Ability to assemble a comprehensive program for an architecture project, including an assessment of client and user needs, a critical review of appropriate precedents, an inventory of space and equipment requirements, an analysis of site conditions, a review of the relevant laws and standards and an assessment of their implications for the project, and a definition of site selection and design assessment criteria...”*

Universal design principles should be present at the foundation of this process, not as an add-on or last minute critique of code compliance. The students should demonstrate an expanded notion of who the user actually is. In 1985, architect Harold D. Kiewel wrote in *User Sensitivity in Architecture*, “One key to understanding the architect’s obligation lies in the concept of user sensitivity; that is, understanding a culture’s people. In this context the term people does not mean every single living member of a culture. It refers specifically to the noninstitutionalized, enfranchised, members in good standing of a population. For example, at the time of its writing the Declaration of Independence’s phrase “We the People...” meant, we the white, male landowners. Since then its definition of people has been officially enlarged by civil revolution, war and ultimately,

acts of Congress to also include men of color, women, children and elderly and disabled people. It is the composition, values, beliefs and customs of this officially enfranchised public that the professional designer must recognize and design for, since it is to them that accountability is owed.”

*Section 12.35, “Architects' Leadership Roles”, states:*

*“Awareness of architects' leadership roles from project inception, design, and design development to contract administration, including the selection and coordination of allied disciplines, post-occupancy evaluation, and facility management...”*

Much of the real work of universal design can best be forwarded by effective post-occupancy evaluations, and these evaluations could benefit by including evaluators who are disabled and who have been educated in design. True leadership could be shown in the recruitment of people with disabilities to assist in all phases of a project as described here.

*Section 12.36, “The Context of Architecture”, states:*

*“Understanding of the shifts which occur-and have occurred-in the social, political, technological, ecological, and economic factors that shape the practice of architecture...”*

The studied architectural vernacular historically excludes and isolates people with disabilities. Again, modern politically active disability culture provides a frame of reference for a fundamental shift in social and political life, and in constructing the environment.

*Section 12.37, “Ethics and Professional Judgment”, states:*

*“Awareness of the ethical issues involved in the formation of professional judgments in architecture design and practice ...”*

Universal design is an ethical practice. The practice of universal design exhibits sound professional judgment. Including people with disabilities as a matter of practicing diversity in the management of professional offices is also a matter of ethics, and can be supported by a reading of the AIA’s Code of Ethics.

Clearly then, existing language in the NAAB Conditions and Student Performance Criteria supports:

- Meeting the needs of students with disabilities,
- Including people with disabilities in the design process and in the profession,
- Learning and practicing principles of universal design,
- Expanding students’ notions of who the public actually is, and
- Serving and integrating the disabled population as a matter of professional ethics.

However, we have demonstrated that these issues are addressed poorly, if at all, in many current studio practices and in NAAB reviews.

## V. Recommendations for Change

There several ways that NAAB Conditions and Student Performance Criteria could be strengthened to address the issues we have raised. We have organized our recommendations to address the overall accreditation process.

### V. A. Conditions:

Under *Condition 4, Social Equity*, people with disabilities need to be seen as a subset of any demographic study and any programs seeking to diversify faculty and student populations. Disability generally has not been addressed as a diversity issue by universities in student recruitment and in faculty hiring practices. It is under this Condition that language or policies specifying the tracking of disabled students and faculty could be included. Disability needs to be seen as an issue of personal identity, and thus needs to be tracked in the same manner as gender, race, and ethnicity. Data about numbers of students with disabilities and numbers of faculty with disabilities need to be kept, and need to be part of NAAB annual reports (see edited example in Appendix X).

Language about universal design needs to be added to existing Conditions. We suggest some possible changes, in bold type, to *Section 1.5, Architecture Education and Society*.

*“...how students gain an informed understanding of architecture as a social art, including the complex processes carried out by the multiple stakeholders who shape built environments; the emphasis given to generating the knowledge that can mitigate social and environmental problems, **including an understanding of universal design principles**; how students gain an understanding of the ethical implications of built environment decisions; and how a climate of civic engagement is nurtured, including a commitment to professional and public service **and the practice of universal design.**”*

We suggest the following change in bold type to *Condition 4: Social Equity*.

*“The program must provide all faculty, students, and staff-irrespective of race, ethnicity, creed, national origin, gender, age, physical ability, or sexual orientation-with equitable access to a caring and **universally designed** educational environment in which to learn, teach, and work. It must have a clear policy on demographic diversity that is communicated to current and prospective faculty, students, and staff; this policy must be reflected in the distribution of the program's human, physical, and financial resources; and faculty, staff, and students must have equitable opportunities to participate in program governance.*

We recommend the following change in bold type to *Condition 7: Physical Resources*.

*“The program must provide physical resources that are appropriate for a professional degree program in architecture, including design studio space for the exclusive use of each full-time student; lecture and seminar spaces that accommodate both didactic and interactive learning; office space for the exclusive use of each full-time faculty member; and related instructional support space. **All teaching and learning spaces should be universally designed.** The facilities must be in compliance with the Americans with Disabilities Act and with local building, fire, and life-safety codes.”*

Under Condition 7, NAAB reviews could check more than compliance with the ADA, and seek to identify universally designed studios, labs, lecture halls, and libraries. They could seek evidence of a program’s initiatives in making their facilities universally accessible. Reviews need to report these efforts. To achieve this, students and faculty with disabilities should be interviewed about their personal experience of all aspects of a program’s facilities. If there are no people with disabilities participating in the program, then consultants with disabilities need to assist in reviewing the facilities.

#### **V. B. Student Performance Criteria:**

Looking at existing student performance criteria, we see that the language is generally adequate to address our concerns, as long as reviewers are aware of how to fully evaluate the criteria in terms of disability and universal design. (We will address this later in section V. C.) However, we propose the following changes, in bold type.

In *Section 12:8 Human Diversity*, we recommend adding language about universal design, (changes in bold):

“Awareness of the diversity of needs, values, behavioral norms, and social and spatial patterns that characterize different cultures, and the implications of this diversity for the societal roles and responsibilities of architects; **awareness of how applying principles of universal design to all phases of a project can assist in meeting diverse physical and cultural needs**”

In *Section 12:14 Accessibility*, we recommend expanding the language, (changes in bold):

“Ability to design both site and building to accommodate individuals with varying physical abilities; **ability to apply principles of universal design to both site and building**”

We have also reviewed the newly proposed Student Performance Criteria in the document titled, *Draft Student Performance Criteria For Review And Comment By Collateral Organizations In Preparation For The 2003 NAAB Validation Conference*. Of the 26 criteria listed in the draft of April 3, 2003, we suggest changes to the following four criteria, with our suggestions in bold type.

5. Fundamental Design (Fundamental Design Skills) (**Accessibility**) *Ability to exercise creativity and **accommodate individuals with varying abilities in the application of***

basic architectural, interior architecture, and urban design principles to a range of building types, their interior spaces, and their sites.

#### 9. Human Diversity

*Awareness of* the diverse needs, values, behavior, and social norms that characterize different cultures **and abilities** and how those factors affect an architect's role in society; **and the application of principles of universal design to meet diverse physical and cultural needs.**

#### 17. Program Preparation (Modifies 30)

*Ability to* assemble a comprehensive building program for an architectural project, including: the client's goals, **user** needs and priorities; analysis of site, space and equipment requirements; and assessment of the relevant laws, codes and standards for the project.

#### 18. Comprehensive Design (29 Comprehensive Design)

*Ability to* design an architectural project that meets a comprehensive program; **integrate stated codes and standards**; develop its site requirements; arrange and develop its programmed spaces; integrate its building systems and materials; develop its building sections and primary construction details; and prepare a preliminary estimate of its construction cost.

The above suggestions are based on our experience and information available prior to the Validation Conference. In order to be more specific we offer to collaborate on the development of specific language changes for the conditions and the student criteria, based on the outcomes of the Validation Conference.

### **V.C. Accrediting Procedures**

(Note that the numbering of these recommendations relates to the specific procedures within the 1998 NAAB Conditions and Procedures or the 2002 Amendments to the NAAB Conditions and Procedures)

#### **Visit Preparation**

1. Writing the APR: the 1998 Conditions and Procedures guide notes, "The NAAB conducts a workshop on APR preparation at ACSA's annual meeting. Programs may request sample APRs and receive guidance tailored to their particular circumstance.

Recommendation to NAAB: Identify APRs wherein conditions related to Social Equity (Condition 4), Physical Resources (Condition 7) and relevant student performance criteria (12.8, 12.14, 12.23, 12.30, 12.35, 12.36, and 12.37 are exemplary and make these APRs available to schools.

2. Team Selection: the 1998 Conditions and Procedures guide notes, "...the NAAB may also suggest observers...of these possibilities, one or two observers are mutually agreed upon by the program and the chair.

Recommendation to NAAB: Compile a list of design professionals with disabilities who would be available to participate in the site visit.

3. Informing the Team of Its Responsibilities: the 1998 Conditions and Procedures guide and the 2002 Addendum provide extensive detail.

Recommendation to NAAB: We understand that there is a ‘Team Training Manual’ that is being re-written. Adaptive Environments would gladly participate in any review in order to make suggestions that could inform the process relative to issues of disability and universal design.

In addition, Adaptive Environments could prepare a PowerPoint presentation on CD that includes examples of both universal design education and the integration of students with disabilities in the academy. This could be done with a review group from NAAB, to meet the needs and priorities of potential team members.

### **The Site Visit**

5. Participating in the Site Visit: the 1998 Conditions and Procedures guide has extensive detail on the multiple aspects of this intense process, facilitated by useful checklists in the Appendices.

Recommendation to NAAB: As invested outsiders, we again offer to participate in the development of the ‘Team Training Manual’ and other documents that will facilitate more understanding of the issues that have been presented throughout the paper.

### **Visit Follow-up**

6. Maintenance of Accreditation through Annual Reports: the 1998 Conditions and Procedures guide notes: “Human resources statistics report (Appendix A-15 contains a form for reporting human resources data.

Recommendation to NAAB: Amend the form to include data on disabled students and faculty, as shown in the Appendix of this paper.

## **VI. References/Endnotes**

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<sup>1</sup> Welch, *Strategies for Teaching Universal Design*. Adaptive Environments, 1995

<sup>2</sup> Boyer and Mitgang, *Building Community: A New Future for Architectural Education and Practice*. Carnegie Foundation for the Advancement of teaching,. 1996.

<sup>3</sup> Ivy, Foreword in *Universal Design Handbook*. Preiser and Ostroff, Eds. McGraw-Hill, 2001

<sup>4</sup> Ostroff, “Universal Design – The New Paradigm” in *Universal Design Handbook*.

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Preiser and Ostroff, Eds. McGraw-Hill, 2001

<sup>5</sup> Weisman, keynote address. Adaptive Environments 20<sup>th</sup> anniversary, online at: <http://www.adaptiveenvironments.org/examples/article2.php?f=4>

<sup>6</sup> *Report of the September 12-13, 1990, Meeting on Universal Design Leadership Initiatives*. National Endowment for the Arts, 1990.

<sup>7</sup> *Universal Design Meeting Report, June 7-8, 1999*, National Endowment for the Arts, online at: <http://www.arts.gov/explore/ud/contents.html>

<sup>8</sup> Hunter, *Report to the Task Force, Access to Design Professions*, Adaptive Environments, 1999.

<sup>9</sup> Ostroff, Limont and Hunter, *Building a World Fit for People: Designers with Disabilities at Work*. Adaptive Environments, 2002. Online at <http://www.adaptiveenvironments.org/accessdesign/>

<sup>10</sup> ArchVoices, Resource Issue on Universal Design. September 13, 2002. <http://www.archvoices.org/index.cfm?pg=Resources&s=UniversalDesign>

<sup>11</sup> Kiewel, *User Sensitivity in Architecture*, University of Minnesota. 1985

<sup>12</sup> *Architecture for Social Justice Awards: Partnerships in Teaching*. Online at [http://www.adaptiveenvironments.org/accessdesign/faculty\\_award.php](http://www.adaptiveenvironments.org/accessdesign/faculty_award.php).

<sup>13</sup> AIAS, *Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force*. December 2002.

<sup>14</sup> Lifchez, *Rethinking Architecture: Design Students and Physically Disabled People*. University of California Press, 1987.

<sup>15</sup> AIA Grassroots 2001 Issues Forum – Inclusiveness – AIM Objective #6, 2001