Orpheus wounded: The experience of pain in the professional worlds of the piano

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The discovery of widespread physical pain among musicians has precipitated agonized reappraisals of the impact of competition upon physical stress, of the consequences of traditional ways of teaching technique, and of the role of medicine in treating pain among injured musicians. This article deals with the institutional and individual factors that both produce pain and constrain the search for solutions, specifically among pianists.[1]

We examine how the causes and treatment of pain are either defined, ignored, or mismanaged by the components of the institutional field of the piano: the "virtuoso world," the "pedagogical world," and the "medical world."[2] Pain is an unintended consequence of the interplay of these multiple institutions, which have diverse goals, practices, and ideologies. We explore the internal coherence of each of the three worlds and show what institutional practices and ideologies shape them, how their interrelationships create tensions within each one, and how each world defines the existence, causes, and remedies of pain among pianists. Since none of the worlds has historically had to cope with the causes of pain (and the medical world only with its consequences), the discovery and acknowledgment of its extent has provoked a crisis of responsibility and response.

The argument of the article is intended to demonstrate the ultimate "macro-micro" link: how the international political economy of the concert market, mediated by "meso" processes in the institutional worlds of the piano, is related to the development of individual pain from skilled body movements.[3]

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The extent and causes of pain among musicians

Historically there are few well-known cases of musicians suffering pain. Probably the best-known is that of Robert Schumann, who destroyed his ability to play after he devised "an apparatus intended to strengthen and help gain independence for the fourth finger of his right hand," a physiological impossibility because of the tendons connecting the fourth and fifth fingers.[4]

However, a remarkable proportion of contemporary performing musicians are in considerable physical pain. The examples of the virtuoso pianists Gary Graffman and Leon Fleisher, both of whom lost the use of their right hand, are only the most well known.[5] Although we focus here upon pianists, the extent of pain among all musicians is extraordinary. A survey of a large number of orchestra members in the early 1980s found that almost two thirds of them had pain associated with playing their instrument.[6] Another survey done in 1986 by the International Conference of Symphony and Opera Musicians of each player in their 48-member orchestras found that over three-quarters had a medical problem that severely affected their performance. Problems were more prevalent among women and in the left versus the right hand. There was "relatively high use" of beta blockers for performance anxiety, connected to psychological stress and possible physical pain, as we show later.[7]

A survey of 3,000 members of the Music Teachers National Association (MTNA, whose membership is not just pianists) conducted in 1989 found that 29 percent had playing-related injuries.[8] Lastly, a survey we conducted found that over half of performing pianists who were members of the New York State Music Teachers Association in 1990 had suffered "physical problems" related to their piano playing.[9]

These numbers indicate that physical stress and nagging pain are part of the daily life of many musicians. And absent from all of these figures are those pain-inflicted musicians who have abandoned their careers altogether.

Why does the widespread extent of pianistic pain merit discussion? First, and most simply, we focus on it because its extent has either not been known or ignored.[10] As Dr. Alice Brandfonbrener, one of the founders of "performing arts medicine," has said, the discovery of pain

is recent. "It has only been within the last decade ... that [the notable examples of career-ending ... injuries ... among instrumentalists] have attracted significant attention from either musicians or medical practitioners. With this heightened interest, the great frequency of other performance-related impairments, not all of them career-ending, has become increasingly apparent."[11]

Second, we discuss this because, partly resulting from this history of denial, neither doctors nor piano teachers appear to know how to cure the chronic pain from which many pianists suffer.[12] Third, it merits attention because the ordeals of pianists raise questions about the social construction of physical pain, this most private emotion. It is important to trace the social contributions to such intensely personal and professional dilemmas. Fourth, we recognize that the problem may indicate social pathologies in the production of culture and the development of new marketplaces for culture.

What are the "risk factors" that lead to the production of pain and how have these factors changed historically? This is a crucial but very difficult question to answer, precisely because of the fragmentation of the relevant knowledge, its encapsulation within the different worlds of the piano. But we can give some suggestions about a variety of interrelated factors.

The configuration of the keyboard and the weight necessary to play the piano are risk factors that have been essentially constant since the development of the modern piano. Given the physical requirements of the piano, having small hands or hands with unusual flexibility ("hypermobility") are additional risk factors.

The development of a standard virtuoso repertory (essentially since Liszt) that places great demands on the hands and fingers is another risk factor, because it creates intrinsic strain and requires much more practice time to learn and keep in shape.[13] Further, the proportion of the total repertory with virtuoso demands has expanded.

Market competition for pianists has increased, because of the shrinking concert market coupled with the increasing production of concert artists. Increased competition leads to higher standards of performance, that in turn demand longer practice times. Performance standards have also increased because of the comparison of live performances with recordings that can be perfect because of splicing techniques.

The number and demands of competitions have expanded, as we shall see, leading to greater demands to play the virtuoso repertory, in turn requiring more practice time. The professionalization of pedagogy and its link to the production of virtuosi, coupled with the expansion of market competition, has meant that recitals, auditions, and artistic competitions have extended to younger and younger musicians, leading to increased practice time, anxiety, and stress among young musicians, enhancing the probability of pain.

Lastly, the possibility of a faulty technique, transmitted from teacher to student, is a key risk factor. If many pianists are playing with unnecessary and inefficient muscular tension, or with excessive movement and pressure, the effects of all the other risk factors are intensified. It is impossible to assess the relative importance of these factors potentially causing pain, but their combination is lethal, as witnessed by the sheer numbers of pianists finally acknowledging their suffering.

The secret history of pain

The surprising frequency of pain is matched only by the tenacity of the silence surrounding the problem. It is highly significant that no comprehensive studies about the incidence of pain among musicians were done prior to the 1980s. Before the late 1970s, pain could not be acknowledged publicly, for reasons we try to explain here.

Pain among pianists looks back on a secret history. On the one hand, it is almost celebrated as necessary for the development of a virtuoso technique. According to Professor Joseph Rezits of Indiana University, there is a "prevalent belief among teachers and students that pain is necessary."[14] On the other, it is often denied by both teachers and students. Both sides of this paradoxical history are important to understand.

Several autobiographies and personal handbooks illustrate the view that pain is necessary. Ruth Slenczynska, a virtuoso who made her debut in Berlin at the age of six in 1931, wrote *Music at Your Fingertips* thirty years later. In the first chapter, entitled "Personal Factors," she says that pianists "must be stubborn optimists who will spend hours, weeks, even months working on dull problems of technique" (p. 16).[15] Later, she recommends, while discussing how to learn such virtuoso pieces as a Liszt *Hungarian Rhapsody* or a Saint-Saens Concerto, that

the pianist "repeat the passage four times (without stopping) at each metronome speed from slow to fast, in order to build up the necessary power of endurance. *"You will suffer physical pain and learn to endure it; pain is like a tunnel of fire that forges muscles of steel. You will emerge at the other end invigorated, with a tremendous margin of reserve, and with the knowledge of complete mastery, which is well worth the effort"* (p. 40, italics added).[16]

George Antheil, a composer and pianist, published his autobiography in 1945: *Bad Boy of Music*. His image of how pianists must train their fingers and their body is almost frightening. "A pianist's fingers are both his ammunition and his machine guns. By the time you are ready to be a concert pianist, they must have been tempered into steel.... Practically any concert pianist with a real technique can [crack plate glass with his little finger]. You practice slow trills until it almost kills you, until your two forearms are like sore throbbing hams, twice, three times their normal size, or so they seem. Then you wait until the soreness gets out of them. Then you start all over again. Finally, after weeks, you commence playing an octave scale.... Up and down, up and down, until, at last, *your forearms seem as if they will burst again. Moreover, by this time, the pain creeps up to your shoulders, spreads over your back. You keep on. You must never stop. And so technique comes to you*" (p. 68, italics added).[17]

On the other hand, pain is denied. A well-known author of works on the piano was invited to talk to the faculty at a conservatory in Manhattan several years ago. He asked the faculty whether any of them were suffering from pain, and if any of their students were. Vehement denials were heard. On the way out of the room after the meeting the Dean whispered to him that they were all lying, about both issues.[18] In another episode, a pedagogue giving a talk at a well-known Midwest conservatory asked the students to raise their hands if they had serious physical problems. Many hands went up. Afterwards, several faculty admitted privately that they did not know how to deal with the students' pain and that they too were having physical problems.[19] These random examples illustrate a paradox: pain is seen as necessary ("no pain, no gain") for virtuosity, but then must be overcome by heroic effort – and denied.

The denial of pain is strikingly reflected in written texts on piano playing. None of the textbooks on piano pedagogy that we have examined deals with pain in any serious way. Sometimes "tension" is

acknowledged, but little is said about its causes or remedies, except to rest, or "change your way of playing."[20] This conspiracy of silence, that may be merely ignorance, is both a symptom of and a stimulus to the illegitimacy of pain.[21]

Between genetic predispositions and the actual prevalence of pain is a set of social mechanisms – the "worlds" that we have distinguished above – that assuage or exacerbate the likelihood of injury among pianists.

The virtuoso world

Young pianists develop their talents in a hot-house atmosphere, isolated from others, trained to think of themselves as psychologically and physically unique and different. They move through the institutional worlds of the piano, some surviving, some disappearing.[22] As they enter the pedagogical world, they find a teacher who nurtures their talent and helps them define their identity as a musician. Music lessons for children are a "source of satisfaction and status for parents." The child is "passive" in the face of a parent or teacher with considerable stake in the outcome of music lessons. A "young musician attempting to overachieve is particularly at risk for injuries."[23]

The music teacher has the "potential ... to exert an inordinate amount of influence on the musical and extra-musical life and development of a young student, at times akin to that of a parent. One may turn to almost any musical biography for confirmation of this tendency" (p. 30). A well-known violin teacher in England, at the 1992 *Playing Hurt* conference, describing teacher-student relationships in what she called "established schools," said that "tradition is very strong [in] the old establishment tradition ... many of the problems really are rooted there, because teacher-student relationships are also very strong, which is good, but when it's unshakable, then it becomes very harmful very often ...."[24]

The tensions mount in the course of the attainment of a professional identity in the virtuoso world, a cluster of interrelated institutions revolving around the pivotal figure of the critically acclaimed star pianist – a unique feature of Western musical culture. Conservatories train future virtuosi, who in turn enhance the conservatories' reputations, which helps recruit young prodigies. Competitions offer a step-

ping stone for aspiring performers to realize their dream of reaching "the top." Artist management firms recruit and promote virtuosi; concert halls must book them to fill the house. Record companies see the promise of gold and platinum sales. Publications offer stories about virtuosi to readers eager to find out everything about their revered pianists, from fingering patterns to sexual habits. The mass media deal with virtuosi in their celebrity columns and with talented unknown pianists as virtuoso hopefuls. Critics laud and condemn virtuosi with language ranging from arcane to slanderous, while staying silent about less successful pianists. The public flocks to virtuosi performances, leaving pianists of lesser standing to play to audiences lured to recitals by complimentary tickets.

How and why does the operation of the virtuoso world cause pain? The constituents of the virtuoso world train, recruit, publicize, criticize, manage, promote, and lionize the virtuosi. The rigorous physical demands and the relentless practicing needed to succeed in the cutthroat rivalry for the few positions on top expose pianists to a higher risk of pain.

However, the virtuoso world also penalizes the open admission of pain and a public search for treatment, as pain-ridden pianists stain the pristine image of the virtuoso, whose almost sacred talent is expected to be unencumbered by profane biological impediments. Pianists in pain do not symbolically qualify for virtuoso standing, nor can they be confidently booked for performances.

Assuming a certain degree of genetic vulnerability to pain from long, repetitive muscle use, the requirements of virtuosic standing thus expose individuals to a high degree of risk accompanied by negative incentives to pursue remedies. The additional penalty is having to abandon a career to which they have devoted their lives. Potential virtuosi are thus in a triple bind: they are exposed to high risk; they do not wish to abandon a life commitment; but they cannot acknowledge their pain and seek help without negative consequences.

The prestige of virtuosity is bestowed only on a select number of pianists. While music schools continue to produce an ever larger cadre of young prodigies, declining public attendance confronts performers with a shrinking concert market that is only partly compensated by expanding media markets.[25] Thus, there is more emphasis on competitions to screen out all but a few and a focus upon note-perfect, power-

ful performances, which adds even more emotional and physical stress. Winning a competition has become more necessary as the cornerstone of an important pianistic career, and adds considerably to the emotional and physical pressure to perform the most demanding literature, extend practice time, and to compete at even earlier ages.[26]

The sheer number of competitions has expanded greatly (see Figure 1). There were about 10 international competitions in Europe in the 1950s. The number has increased geometrically since then, to 20 in 1960, 40 in 1980, 58 in 1988, 104 in 1993. Since not all competitions are held every year, there are even more organizations planning an international piano competition in Europe. In 1992, for example, there existed approximately 135 international piano competition organizations in Europe. If one counts the "numerous national, local and internal competitions (especially in the U.S.A.) ... the amount of piano competitions worldwide might well total some 500" (p. 29).[27]

The career significance of piano competitions is indicated by the widespread extent that young pianists "pad" their vitae. Alink comments that "it is amazing to see how many times facts about prizes are distorted in the curriculum vitae of pianists" (p. 19). "Unfortunately, a few

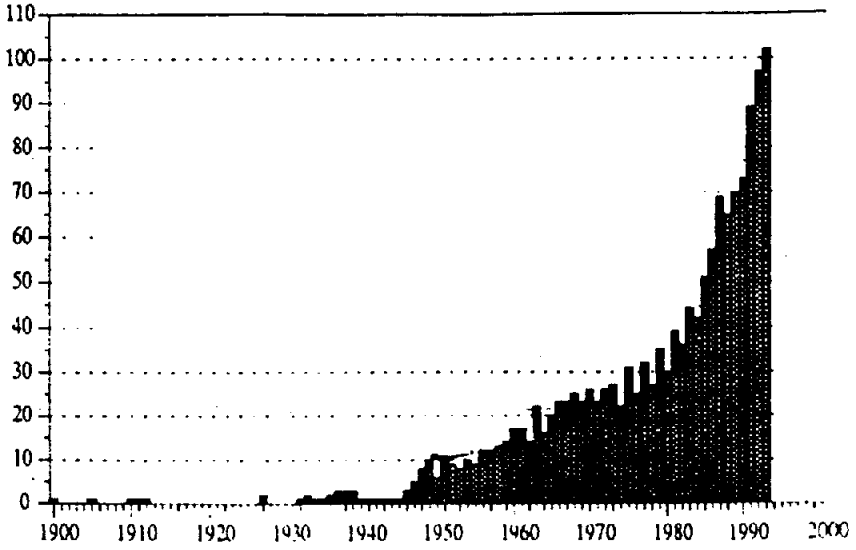

Fig. 1. The number of (semi-)international piano competitions being organized in Europe, for each year. (Courtesy of Gustav A. Alink, *Piano Competitions*, 3rd edition, Den Haag: IPC Publications, 1993, p. 28. 1st edition 1988.)

pianists go quite far in this. They tend to 'invent' good results, knowing that nowadays, there are so many competitions that it is quite difficult to check the information received." Because of this inflation, and because "many concert agencies and impresarios" only have the competition results, as reported by the pianist, as the basis for a booking decision, it is "more and more difficult for young pianists to start an international career and to find a good manager...." The result is that pianists are "even stimulated to make up and embellish their competition results. Another consequence of all this is that competitions are considered even more important!" (p. 18).[28] The increased importance of competitions leads to considerable additional emotional and physical stress upon these young musicians.

Competitions have penetrated all the way down to the earlier levels of training, in the form of Music Teacher Association "auditions" and "Piano Olympics" (see our discussion of piano pedagogy below). According to Helen Epstein, author of a book based on conversations with musicians, "winning a competition had, in the opinion of many, become almost indispensable.... A prize also was tangible proof of accomplishment, a standard of undisputed excellence in a field riddled with ambiguities. Although music competitions were disparaged by musicians as encouraging mechanical playing and politics, by teachers as causing needless demoralization, and by critics as producing technical wizards producing soulless notes,[29] they were nonetheless a phenomenon that few could afford to ignore.... The contests had created a new breed, the *competition artist*...."[30]

The competition artist is under tremendous stress to produce note-perfect music – a skill that for all but the most talented prodigies can only be attained by incessant practicing. According to one competition artist interviewed by Epstein. "In a concert, if you miss a note, you don't worry...." Here, you immediately feel that it's fifty points against you."[31] In addition to exposing pianists to the risk of pain by submitting them to grueling practice schedules, competitions, by their very nature, create situations of extreme stress in which the musician's endurance is stretched to its limits. "I have never had to go through pressure like this," said one contestant at the renowned Leventritt competition, "The worst part is the exhaustion. You practice all day; you're under stress all the time. My neck and back feel like a solid knot."[32] Quite possibly, at moments like these, when the capacity of the body and the nervous system is tested to the extreme and beyond, the potential for pain created by arduous preparation develops into full-blown symptoms.

Competitions are not the only pressure toward note-perfect playing, and hence, increased exposure to the risk of pain, in the virtuoso world. The exacting standards of modern music recording, the preeminent vehicle of music appreciation today, likewise produce intolerance to even minor digressions from the musical score. The standards fashioned in the recording studio are reflected, in turn, in the concert hall and competition circuit as well, where live performances are increasingly expected to match the clinical precision of studio-crafted recordings. "Through the recording industry, people have become highly conscious of technical excellence," said conductor Max Rudolf while judging the Leventritt Competition, "There are simply no mistakes on a recording and *they* have become the new standard. In the old days we didn't mind a wrong note here and there. Now, young pianists have to play perfectly because a wrong note sticks out like a sore thumb."[33]

It is not just the quality standards of the new recordings that create new demands on pianists, but also their increasing pervasiveness. Being recorded is no longer a privilege of the Horowitzs and the Schnabels; a vast population of pianists today make routine visits to the recording studio and its standards apply to them all.

Audio recordings and their promotion thus encourage the ardent pursuit of virtuosity in both an esthetic and a market-oriented sense. By indirectly raising the standards of live performance, whether inside or outside the studio, they contribute to the existing pressures for brutal practice regimens. By presupposing a mass market for the recordings, they help stimulate the need for virtuosi, and hence for heated competition. Both factors expose pianists to an increasing risk of injury.

So integral is the collective investment in virtuosity in all aspects of the virtuoso world that its elimination, in the hope of reducing pain, is entirely unrealistic and improbable. Virtuosity signifies a standard of expertise, both technical and interpretive, around which musical discourse revolves. It promises and secures social status for musicians, partly by providing a legitimate claim for high incomes. As such, virtuosity is the orienting principle and the chief product of social mobility in the institutional field of the piano.

The selection process constitutes the definable social structure surrounding the piano; the reward of virtuoso status objectifies the rules of the game, knowable to all, to which every actor must adhere. For the musician, the consecutive stages that must be passed through in the

quest for virtuoso status provide a series of challenges that continuously demand superhuman efforts. But, the hierarchy crowned by the virtuoso is not simply a negative side-effect of virtuoso production. It is a structural foundation that instills interpretable order into the field of professional piano playing. By means of this hierarchy musicians define and navigate in this world and locate their personal identities as performing artists of varied calibers. Virtuosity is not an "end in itself," nor merely a principle that legitimates an aristocratic piano field, nor is it primarily an ideology excluding the might-have-beens from the select sphere of privileged performers. Virtuosity is the central aspect of collective order and meaning in this array of interrelated institutions.

Maintenance of the actions and values supporting virtuosity is to some degree passive: people do not consciously conspire to maintain the hegemony of the virtuoso. The social structure and cultural context defined through virtuosity confront participants as a practical given, a result of an ongoing historical process toward which this world has been steadily geared. Moreover, this process has been transformed into a set of primarily economic relationships, that prescribe routine agendas for a career as well as salient financial rewards. The critical and aesthetic formulations that characterize virtuosos and their performances are similarly semantic expressions of the structural order generated and maintained by the virtuoso element. A world structured by virtuosity places profound emphasis on minute details of execution and interpretation; it articulates historical comparisons, traditions, and contexts; it develops a fine-grained scale of distinction among players. Technical perfection, attained only by an heroic exertion of mind, body, and will, becomes the key measure. The greater the emphasis on virtuosity, the more demanding and detailed the evaluative code. The constitutive logic of virtuosity has enormous rhetorical effects on musicians.

Virtuosity thus defines the social structure and the entire language of the field of professional playing. The consequences of this as regards the production of pain in this musical world are enormous, for *hidden inside the romantic image of virtuosity is an ideology of pain.* Virtuosity commands and forgives the superhuman exertion required to live up to its culturally defined norm, embedded as it is in social, economic, and esthetic imperatives. For all members of the virtuoso world, including performers, virtuosity offers sufficient rewards to make pain a secondary concern. But more than that, the ideal of virtuosity is alien and hostile to the acceptance of pain, because pain impedes musical per-

fection and professional endurance. For this reason, pianists cannot confess they are in pain. They remain silent to their teachers, to their managers, sometimes even to themselves. They dare not seek help because they fear it might endanger their careers, and because pain is not yet publicly recognized as a legitimate problem. They are likely to think it is a personal aberration and are often reduced to dealing with the affliction entirely on their own, in perfect isolation.

While the virtuoso world generates pain and penalizes individual solutions, it is difficult for its institutions to respond to, or even recognize, the problem of pain. Some of the institutions, like the recording industry, do not recognize the problem simply because they are never confronted with pianists in pain. Ironically, it is the pain-ridden pianists themselves, for the now apparent reasons, who do the most to guard the secret of pain from their audiences, concert management firms, and the media. Conservatories – the institutions that bridge the virtuoso and pedagogical worlds – are better positioned to respond to the problem of pain, but they are riddled with internal conflicts of goals: they must simultaneously provide pedagogy and produce virtuosity. The faculty members of the leading conservatories – frequently virtuosi themselves – principally teach repertoire and career management, not technique or the healthy use of the body.[34] The stakes for admitting pain into the curriculum, we believe, are high.

In the routine, standard practices of the virtuoso world, pain is produced while it is simultaneously denied, seen as necessary and sometimes even as beneficial. But while providing mutually reinforcing reasons for the production and perpetuation of pain among pianists, the virtuoso world offers no remedies. The hope for solutions to the problem is left either or both to the pedagogical or the medical worlds, to which we now turn.

The pedagogical world

The recent discovery and acknowledgment of the extent of pain has put some responsibility on piano teachers to ask whether something about pedagogical techniques is causing tension and stress. But, the combination of commercial and professional commitments of most piano teachers make it difficult for the institutions, either alone or collectively, to recognize the pervasiveness of pain and to respond in any kind of coordinated or integrated way. A brief description of the pedagogical world will illustrate their activities and commitments.[35]

The pedagogical world includes a variety of institutions committed, partially or totally to the production of pianists with competent technical and interpretive abilities, but not necessarily virtuosi. The pedagogy programs within conservatories have developed curricula primarily for pianists who will become teachers. Consistent with the primacy of virtuosity, these programs are generally lower in status than the "performance" specialty. General music schools and liberal-arts programs and majors within university and college arts and sciences programs have courses and majors in piano pedagogy that emphasize teaching rather than performing.

The differentiation of "performance" and "pedagogy" majors in American schools of music reflects the institutional disjuncture between virtuoso and pedagogical worlds. How much capacity to play, and at what technical or interpretive level of proficiency, one should expect of a piano teacher is a contested issue, as is the converse, whether to expect a potential concert artist, who may happen to teach, to take pedagogy courses.[36] Special pedagogical associations have developed, such as the National Conference of Piano Pedagogy (NCPP), founded in 1979. The isolation of the virtuoso world from the pedagogical world is indicated by the fact that very few concert pianists of international stature have been on the programs of the NCPP, very few have attended the meetings, and few faculty of three of the major conservatories (Juilliard, Peabody, Curtis) have either attended the meetings or been participants on panels. And, professional associations composed of different subgroups of teachers exist, such as the Music Teachers National Association, oriented largely toward private-studio teachers (many of whom now call themselves "independent piano teachers"). A number of journals and magazines directed toward piano teachers are now published, such as *Keyboard Companion*.[37]

New piano students are drawn into the cycle of small student recitals for their parents and friends, and if they show any promise at all, they start to play for auditions, then competitions. Auditions and competitions are increasingly embedded in the institutional practices of the Music Teachers National Association and other pedagogical associations, that adds to competitive pressures, and thus the production of pain. Each of the seven geographic divisions of the MTNA has a "Division Chair" for competitions. The state associations each sponsor competitions that select winners to be judged at the division and then national meetings of the MTNA. At the national level, competitions are sponsored (with larger money prizes) by major instrument makers

(Selmer, Baldwin, Yamaha, Wurlitzer). MTNA supplies judges for each instrument and each competition.

The "commercial" and "professional" aspects of the 1992 annual meeting of the MTNA were completely intertwined. The profession of piano teaching provides a constant market for new music. Many persons make their living composing new music for children, and many publishers make their living printing and distributing it.[38] Piano manufacturers depend upon teachers to recruit students and their parents to buy instruments.

Independent piano teachers conceive of themselves as engaged in a small business. Many MTNA and NCPP meetings, certainly the language and images of the exhibitors – publishers, instrumental manufacturers, software firms – are directed toward the concrete problems the teachers have of recruiting and maintaining an adequate number of students to make a living. The best-selling handbooks on professional piano teaching contain a lot of material devoted to telling the music business-persons how to manage their small business.[39] The competitive market for students may be another factor inhibiting the public recognition of a students' pain, particularly if the teacher lacks confident knowledge of what to do about it.

It must be emphasized that most of the students that piano teachers teach are not likely to become professional musicians. Since most of the pupils are beginners, are not practicing that much, and are not child prodigies, they may not be likely to suffer much pain.[40] A large component of the pedagogical world, up to the conservatory level, never comes into contact with the problem of pain. There is thus little incentive for the relatively elementary textbooks (John Thompson, Diller-Quaile, Ada Richter, Frances Clark, Leila Fletcher, and others) to deal with the possibility of pain, even if the faulty technical habits that may produce pain are established early.

Given the lack of a secure body of knowledge about the causes and remedies of pain, the pedagogical world has had few incentives to confront the scope and extent of pain.[41] If parents come to believe that techniques for teaching are faulty, and will produce injury, or if they believe that teachers don't know to teach in ways that will avoid pain, they will be less likely to give their talented child lessons. The literature on piano technique exists in a world quite apart from the rest of pedagogical institutions, and relatively few teachers actually use the

written literature.[42] Until very recently, pedagogical traditions have not had to deal with pain. We have no way of knowing the extent of pain experienced by pianists in generations past. No one knows how many students came to their teachers asking for help with pain. Teachers could avoid the problem by dealing with technical, esthetic, and interpretive issues. Whether or not the problem has existed as it does today, the heritage of piano pedagogy offers little help.

The current state of knowledge about piano pedagogy is probably well summarized in a recent volume by three leading scholars in the field. We rely upon it as primary evidence for our claim that there is *no* single, coherent, and widely accepted body of pedagogical knowledge about the causes of and remedies for pain.[43] What the widely read pedagogues, the few that there are, do have to offer are some general theories of pain. Arnold Schultz, for example, in *The Riddle of the Pianist's Finger*, disagrees that technique produces pain. He argued, sixty years ago, that "physical injuries, unless they are caused by organic disease, are almost always due to persistent use of muscles after extreme fatigue has set in, or to inordinately high degrees of contraction. The notion that they are due to generally mistaken technical methods, as theorists are wont to declare, is not grounded in physiological fact. The *kind* of movement that a muscle produces has no effect on its well-being. The bad effects of bad technique are musical, not physiological."[44] This argument of Schultz's is controversial, and probably not accepted by most pedagogues currently grappling with pain.

Well-known concert artist Gyorgy Sandor, who wrote what is essentially a textbook "on piano playing," took precisely the opposite position over four decades later. "The spectacularly high incidence of ailments among pianists (fatigue, muscle pain, tendonitis, bursitis, and other temporary and chronic afflictions) is primarily the result of faulty practice habits, of excessive tensions, and of muscle-building exercises. These undesirable and troublesome symptoms result from the continuous abuse of the muscular system; they can and must be avoided. I must disagree with the many pianists who believe that muscular fatigue is inevitable [and is due] to the weakness of their muscles, that, they contend, must be built up. Nothing could be further from the truth!... Our task is to know how to coordinate the stronger muscles within the entire apparatus and to acquire the habit of doing so whenever we play the piano.... Technique must be based not on the strength and endurance of our muscles but rather on their optimal coordination."[45]

These two contrasting positions illustrate the contradictory diversity within the pedagogical world on some absolutely fundamental issues.

Some of the classic and orthodox ways of teaching technique may have been based on an erroneous theory of the physiology of the hand. One of the major controversies centers on a particular kind of exercise, described in detail in Malvine Bree's 1902 work on Leschetizky and also found in numerous books of exercises, including Czerny and Hanon.[46] In this exercise, intended to strengthen the fingers, the pianist holds down one or more notes with the fingers of one hand, and plays other notes with other fingers of the same hand. By thus isolating the fingers from each other and from the hand, that exercise, when repeated constantly, produces extreme tension and strain in the hand. This exercise, despite its dangers, is alive and well. A picture of it was reproduced in the magazine *Keyboard Classics* in 1987 by the composer and pianist Robert Starer. He learned them from Victor Ebenstein as a student in Vienna. Starer notes that "if the hand got *stiff or tired* [Ebenstein] permitted you to let it hang down loosely, and shake it lightly. After a few weeks of going through the exercises daily the *need to recuperate* diminished." Then Starer gives an example of the five fingers holding down widely dispersed notes. "The third and fourth fingers were no longer adjoining and thus *stretched more*. You went through the entire sequence given above and then repeated it once more in the final, *most painfully stretched position*."[47] Recent neurophysiological theories of muscular tension hold that such painful stretches, while endured by the body for perhaps a long time, ultimately cause a rebellion of the body in the form of pain or stiffness that inhibit playing. Some have used the analog of metal fatigue; a steel spring can move thousands of times, then suddenly break.

It is quite likely that some of the orthodox ways of teaching the piano in fact cause pain, but because of the way in which pain has been individualized, rationalized, and denied, that possibility has not been recognized generally within the pedagogical profession. And, as a corollary, there is no consensus in the pedagogical world on the causes of and treatment for pain. Related to this is another widespread argument that there can be no common basis for technique that can serve for musicians. The conductor/composer Lukas Foss takes this position: "There is not one perfect technique.... Each musician needs a different one, he has to find his technique, the technique that will enable him to express what he has to say."[48]

A consensus does exist among many piano teachers (but not all, as we shall see) and among physicians and neurophysiologists about the hand and arm position least likely to lead to physical strain. Dr. Brandfonbrener, although generally cautious in her discussion of pedagogy, does take a stand on, for example, the issue of posture: "The ideal (i.e., physiologically and mechanically) is for the lower arms and wrists to be level with or slightly above the keyboard ... The upper arms should hang naturally and relaxed from the shoulders...." For "most" pianists, she argues, this position "allows for optimal integrated functioning of the hands, wrists, arms, shoulders and back" (p. 39).

Variations in the impact of the risk factors summarized above on the actual incidence of pain may depend on a particular pedagogical school and whether or not its physiological requirements are mechanically efficient. This would seem to be an important area for research, but we have found nothing systematic that would indicate which, if any, of the Russian, French, or German (or any other) schools of pianistic technique are "safest" to use.

Dr. Brandfonbrener says that "many schools of piano technique regard the position over the keys and posturing of the fingers as singularly important." How curved the fingers should be is debated, as well as the position of the wrist, views of which are also "partially a function of one's pedagogical school..." (p. 39). She says that "we generally recommend that the wrist be maintained as closely as possible to a neutral position – in a relatively straight line with the forearm, neither bent toward the thumb ... nor toward the small finger" (p. 39). Either wrong position is usually called "twisting."

This view is diametrically opposed to that of the virtuoso Ruth Slenczynska, in her book written to provide "advice for the artist and amateur on playing the piano." The content of her ideas is inconsistent with much current pedagogical and medical thinking about hand and wrist position. She recommends playing octaves with fourth and third fingers as a "developer" of "endurance" in the hands.[49]

But the terrifying position she advocates is what she calls the "stiff octave mold" (see Figure 2). The wrist is higher than the arm, and the "middle fingers [are] curled under so that they will be out of the way."[50] If you put your own hand and arm in that position you will feel strain. As already indicated Slencyznska says that playing octaves this way will "build up the necessary power of endurance. You will suffer physical

Fig. 2. How pain is produced; the stiff octave mold. (From Ruth Slenczynska (with the collaboration of Ann M. Lingg), *Music at your Fingertips*. Garden City, N.Y.: Doubleday, 1961, p. 56.)

pain and learn to endure it" (p. 39). A recognition of these differences in fundamental approaches is barely recognized, let alone openly confronted.

In conclusion, pedagogy has been a low-status professional specialty within the institutional field of the piano, but to the extent a body of knowledge is developing that pinpoints the causes of pain in faulty technique, pedagogy can challenge the ideological assumptions about individual causes of pain, whether talent or overuse. Many pedagogues are openly questioning the usefulness and harmlessness of traditional teaching methods, and in the course of these debates pedagogy has been opening up toward the medical world through conferences such as the one we have described. Debates, sometimes intense, over the causes of pain and what to do about it, are reflected in these programs.[51]

The medical world

Once pain has been produced by the normal operations of the virtuoso world, and once pain is acknowledged, the medical world must deal with it. With the discovery of the widespread extent of pain among professional musicians, a new specialty called "music medicine" or "performing arts medicine" has developed. The doctors concerned with treating pianists and other musicians in pain are seeking to develop a legitimate medical specialty within established training and treatment institutions.

The medical world is a composite of institutions that have considerable legitimacy and power: medical schools, hospitals, insurance companies, clinics and physician partnerships, solo practices, clinics. The power of this profession allows professionals who see a new medical need to penetrate quickly the world of musicians.

The cognitive and organizational requirements for development of a medical specialty can be summarized briefly. The cognitive requirements include:
- a language of diagnosis ("overuse syndrome," focal dystonia, tendonitis), that may be oversimplified (and is acknowledged as such by specialists) but serves to identify the field publicly;
- a catalog of treatments (rest, surgery, physical therapy, psychotherapy, drugs, etc.) that are rationally connected to the diagnoses;
- a specialty name ("performing arts medicine") that establishes its distinctive niche in the pantheon of medical specialties;
- accumulating clinical experience that can be described in a specialized language;
- an accumulating body of research reporting clinical studies that have academic and professional credibility.

The organizational requirements include:
- a minimum number of doctors potentially committed to the specialty. They must come from other established specialties, in order to legitimate the new subfield;
- a flow of patients demanding medical services for a set of symptoms that can be plausibly defined by the diagnostic language and treatment catalog as appropriate for the new specialty;
- the establishment of a visible set of institutionalized expressions of the specialty: a professional association, a journal, a textbook, research conferences on the specialty;

- courses in medical schools that are recognized as specialty training, use the textbook, and teach the language of diagnoses and the catalog of treatments;
- clinics where the specialty can be advertised, learned, and practiced.

Most of these cognitive and organizational prerequisites for a new medical specialty already exist. A journal, *Medical Problems of Performing Artists*, was established in 1986, followed by a new professional association, that enjoyed a membership of seventy doctors by the fall of 1991, and *A Textbook of Performing Arts Medicine* was published in 1991. Some twenty clinics specializing in arts medicine were established by 1991.[52]

A leading figure in all of these efforts has been Dr. Brandfonbrener, Director of the Medical Problems of Performing Arts Institute at Northwestern University, editor of the journal and co-editor of the textbook. Doctors specializing in the new practice have engaged in seminars, institutes, and conferences such as several held under the title *Playing Hurt*.[53]

It is striking that the creation of the new medical specialty of "performing arts medicine" has been accomplished without the knowledge base to justify it. Dr. Brandfonbrener, discussing the journal she edits, said that the number of high-quality submissions she received in the first few years was "thin," and that it was encouraging that the number had improved, as researchers increasingly saw the journal as a legitimate and prestigious publication outlet. In her chapter in the textbook, she emphasizes that this is a "first text," that is a "response to the rapidly increasing demand for knowledge and training" (p. 25). She admits that only a few "preliminary" studies have been done, but these "appear to more than justify the current level of interest in performance-related injuries of musicians" (p. 27). In effect, the leading physicians (frequently also musicians), starting from a powerful legal and professional base, are creating organizational structures – an association, a journal, a textbook, clinics – in an attempt to legitimate the field. The necessary knowledge base can then be sought through research and accumulating clinical experience. The doctors thus have a stake in publicizing the widest extent of pain and injury.

Because these doctors must deal with the competing claims of both pedagogy and of nontraditional medicine, they are vulnerable to the criticism from mainstream medicine that they are either quacks or not

based on scientific medicine. They must guard their professional flanks. To maintain legitimacy they are likely to emphasize physiological causes and traditional solutions, such as surgery.

The medical explanation for pain among pianists is "overuse syndrome," a label for a complex of symptoms about which little is known of the causes.[54] The most common diagnoses of the consequences of overuse are carpal tunnel syndrome, tendonitis, and focal dystonia. Dr. Brandfonbrener said in an interview that "the overall incidence of injury is probably higher than it used to be, because of the high degree of competitiveness, that contributes to both physical and psychological stress." In the chapter on epidemiology in the textbook, she wrote: "Many of the current suspicions regarding etiology of these performance-related ailments are based on anecdotal experiences and calculated guesses ... many of the current assumptions on which diagnoses are made and treatments are prescribed await scientific verification."[55]

The doctors are making an honest attempt to deal with the problem, but their approach is necessarily within a medical definition of how to treat symptoms. Little attention is paid to the possibility that faulty ways of moving, of using muscles, *cause* the pain, and that retraining would solve the problem without surgery. Dr. Brandfonbrener, one of the leaders in the music medicine movement, has said that "input from music teachers is crucial ... [because] so much of the evidence points to faulty technique as a cause of injury."[56] Once the damage has been done, of course, surgery may seem to be a benign attempt to repair the damage.

The *Textbook of Performing Arts Medicine* is an example of how "physical" and "psychological" disabilities are treated separately, even though their mutual interrelationships are recognized. Existing medical specialties (neurophysiology, psychiatry, clinical surgery, rheumatology) must be acknowledged and built into the structure of a new specialty, even at the cost of not being able to analyze the multiple and interrelated aspects of the problems. Pain is an excellent example of a chronic phenomenon that affects the entire organism, has complex and little-known causes, and thus cannot be comprehended within the boundaries of existing medical specialties.

Doctors are not accustomed to preventive solutions, but even if they had a strategy for prevention, their legitimate jurisdiction does not

extend into the pedagogical or virtuoso worlds, so that it is impossible for them to challenge other institutions, particularly because of the absence of a secure knowledge base about musicians' injuries for diagnosis and treatment.[57]

The weakness of the medical analysis of causes and treatment is indicated by the high proportion of persons who seek nontraditional solutions. The causes identified by nontraditional treatments include lack of physical coordination, lack of awareness of pain, lack of sensitivity to movement, posture, breathing, tensions in the body. Treatments include: various bodywork therapies: the Alexander Technique (that focuses upon alignment of the spine), the Feldenkrais method (that stresses body awareness), acupuncture, chiropractic, physical therapy, etc. Not only are people forced to seek nontraditional remedies, they go beyond the medical realm altogether to psychology or religion.[58] A number of pianists and teachers have developed their own theories and solutions for pain, and are offering their services to others.[59]

"Chronic pain syndrome," from which many pianists suffer, is a very ambiguous medical category, very much like "overuse syndrome." "The concept is so poorly defined that chronic pain syndromes lack official status within the standard biomedical taxonomy.... [It] is a widely used clinical category without official sanction, an anomalous category, only partially legitimized as disease."[60]

Pain also challenges the individualistic assumptions of the culture and of biomedicine, precisely because it cannot be treated solely as a physiological experience, and there are broad cultural and historical variations in the definition and experiencing of pain: "... processes that inscribe history and social relations onto the body ... simply cannot be reduced to biological terminology without distorting in the most fundamental way what pain, or for that matter, experience per se is about" (p. 9).[61]

The result of the impossibility of reducing pain to a conventional category of diagnosis, disease, and treatment is that it remains on the margins of the dominant ideology and thus institutions of biomedicine. "Pain clinics, along with alternative therapies for pain, have evolved in the margins of medical institutions" as a result.[62]

Relations among worlds of the piano

Each "world" has its core focus and institutional goals, commitments, and competence. Each world "exports" the problems that it cannot define as part of its domain and then incorporate into its zone of competence.

The medical world cannot deal with the pedagogical causes of pain; it recognizes psychological and physiological symptoms, that may have pedagogical causes. And, even within the medical world the fragmentation of cognitive categories and institutional subfields forces a definition of some problems as "psychological" and others as "physical."

The pedagogical world has exported musicians with physical symptoms out to the medical world to diagnose and deal with, because pain was not defined as a consequence of pedagogy. Few of the major textbooks or handbooks or monographs on piano technique and teaching mentioned, deal with pain or tension, except in the most cursory way. "Rest," "relax," and "be comfortable," are injunctions to the pianist, not knowledge that connects theory and practice in pedagogy.

The virtuoso world, comprising conservatories, competitions, concert-artist managers, concert producers and organizers, takes the existence of a body of available performers as given. Young or older concert artists with physical problems are either not accepted in or are eliminated from conservatories, cannot win competitions, cannot reliably appear for concerts, and thus – unless their problems are solved in some way – ultimately simply disappear from the virtuoso world. Whatever happens, the virtuoso world takes no responsibility for dealing with the problems.

But the hegemony of the virtuoso principle has been accompanied by fermenting debate on pain. Given the increasing acknowledgment of the problem, which might be a direct result of professionalization of both arts medicine and piano pedagogy, in the entire field of the piano, relationships *among* the institutions comprising the virtuoso, medical, and pedagogical worlds pose the possibility of critical changes. As we show repeatedly in the course of this article, the relative isolation of these worlds has significantly hindered a concerted response to pain. Perhaps most damaging in this respect has been the isolation of *pedagogy* and *medicine*. Medicine has traditionally been able to enter the process only at its critical stage, after the symptoms have already devel-

oped. The exclusion of medicine from the institutional boundaries of music pedagogy has thwarted the possibility of prevention (assuming, of course, that medicine could provide adequate preventive measures), thereby giving free rein to "overuse" through physiologically insensitive pedagogical regimens. There are signs, however, that the relationship of pedagogy and medicine may be changing.

Some of the problematic relations between the pedagogical and medical worlds are summarized in an answer (at the *Playing Hurt* conference) by Dr. Lederman to a question from the floor about whether doctors ever work with teachers to deal with students in pain. Lederman said that he did, but that "obviously this is a very ticklish situation. One can't begin with a student who is studying with one teacher and say, I've identified your problem; I'm going to take you to another teacher who's going to fix it. That's one quick way to get yourself tarred and feathered, or worse yet, cut off from patient access." That frank, informal off-the-cuff language undoubtedly reflects a general reluctance by doctors to challenge pedagogical practices and techniques that they believe are causing pain, partly because of an unwillingness to risk conflict with no pay-off, partly out of self-interest: maintaining access to patients.

What is the relation between the *virtuoso world* and the *medical world*? The virtuoso world provides a steady stream of patients to the medical world, that takes them as presented, and treats the symptoms and the proximate causes of pain: tension, "overuse," stiffness, through the standard paraphernalia of medical treatment: cortisone, surgery, physical therapy. Even as the field of performing arts medicine develops, with its own attempts to establish a niche within the medical establishment by providing possible preventive measures against pain, it is unable to promulgate those preventive measures in the virtuoso world because of the institutional boundaries – similar to those separating the medical and pedagogical worlds – that keep it outside. Moreover, by identifying pain as caused by the "overuse syndrome," the medical world helps to individualize the causes of pain, thereby blocking any criticism of the institutions of the virtuoso world. Solutions to pain gained though the interaction of the virtuoso world and the medical world are unlikely any time soon, and no concrete cooperation has so far appeared.

The difficulties in the mutual interaction of the *virtuoso world* and the *pedagogical world* are remarked upon in various earlier sections of this

article. Here too, the social isolation of large areas of the two worlds involved is the culprit in the low degree of communication that stands in the way of prevention. By far the largest group among pedagogues are private teachers who teach pre-college students. Their exposure and interaction with the virtuoso world is for the most part minimal. Many piano teachers who are responsible for the development of the earliest and thus most deeply embedded techniques have little exposure to the problem of pain, because most of their students are not prodigies. The talented ones are passed on to "higher-level" teachers, and precisely their enthusiasm and drive will get some of them into trouble later, as the stresses and tensions of faulty playing accumulate.[63]

Another aspect of the difficulty of finding solutions to the problem of pain though the interaction of various worlds of the piano was raised earlier in the case of conservatories. Here the double and often contradicting agendas of teaching *and* virtuoso production inhibit the clear-headed confrontation with physical problems. The conservatory is too enmeshed in the value structure of the virtuoso world to confront pain publicly in the composition of its faculty and curriculum. And, virtuosi who serve as part-time teachers are both most likely to teach the most talented prodigies and be the most incompetent or unwilling to deal with incipient problems of pain. As the pedagogue Tobias Matthay put the issue over three decades ago: "Those few gifted ones [the virtuosi] who instinctively stumble upon Right Doing, physically, are usually precisely the ones least fitted to help us by self-analysis. The greater their temperamental, emotional and musically-imaginative gifts, the more likely they are to be disinclined, opposed, and even resentful towards any exercise of self-analysis, mechanically and physically. Hence we find that these usually prove to be quite bad teachers, technically...."[64]

However, as in the relation of pedagogy and the virtuoso world, the increasing awareness of pain is stimulating efforts at cooperation.[65] Which rhetoric of explanation and remedies will come to dominate, medical or pedagogical, is not yet clear.

The psychological milieu

The psychological milieu of the gifted young performer may lead to a denial of pain, whatever its causes. If pain is not recognized or acknowledged by young prodigies or by their parents and teachers

encouraging their talent, then no action will be taken to correct the problems leading to the pain. Here we shift perspectives from the social worlds of pain to the experience of those worlds by individuals moving through their musical career, confronting parents, teachers, schools, audiences, in their developing sense of competence and authority as a musician. All of the processes to which we refer are risk factors: not every musician will be subject to them.

The denial of pain because of the impact of ego demands and career contingencies is intensified because of the inaccessibility of pain to conventional medical treatment and its ineluctably private character. As Elaine Scarry puts it, the "resistance [of pain] to language is not simply one of its incidental or accidental attributes but is essential to it."[66] The invisibility of pain to others creates what Good et al. describe as a "double bind" for the sufferer, citing Scarry: "...pain comes unsharably into our midst as at once that which cannot be denied and that which cannot be confirmed."[67]

What are the factors that can lead to psychological denial of pain? Psychiatrist Kyle Pruett's analysis of the "psychological aspects of the development of exceptional young performers and prodigies" gives some clues. Citing Alice Miller's *The Drama of the Gifted Child*, he asserts that a child's talent can be a "mechanism to guarantee an existential, secure relationship with a psychologically disabled nurturing object [mother or teacher] who can provide it in no other way."[68] The "conscience, derived as it is from early parent-child interaction, can assist in the development of talent through its imposition of discipline and expectations ... but ... extracts a heavy toll on the emotional life of the performer..." (p. 340). Pruett emphasizes that there is little evidence about how widespread this emotional dependence is. The point is that if the teacher or parents are fulfilling their own needs through the development of a talented child, they have a stake in *not* recognizing physical problems that might disrupt the child's progress, particularly if there is no public recognition of pain as a risk.

Even worse, if the teacher of a young prodigy had to drop out of a promising concert career because of pain, he or she may be passing on dangerous technical habits to the young student. In cases such as this, teachers may have a special emotional investment both in the child's progress and in not recognizing what aspects of their own teaching are contributing to a potential for future pain.

Exceptionally gifted performers are vulnerable to post-performance depression, marked by "sadness, crying bouts, anxiety and panic attacks ... lethargy, fatigue..." and even in some cases suicide attempts.[69] The factors that lead to such depression are "the stress of repeated auditions and competition with hundreds of others for one or two positions, leading to insidious erosion of self-esteem" and the social "isolation of traveling and touring." Also, "many performers ... also report that no one 'warned' them of the tremendous physical demands or fatigue" (p. 342). Under these stressful circumstances, it may be easy to deny pain. The young artist is rewarded for successful performances, and acknowledging potentially crippling physical problems is ego-threatening, to say the least.

The ego requirements of talent can lead to a feeling of being "saddled with a sense of *pressure*, an almost obligatory quality to expand their talent from their own inner drive, not exteriorly imposed" (p. 344). And, "after adolescence, what was previously a pleasure sometimes begins to feel more like an *obligation* to delight people" (p. 344, italics added).

The requirements of stage presence also distance the young performer from body awareness. "Privately, he may be feeling very much in love with his music in a very intimate, often vulnerable way. On the outside, however, he must appear cool and totally in control, invincible" (p. 345).

The public recognition of success may undermine the young performer's inner sense of self, under some conditions. "The young musician who chooses an anxiety-binding pattern of grandiosity and omnipotence risks his self-esteem. That self-esteem can be anchored in the possession of certain *qualities*, such as musical talent and success, instead of the more sustaining authenticity of one's own perceptions. He can become increasingly dependent upon adulation and admiration. This path is not chosen consciously, but can be a result of a deeply troubled entanglement of poor early nurturing experiences" (p. 345).

Pruett emphasizes that even in the absence of such pathological early experiences, significant anxiety is an endemic problem. As he puts it, "when the pecking order of the most important realm of your life is determined almost exclusively by demonstrable *skill*, regardless of age, the pressure seems never to end" (p. 346). It does not seem unlikely that a potentially disabling tension or pain will be endured, and not

acknowledged, given the enormous costs not only to one's precious career, but also ego identity.

Pruett ends his chapter in the medical textbook with well-intentioned advice. "This overall respect for one's whole self can also take the form of encouraging children early not to push themselves through injuries or pain.... The guilding principle should be the preservation of self-esteem, not the layering of armor" (p. 347–348). We can teach children that critical reviews are of "complete irrelevance to their innate worth as human beings" (p. 348). By focussing only upon the psychological aspects of the development of talent, Pruett neglects the ways the social worlds of the piano interact with the psychological milieu to create emotional barriers to the recognition and acknowledgment of pain.

Social theory, social worlds, and the body in pain

As sociologist Bryan Turner recently argued, "we do not have a sociology of pain, although ... the complex and ambiguous relationship between the mind, the nervous system, the body and the experience of pain is now well established."[70]

It is interesting to note that a more general "sociology of the body" does not exist either, although a variety of core concepts of classical and contemporary social theorists presuppose a body on which and through which social action must be enacted. The "rationalization of the body" (Weber) through scientific practices (medical, technological), the "disciplining of the body" (Foucault) via various institutions of social control (prisons, schools, mental hospitals), and the "productive body" (Marx's concept of labor power) are all examples.[71] But the body in these theories is mostly acted upon, is socially controlled, and is not an agent, complete with deep-rooted motives, feelings, and desires: erotic impulses, anger and hostility, shame and guilt, exaltation in performing, joy in learning.[72]

The living, experiencing, active body can be theoretically recognized more easily if a "society" is conceived of as composed of multiple levels of analysis ("vertically" constructed) and multiple institutional logics ("horizontally" constructed) with each level and each logic *not* well integrated and coherent, and longitudinally ("historically" constructed). Rather than a "system" or a "structure," a "society" may be best understood as a bricolage of diverse elements: material and symbolic, ration-

al and irrational, cognitive and emotional.[73] Each individual body is cross-cut by myriad memberships ("social circles" in Simmel's metaphor), and the emotional and physical tensions experienced by individuals cannot be understood outside of the social context in which they are exposed to multiple and contradictory pressures, incentives, and sanctions. But, conversely, reifying and isolating the analytic elements of the social context into different "institutions," "worlds," "roles," "organizations" (almost any collective noun could be inserted), perhaps paradoxically deflects understanding of just how those social processes really operate on the bodies of concrete, living human beings.

Pierre Bourdieu has stressed how through embodiment one acquires the appropriate classifications of identity (prodigy, teacher, virtuoso, physician) underlying social and class position.[74] Through embodiment, culture becomes a second nature, appears as nature as its conditions of acquisition are forgotten or repressed, and thus becomes "doxa" – the taken for granted sense of reality. Bourdieu, however, does not consider the organization of pleasure and pain, their "economy," in this process of embodiment. Indeed, he seems to argue that the level of pain experienced in initiation binds the initiate to the group to which he is admitted.[75]

However, Bourdieu does specify two conditions under which the arbitrary qualities of practices are "denaturalized" – made to appear arbitrary. First, where the conditions of the operations of habitus are incongruent with the conditions of its acquisition. Second, where there is a crisis so that habitus does not produce the results with which it is historically associated. In this study, we have analyzed the practice of piano playing as a particular habitus, an embodied knowledge, showing the ways in which certain practices are being challenged as arbitrary and perhaps unnecessary to the production of music at the standard of virtuosity. The "economy" of pleasure and pain probably operates as a quite general potential basis for the politicization of practices, and thus their potential transformation.

What is fascinating and unusual about our case study of the discovery of pain and finally its confrontation by the social worlds of the piano is that what Bourdieu calls in some contexts the "doxa" and in others the "habitus" of both virtuosity and pedagogy is being challenged and disrupted. How far and how deep the established practices of teaching, learning, and performing will be transformed is an open question at this moment.[76]

Conclusions

None of the three worlds within the field of professional piano playing has adequately confronted the problem of pain, partly because its causes and treatment could be easily assigned to another world. The medical world could blame pain on "misuse"; the virtuoso world on lack of "genius" or "hard work"; the pedagogical world on "bad teaching" or "lack of talent." Each world, for its own reasons, has managed either to skirt the problem of pain outright or to develop techniques and languages that fail to offer general remedies, or worse, exacerbate the amount of pain pianists endure. In the meantime, market competition in a shrinking concert market has increased, together with audience dependence upon charismatic virtuosity. The more compact virtuoso world, populated by ever larger numbers of hopeful pianists, creates intense competition in which the causes stimulating pain multiply.

A number of factors have inhibited both the private and public acknowledgment of pain. First, there are the demands of maintaining a professional career as a pianist. It has been difficult if not impossible for concert artists to admit they are in pain, because it would threaten their careers. Second, there is the romantic image of pain: the belief that pain is necessary and inevitable in order to be a virtuoso. This factor is related to a culture of mastery (or masculinity): the ideal of a stoical master in control of his body, able to surmount such mundane obstacles as pain.[77]

Third, the emotional identification of the young prodigy with their teacher; the belief that the teacher is giving the young pianist a precious skill, potential career as an artist, and would not allow unnecessary pain. Psychologically it is difficult to challenge teaching maxims that lead to discomfort. Instead, musicians in pain blame themselves.

Complementary factors are leading to a growing ability to acknowledge pain. First, what might be called a "culture of femininity" emphasizing awareness of the body may be increasing. It is interesting to speculate whether women teachers are more likely than male teachers to emphasize that playing should be "comfortable." Are women pianists less likely to suffer pain than male pianists because of less commitment to the ideal of control, power, and mastering pain?

Second, the rise of the world of performing-arts medicine itself provides a refuge, a safe place where pain can be legitimately acknowledged. Medicalization takes pain out of the virtuoso world and "neutralizes" its emotional and professionally charged character, whether or not the doctors have solutions.

Third, the diffusion of awareness that pain is not one's individual problem, as such examples as Gary Graffman and Leon Fleisher have become publicly acknowledged. However, once acknowledged, there may be a contagion effect. Is it possible that the reported incidence of pain is a result of a kind of "mass hysteria"? This possibility raises a knotty methodological issue: How much can we trust subjective reports of pain? Once people are asked if they have physical problems, they may become aware of them. Or, the individual may "discover" or "remember" an analog to parental or teacher abuse. Such an attempt to explain away the discovery of widespread pain as hysteria seems highly unlikely.

If injuries to hand and arm can be shown to be caused by keyboards, not just pianos, but computers too, then legal institutions may get involved in this complex story. Here we are dealing with a future possibility, but an ominous one. Repetitive stress injury (RSI) has been charged by persons suffering pain after long hours on the computer, and more than 2,000 suits have been filed against makers of computer equipment.[78] The U.S. Occupational Safety and Health Administration in October, 1994, announced a plan for rules that would "make it harder for employers to claim they didn't know about the problem .... For the delicate muscles and tendons in the fingers and wrists, rapidly pushing buttons [or piano keys] thousands of times an hour can be just as stressful [as driving screws or slicing carcasses in a meat-processing plant]." The *Time* magazine article blithely explains the consequences of these stresses as creating "tiny tears in the muscles and tendons, which become inflamed. If the tissues aren't given time to heal properly, scarring can occur."[78]

That the hand motions required for the piano and computer keyboards are essentially the same, in terms of body physiology, has been finally realized. A book giving concrete instructions on how to "play" both types of keyboards safely and efficiently was published in 1995, although the author, a concert pianist, focusses upon computers, with an accurate eye on a far bigger market for the book.[80]

It is curious in a society like ours that technical solutions have not been explored at all as a cure for pain. Interviews with members of manufacturing companies at the National Conference on Piano Pedagogy in October, 1994 indicated that there is practically no work being done in this area. Even though certain technological solutions readily present themselves (as they do in the computer industry, for example), having to with changing the physical arrangement of the keyboard, nothing has been seriously considered.[81] Neither have pedagogical learning routines in electronic keyboards reached the sophistication that is now technically possible. This lack is fortunate (and perhaps not accidental) because Steinway and Baldwin might become subject to suits on exactly the same grounds as IBM has become liable.

If pain is still slipping through the cracks among the various worlds constituting the field of professional piano playing, it is because in each of these worlds there are forces at work either producing pain or explaining it in individualistic terms. The pervasive experience of pain is an unintended consequence of the mutual actions of the institutions involved in creating and propagating piano music in our culture. Unintended consequences put stubborn difficulties in the path of change precisely because there are no concrete intentions or interests at stake that are producing the problem. As the examples above show, however, the mere recognition of pain as a reality pushes for a mutual opening up and interaction among these only partially overlapping worlds. If the issue of pain among pianists becomes forcibly raised – well beyond academic discourse and professional "interest groups" – in the broad community of piano playing and the even broader realm of the media, each of these institutional worlds faces deep challenges. At this moment it is impossible to know what might happen if the issue of pain is finally confronted as a joint problem for these social worlds. Within physiological limits, the issue is whether knowledge exists or can be acquired about how to play the piano in a way that will minimize the occurrence of pain.[82]

We have been concerned with the institutional and individual processes that both cause pain and stand in the way of obtaining a suitable cure for injured pianists. As we have shown, the institution with which pain is traditionally associated in our culture – medicine – plays only an accompanying part in this story. As David B. Morris notes in his recent work on the cultural embeddedness of pain. "Certainly we can take comfort in assuming that pain obeys the general laws of human anatomy and physiology that govern our bodies ... however, the cul-

ture we live in and our deepest personal beliefs subtly or massively recast our experience of pain. The story of how our minds and our cultures continuously reconstruct the experience of pain demands that we look beyond the medicine cabinet."[83]

For the sociologist, what is most theoretically and substantively compelling about the relatively esoteric tribulations of pain-ridden performing artists is precisely how, within the experience of emotional and physical distress, deeply individual physical states and emotions cannot be separated from institutional pressures and constraints. And not only does the scourge of pain among pianists shatter the dichotomy of individual versus institution, it also provides a palpable example of how pain in our culture exists in the shadow of multiple social worlds.[84]

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Notes

1. The factors that produce pain among pianists as compared to violinists or other instrumentalists may or may not be the same, and it is beyond our scope to speculate on the possible similarities or differences.
2. The concept of "field" is, of course, derived from the work of Pierre Bourdieu. See his *The Field of Cultural Production* (New York: Columbia University Press, 1993). As we use the term, a "field" is broader than a "social world." A "field" comprises all of the organizations, institutions, and social roles involved in the production, distribution, and consumption of piano teaching, learning, and performing. In Bourdieu's language, as formulated by Loic Wacquant, "a field consists of a set of objective, historical relations between positions anchored in certain forms of power (or capital)...." See Loïc Wacquant, "Toward a Social Praxeology: The Structure and Logic of Bourdieu's Sociology," in Pierre Bourdieu and Loïc J. D. Wacquant, *An Invitation to Reflexive Sociology* (Chicago: University of Chicago Press, 1992),

16. The term "social world" is derived from the work of G. H. Mead, and we rely here upon one of his disciples: Anselm Strauss. According to Strauss, "Mead directs us ... to look at modern society as if it were a congeries of social worlds," rather than either as composed of "anonymous, alienated individuals" or as "highly bureaucratized and/or rationalized." "Some – possibly most – organizations can also be viewed as arenas wherein members from various sub-worlds or other worlds stake differential claims, seek differential ends, engage in contests, and make necessary alliances in order to do the things they wish to do." See Anselm Strauss, "Introduction" to Anselm Strauss, editor, *George Herbert Mead, on Social Psychology: Selected Papers* (Chicago: University of Chicago Press, 1977) (first published 1956), xviii–xix.
3. Our approach thus distinguishes among individual, organizational, and societal levels of analysis. See, for an example of this mode of inquiry applied to theories of the state, Robert R. Alford and Roger Friedland, *Powers of Theory: Capitalism, the State, and Democracy* (Cambridge: Cambridge University Press, 1985).
4. Reginald Gerig, *Famous Pianists and their Technique* (Washington-New York: Robert B. Luce, Inc, 1974), 203.
5. It is interesting to speculate about whether Vladimir Horowitz's periodic retirements and Glenn Gould's early departure from the concert stage were due in some measure to physical ailments. Both pianists employed an extremely low posture, which almost certainly produces physical strain. And Otto Friedrich, in his biography of Gould, describes Gould's almost life-long complaints about physical ailments. See his *Glenn Gould: Life and Variations* (New York: Vintage Books, 1989), which has dozens of references to Gould's "health problems." The pianist Byron Janis, acclaimed in the 1960s, also had to leave the concert stage because of pain, specifically arthritis. Janis, in a recent interview, dismissed the explanation of his pain as due to his "fondness for marathon evenings or his brilliant style of performance..." He said: "Playing the piano, of course, exacerbated [the arthritis. But] I'm convinced that the exercise of those fingers, constantly using them, is what kept me from having totally deformed hands" (*New York Times*, Section 2, 11 December 1994, 44).
6. See the citations to the work of Dr. Hunter J. H. Fry, in Susan E. Harman, "The evolution of performing arts medicine as seen through the literature," in *Textbook of Performing Arts Medicine*, ed. R. T. Sataloff, A. Brandfonbrener, and R. Lederman (New York: Raven Press, Ltd. 1991), 22.
7. See Harman, *Textbook*, 15.
8. Alice G. Brandfonbrener, "Preliminary findings from the MTNA music medicine survey," *American Music Teacher*, 39/1 (August/September 1989): 14. The article does not give the proportions of persons playing different instruments suffering injuries, but 81 percent of the respondents were pianists. It is difficult to interpret these raw percentages, since we do not know the wording of the questions asked. In our own survey, which had questions about how serious the injury was, answers varied considerably.
9. The survey was a mail questionnaire, and 268 members of the NYSMTA responded, with over a 50 percent response rate. A few persons who had never played or taught the piano were excluded. Ninety percent of those who responded had a degree in music. Forty-four percent said they had played "many" solo recitals. Twenty-five percent defined themselves as either a "virtuoso" or a "concert pianist." Of those who answered "Yes, I have had physical problems" (52 percent of the total sample), 40 percent said that it had been a "nuisance," 23 percent an

"occasional problem," 7 percent a "recurrent problem," 8 percent a "constant problem," 13 percent that it had "inhibited their playing," and 4 percent that it had "inhibited their life." These alternatives were presented as a scale of "seriousness of the problem."

10. The Committee on the Prevention of Medical Problems formed as a subcommittee of the National Conference on Piano Pedagogy reported to the 1990 Conference that one of its goals was to "alleviate the stigma of seeking professional help" for pain. See the committee report in the *Proceedings* of the 1990 National Conference on Piano Pedagogy (Schaumburg, Illinois, October 24–27, 1990), 97. Neurologist Frank Wilson, writing in 1986, confirms the recency of the discovery of pain among musicians. "In the past few years the public has learned of the tragic interruption of several notable concert artists because of disabling pain, numbness, or weakness in an arm or hand. It was not until the reports of these problems had widely circulated that physicians began hearing from musician-patients that they, too, were in pain when they played" (*Tone Deaf and All Thumbs* (New York: Vintage, 1986), 198). Wilson comments that the "physical peril" of a musical career was a "novel and unexpected impression" (198). Leon Fleisher played with two hands in April, 1995 (a Mozart concerto) for the first time in thirty years (except for one abortive attempt in 1982). He told an interviewer in England: "Back then, no one even recognized this as a legitimate medical problem, and everyone felt ashamed or embarrassed." (*The Independent*, 6 May 1995, 28).
11. Alice G. Brandfonbrener, "Epidemiology of the Medical Problems of Performing Artists," in *Textbook of Performing Arts Medicine*, ed. R. T. Sataloff, A. Brandfonbrener, and R. Lederman (New York: Raven Press, Ltd, 1991), 26.
12. It is important to acknowledge a methodological issue: whether pianists are more likely to suffer chronic pain than other people, or whether their pain is caused by playing the piano. A 1994 Harris survey estimated that about 17 percent of Americans have chronic pain (migraine headaches, arthritis pain, lower back pain or nerve pain). At the AMA briefing where the findings were announced, "experts" said that "doctors often treated diseases but ignored pain" and David E. Joranson, a director of the WHO Collaborating Center for Symptom Evaluation of Cancer Care at the University of Wisconsin, commented that it was "startling to learn that chronic pain is suffered by so many with such devastating effects." (*New York Times*, 21 October 1994).
13. Dr. Wilson, in his thoughtful and amusing book (*Tone Deaf*) says that "no other activity in which we engage requires the accuracy, speed, timing, smoothness, or coordination of muscular contraction exhibited in finished musical performance" (27).
14. Personal interview with Professor Rezits, 27 October 1994.
15. Ruth Slenczynska (with the collaboration of Ann M. Lingg) *Music at Your Fingertips: Advice for the Artist and Amateur on Playing the Piano* (Garden City: Doubleday, 1961). This book is a good example of private lore: a work by a concert pianist who reveals her secrets to the world of pianists, one among many such writings. There are no footnotes, no bibliographic references: she does not locate her ideas in any previous concepts or theories, but only in the master teachers with whom she studied. She had had lessons from a Leschetizky pupil, Alma Schmidt-Kennedy, and from virtuosi Josef Hofmann, Egon Petri, Sergei Rachmaninoff, Artur Schnabel, and Alfred Cortot by the time she was *nine* years old (10–11). The author does not identify *any* "methods" that she learned from those virtuosi; she cites the names as if merely having lessons with them *and* having become a per-

forming virtuoso herself somehow qualifies her to teach and write about how to practice. A typical practice for piano teachers is to list their teachers; the more famous their teacher, the more credible they are as piano teachers. The gift of charismatic grace – virtuosity – is transmitted as if by a laying on of hands (so to speak). "Music is poetry," Cortot (12); "Play it how Beethoven wrote it," Wilhelm Backhaus (62).

16. In a comment on an earlier version of this article, Professor Gail Berenson, chair of the National Conference on Piano Pedagogy's Committee on the Prevention of Medical Problems, said that "teaching philosophies have changed since then. Most pianists no longer practice like this."
17. George Antheil, *Bad Boy of Music* (Garden City: Doubleday, Doran and Company, 1945). That these beliefs still exist is shown by a somewhat less dramatic letter (although he also uses the military metaphor) to *Clavier* magazine by Joaquin Achucarro, a piano faculty member at Southern Methodist University, commenting on a previous article by Greg Dempster: [I want to] "... make the finger-infantry as comfortable as possible on the keyboard battlefield! I don't fear pain as Dempster seems to. The profession of concert pianist demands a great deal of devotion ... and hard practice, with an emphasis on hard .... The price of playing is high, and we should be ready to pay it ... [William] Kapell had calluses on his fingertips ... [Rudolf Serkin] ... a bleeding finger ... only through painful effort has this small (4°10°°) woman [Alicia de Larrocha] managed to stretch a tenth." (November 1992, 4).
18. Interview with the author, who must remain nameless.
19. Interview with the pedagogue, who must remain nameless.
20. For a recent review of the literature on piano technique, see Marienne Uszler, Stewart Gordon, and Elyse Mach, *The Well-Tempered Keyboard Teacher* (New York: Schirmer Books, 1991). Other books examined include Reginald Gerig, *Famous Pianists*. The only reference that comes close to mentioning pain in Gerig's brief concluding chapter, "The Perspectives of an Enlightened Piano Technique," is "poor coordination and unnecessary fatigue will ... be avoided ... by a rudimentary understanding of the musculature and the skeletal joints associated with piano playing ..." (510). Another often cited work, Jozsef Gat, *The Technique of Piano Playing* (London and Wellingborough: Collet's, 1980) does not mention pain. The only reference to physical problems occurs in a footnote in a chapter "On the Role of the Various Joints": "The most frequent cause of the inflammation of the tendon sheaths is the work carried out under excessive strain" (117).
21. Stewart Gordon in *Etudes for Piano Teachers: Reflections on the Teachers's Art* (New York: Oxford University Press, 1995) emphasizes both the "unbelievable physical stamina for years" which a professional piano career demands but also the denial of the physical dangers. He argues that most pianists "often sport it-could-never-happen-to-me attitude" about possible dangers to their body. "Even in the face of a virtual epidemic of that bete noire of all keyboard players, tendinitis, we [pianists] persist in daily habits which by and large ignore the most basic rules of caring for the physical organism" (118), such as warming up. "We do not take the time to stretch and prepare our playing mechanism, nor do we sensitize our awareness to its well-being. Quite the contrary, when an occasional twinge of an ache or pain forces its way into our conscious consideration, we are very prone to push ahead by calling up an extra measure of effort" (119). Gordon contrasts these dangerous habits of pianists with athletes and dancers, where there is conscious and systematic attention to the demands they make on their bodies.

22. In Harold Schonberg's survey of *The Great Pianists: From Mozart to the Present* (New York: Simon and Schuster, 1987) [Revised edition. The first edition was published in 1963]), Gary Graffman and Leon Fleisher barely make a mention (490) and Byron Janis does not appear at all.
23. Brandfonbrener, *Textbook*, 28–29. The exaltation of the teacher is deeply embedded in cultural assumptions, extending to such subtle practices as how obituaries are written. When Juilliard pedagogue Adele Marcus died in May, 1995, one of the first sentences in her obituary (both in the New York Times – 5 May – and as released by Associated Press – 4 May) was that she had started studying with Josef Lhevinne at the age of 15.
24. All of the quotes from the *Playing Hurt* conference at the University of Minnesota are taken from transcripts of the taped speeches and comments by the speakers. The conferences, sponsored by the Minneapolis Symphony Orchestra, brought together professional musicians, teachers, and physicians concerned with the growing incidence of physical injuries.
25. Robert J. Silverman, editor of *The Piano Quarterly*, argued in 1991 that the "concert hall, as a medium of communication, is slowly dying." His reasons were that "audiences are tired of conventional programming ... competition from recordings, radio, and television tends to keep people confined to their homes ... high ticket prices ... and a steady erosion of support from our country's leaders when it comes to arts education" (*The Piano Quarterly* 39/156 (winter 1991–1992): 28–29).
26. Joseph Horowitz, in his book on the Cliburn Competition, remarks that "Music businessmen find it safer and easier to exploit the young gladiator who comes trailing loud publicity and applause. As never before, they aim for the instant career, quickly begun, quickly expended" (reprinted in *The American Music Teacher* (December/January, 1990–1991): 21.
27. Drs. Gustav A. Alink. *Piano Competitions* (published by the author, 1993).
28. Unfortunately, we do not know the total number of pianists eligible to enter competitions nor whether that number has changed as the number of competitions has increased. Nor do we know the average number of competitions each pianist has entered.
29. Harold Schonberg, in his classic and extremely readable survey, *The Great Pianists*, perhaps inadvertently makes an analogy between contemporary pianists produced in the competition circuit and accountants or executives: "Pianists of today's international school are eclectic in approach, clear in outline, metrically rather inflexible, tonally hard ... they make a positive fetish of the printed note, observing the values the way accountants study a balance sheet. This they do very well. What they do not do is read *between* the notes. In a way, they are junior executives, company men, well-trained, serious, confident and efficient, and rather lacking in personality" (496, italic in original). Schonberg argues that "the day of the supervirtuoso showman is gone ... the emphasis today is on 'musicianship': clarity, proportion and the other contemporary virtues. The concept of the Artist-as-Hero has been abandoned. Accuracy is more important than temperament" (499). Schonberg may or may not be right about contemporary standards of judgment of virtuosity. Our argument concerns the network of institutions that are oriented toward the recruitment and training of virtuosi with almost superhuman technical capacities, and the physical strain that results.
30. Helen Epstein, *Music Talks: Conversations with Musicians* (New York: McGraw & Hill, 1987), 188 (italics by author). Joseph Horowitz has described the Van Cliburn International Piano Competition as "epitomizing the cult of the performer.

Its cash prizes commodify artists. It mainly endorses the contraction of the repertoire to masterworks of the past, each compared to itself in a dozen barely distinguishable recordings." *The Ivory Trade* (New York: Simon and Schuster, 1990), excerpt reprinted in *The American Music Teacher* (December/January, 1990–1991): 18.

31. Epstein, *Music Talks*, 193.
32. Epstein, ibid., 193–194.
33. Epstein, ibid., 189.
34. Gail Berenson, Professor of Music in the School of Music, Ohio University at Athens, commented on this point that "It's time to change this!"
35. The diversity of professional roles among piano pedagogues is striking, with many different words used to characterize them in the Music Teachers' National Association 1992 program: lecture-recitalist, clinician (and "workshop clinician"), adjudicator (and "judge"), coach (and "master class coach"), performer, accompanist, recording artist, chamber musician, lecturer (and "speaker"), musicologist, teacher (and "nationally certified teacher"), editor, pedagogy workshop leader, consultant, church musician, chairman (of faculty), orchestral soloist, recitalist, author, music director. Frequent couplings were: "performer, clinician and adjudicator." "Independent piano teachers" also had "private studios" or engaged in "studio piano teaching."
36. Stewart Gordon (*Etudes*) acknowledges (and bemoans) the status hierarchy of "performers" and mere "teachers" or pedagogues. "'Performers'... by the nature of their activity garner an admiring public while 'teachers' must remain, if not totally unappreciated, at least unheralded and long suffering" (4). And he notes that the parallel division in music schools between "performance" teachers and "pedagogy" teachers is characterized by a "feeling of division between the two areas, one which can range from mere estrangement at best to open animosity at worst" (6). Gordon, who is both a pianist and an educator, discusses the tensions that individuals feel who bridge the virtuoso and pedagogical worlds: "...most of us have had to learn how to balance the delicate relationship between our professional activities as performers and as teachers" (7).
37. We must emphasize that these "worlds" do not exist in watertight compartments. Dr. Alice Brandfonbrener and Dr. Richard Lederman were on the 1989–91 and 1991–93, respectively, Editorial Committee of the American Music Teacher, the Official Journal of the MTNA. Fernando Laires, a virtuoso Liszt specialist, was also on the 1991–93 Editorial Committee. Ten other persons solidly within the pedagogical world included Frances Larimer (head of piano pedagogy at Northwestern University), Marvin Blickenstaff (a teacher at Goshen College and a frequent presenter and "clinician" on pedagogical topics at professional meetings), Richard Chronister (editor of the *Keyboard Companion* and founder of the National Conference on Piano Pedagogy), and seven others served from 1991–93. We expect that the persons crossing the boundaries between these worlds will be most open to institutional innovation.
38. James Bastien lists 45 of the "better known and newer method book authors," summarizes the contents of 26 of the method books for beginners, put out by over twenty publishers. See the second edition of his *How to Teach Piano Successfully* (Park Ridge and San Diego: Neil A. Kjos, Jr., 1977), 71.
39. See, for an example, James Bastien, ibid. In keeping with the "small-business" ethic and ideology, a constant concern of the professional association is to mediate conflicts between members. In the MTNA code of ethics, members "agree not to solicit

students of other teachers." "Members shall not make misleading statements in their printed matter or publicity releases," and "any advertising shall be dignified." A grievance committee was established to "help resolve problems involving members and students or parents." Such codes of ethics are one of the mechanisms necessary to manage the difficult combination of professionalism and commercialism – selling a service and competing with other teachers for students.

40. Professor Gail Berenson of the Ohio University School of Music commented on this point that "Lots of young students suffer injuries" and that "Early training is important for *all* students in building a healthy foundation."
41. Of some 45 sessions involving presenters of papers at the 1992 MTNA meetings, only one mentioned "pain" or any synonym in the title: "Piano Lessons: Gain without Pain." Three others dealt with some aspect of pedagogy.
42. The great majority of piano teachers and pianists have worked out an individual synthesis of concepts and principles that we call private lore. Our survey of New York State piano teachers has documented the lack of any body of literature that serves piano teachers as a framework for their work. There is no work used in actual teaching by more than one out of 10 American piano teachers. The classics, such as Matthay and Leschetizky, are known but not used. More modern works, by such pedagogues as Abby Whiteside, Gyorgy Sandor, William Newman, George Kochevitsky, Arnold Schultz, and Jozsef Gat, are neither known nor used. From 40 to 64 percent of even this highly selected population of professional piano teachers are "not familiar" with these modern pedagogues, and fewer than one of 10 use any of them (the highest percentages are; Joan Last 12%, Tobias Matthay 10%, Seymour Bernstein 10%).
43. Uszler, Gordon, and Mach, *Well-Tempered.* The flyleaf blurb says that this is a "text on piano pedagogy," designed "specifically for piano pedagogy courses." The preface by the authors makes clear that the book is intended as a "resource" for the budding professional piano teacher.
44. Arnold Schultz, *The Riddle of the Pianist's Finger* (New York: Carl Fischer, Inc, 1936), 212. This is a rare reference to pain.
45. Gyorgy Sandor, *On Piano Playing: Motion, Sound and Expression* (New York: Schirmer Books, 1981), x. Sandor goes on to say that "When the technique of piano playing is reduced to its fundamentals, it turns out to be a skill that is rather uncomplicated and unproblematical, but it is nevertheless a composite one, that is, the individual motions of the fingers, hand, arm and shoulder are very simple in scope and in function, but they all must be coordinated and synchronized" (xi).
46. Malvine Bree, *The Groundwork of the Leschetizky Method* (New York: G. Schirmer, 1902). Leschetizky himself claimed to have no "method." His students and biographers wrote about his method.
47. Robert Starer, "Victor Ebenstein's Exercises," *Keyboard Classics* 7/4 (June/July 1987): 11. All italics are added.
48. Lukas Foss, "The state of piano playing in the twentieth century," *American Piano Teacher* 39/1 (August/September 1989): 25. Foss originally published the article in 1948, but in his introduction to the re-publication he says that "I still agree with the contents of this article."
49. That position, or something similar – playing octaves with the third and fourth fingers – creates the severe strain that may have crippled Gary Graffman.
50. Slenczynska, *Music*, 40. The picture is taken from the endpaper illustration.
51. Some pedagogues, such as Dorothy Taubman, are beginning to specialize in the problems of pianists' pain and injury. Mrs. Taubman has attracted over a hundred

pianists and piano teachers to the Taubman School of Piano at Amherst College each year for 15 years. She argues that "pianists are able to play unlimited hours without any fatigue or strain, providing they are playing correctly," a position directly opposed to the medical theory leading to the label "overuse syndrome." See her brief essay "A teacher's perspective on musicians' injuries," *The California Music Teacher* 15/3 (Spring, 1992): 12. References to Taubman principles are creeping into the pedagogy literature. Ruth C. Friedberg's recent book summarizes them as follows: "a natural hand position (just as the arm hangs, fingers not artificially curled); the elimination of hand stretching and twisting, and of finger isolation; the use of fingers and arm together with extensive employment of forearm rotation; and the adaptation of fingering and notation to promote the pianist's health and comfort" *The Complete Pianist: Body, Mind, Synthesis* (Metuchen: The Scarecrow Press, Inc, 1993), 26. Friedberg believes that the Taubman system may be "one possible answer to the epidemic of pianists being diagnosed by musical medicine as victims of 'overuse'" (26). An interesting and important question outside the scope of this article is whether knowledge about appropriate use of the body to enable most people to play with a virtuoso technique without risking pain actually exists, but has not become public knowledge because of the fragmentation of the institutional worlds of the piano.

52. Harman, *Textbook*, 13.
53. A corollary organizational principle must be a militant rejection of interlopers, quacks, charlatans, who either claim the same bodily territory or claim to treat the same diseases or injuries, but with techniques and concepts that can be dismissed as unprofessional and incompetent.
54. Dr. Richard Lederman, a leader in the new specialty of performing arts medicine, also says that the terms "cumulative trauma" or "repetitive strain" are used. In a review of the current state of the field, he says that he prefers the plural ("overuse syndromes") because "this clearly is not a single entity, a common mechanism appears to underlie these disorders." See his article, "An overview of performing arts medicine," in *The American Music Teacher* 40/4 (February/March 1991): 70. Dr. Lederman is Director of the Cleveland Clinic Center for Performing Artists, Co-Director of the Annual Symposium on Medical Problems of Musicians and Dancers at Aspen, Colorado, and founding Vice President of the Performing Arts Medicine Association, as well as co-editor of the first textbook in the field.
55. Brandfonbrener, *Textbook*, 25.
56. Ibid., 14. She adds that "pianists as a group ... appear to be frequent victims...."
57. It is widely accepted as legitimate, of course, for the medical profession to intervene where unsafe health conditions or behaviors have been firmly established by credible research, as in the case of smoking. Nothing yet would justify a poster warning pianists that "The Barber Sonata is dangerous to your health."
58. Of those persons reporting some physical problems connected with playing the piano in our New York State Music Teachers Association survey, the following is the rank order of the frequencies of different kinds of solutions sought: physician 44%, piano teacher 39%, pain relieving medicine 32%, physical therapy 21%, cortisone shots 18%, the Alexander Technique 18%, chiropractic 17%, ice packs 15%, ultra-sound therapy 13%, massage 12%, practice more 12%, sports medicine clinic 9%, surgery 7%, acupuncture 4%. Forty-seven percent reported that they did something else in addition: "other."
59. One example is Jacqueline Schmitt, who holds a Master's degree in Piano Performance from Indiana, a student of Menahem Pressler. Ms. Schmitt is Director of

Pianistic Retraining at the Institute of Myofascial Pain and Musculo-Skeletal Medicine in Ann Arbor, Michigan. At the age of 24, Ms. Schmitt's muscles contracted into a "spasm whenever she reached for an octave," and she underwent surgery two years later to remove the "ganglia formed on the flexor and extensor sheaths in the right hand." Later she began working with Dr. Ellen Ward on "musculo-skeletal manipulation," a "composite of techniques which reach deep into the fascia to release constrictions and to realign the bones and muscles." Ms. Schmitt offered lectures on "identifying and correcting ... causes of pain and dysfunction" to the Illinois State Music Teachers Association in 1988. (Quotes drawn from Ms. Schmitt's publicity brochure offering concerts, clinics, and pedagogy seminars.)

60. It is also important to note that chronic pain cannot be medically classified as either "psychological" or "physical," which complicates its definition and treatment within conventional biomedical categories and professional specializations. "The American Psychiatric Association *DSM-III* category of 'Psychogenic Pain' – subsequently dropped in *DSM-III-R*- was unacceptable because physicians and psychologists find relatively few cases of pain in which the etiology is clearly and solely psychological." See Arthur Kleinman, Paul E. Brodwin, Byron J. Good, and Mary-Jo DelVecchio Good, "Introduction," to Mary-Jo DelVecchio Good, Paul E. Brodwin, Byron J. Good, and Arthur Kleinman, *Pain as Human Experience: An Anthropological Perspective* (Berkeley: University of California Press, 1992), 4.
61. As Kleinman et al., ibid., put it, "chronic pain not only exposes basic contradictions of medical ideology and care to analysis but also suggests the importance of more systematic criticism of efforts to contain and manage fundamental aspects of human suffering through technical mastery and instrumental rationality" (7).
62. Mary-Jo DelVecchio Good et al., ibid., 203. The authors go on to say that "In standard medical settings, the bodily and experiential order of chronic pain is framed by ideologies and practices that divide the sufferer into parts and reorder the 'pain patient' by practice specialty and clinic schedules.... The resistance of the body of the treatment of pain is thereby amplified in experience by the contradictions of the American health-care system" (203).
63. Stewart Gordon notes the tension in the young prodigy between the "passionate drive ... needed for musical success," but the "inherent danger" that the drive will be accompanied by an unrealistic dream of "stardom." "Anything less becomes linked with failure at worst or compromise at best" (*Etudes*, 21). And, once the young prodigy has felt the intoxication of early adulation, the incentives of tackling the "highly virtuosic icons of the literature are great" (24). "If student competitions enter the picture, the display piece is often seen as a vehicle with which to win. Even parental pressure is often strong to indulge in continued use of showy repertoire" and disdain for "lesser" works (such as Haydn sonatas). "This cavalier attitude toward more subtle musical challenges is insidious in that it often results in burnout" (24).
64. Tobias Matthay, *The Visible and Invisible in Pianoforte Technique* (Oxford: Oxford University Press, 1932), 16. This little volume, which Matthay himself described as a "digest of the author's technical teachings up to date," contains no references to pain or injury. Matthay mentions "limb-stresses" and "stiffness" (an antagonistic opposition of muscles) (15–17) but not in relationship to pain.
65. The need for the mutual opening up of the different worlds of the piano is clearly expressed in a 1991 article in *The American Music Teacher* (February/March), entitled "An Overview Of Performing Arts Medicine," by Richard Lederman, M.D.: "Clearly the health professional is often, if not usually, going to require some

help. The physician or health-care worker cannot be expected to understand the nuances of performance on any, let alone all, instruments, and input from teacher and performer-consultants may be extremely helpful. The health-care professional *can*, however, be expected to understand the language of the performer as it relates to his art and can be expected to look for and recognize aspects of playing technique that may be biomechanically unsound or inefficient.... I am often confronted with the challenge that somehow all of this should be unnecessary if proper technique is taught and if sensible practice and performance is carried out. I believe that the playing-related problems of the instrumentalist are the result of a complex interaction involving the anatomical and physiological equipment of the instrumentalist, the technical skills acquired through the process of teaching and learning, the time and intensity committed to practicing and playing, and some intangible and in some cases, unpredictable factors, such as emotional stress, trauma and systemic illness. I further believe that while *prevention* of all those playing-related problems is the ultimate goal (as it is in all medicine), we have the responsibility currently to learn how to manage the problems that do continue to arise.... I would like to see a collaborative effort among the teacher, performer, and health-care professional to achieve common goals. This can be realized by the mutual education of the parties involved and by investigation of the many factors that contribute to playing related problems and of methods to prevent or alleviate them" (italics by the author).

66. See Elaine Scarry, *The Body in Pain* (New York: Oxford University Press, 1985), 5.
67. Good et al., ibid., 5; Scarry, ibid. 4.
68. See Kyle D. Pruett, "Psychological aspects of the development of exceptional young performers and prodigies," *Textbook*, 340.
69. The quote is from Robson, in *Medical Problems of Performing Artists*, (1987), 342. Because of the paucity of empirical research, the incidence of various degrees of psychiatric disorders is not known.
70. Bryan S. Turner, *Regulating Bodies: Essays in Medical Sociology* (London and New York: Routledge, 1992), 168.
71. Turner, *Regulating*, argues more generally that there is no sociology of the body in classical and contemporary social theory, discussing Weber, Parsons, Giddens, and Bourdieu. The body tends to be treated as a conscious and cognitive actor: "a thinking and choosing agent, not a feeling and being agent" (87, referring primarily to Giddens). Turner reviews the recent literature on "the body and society," as part of his effort to establish a new sociological specialty (complete with a new journal). But Turner's own arguments are still in a highly abstract vein, and he does not offer any substantive theories about, for example, how the body as "lived experience" interacts with the body as an "objective presence" in specific kinds of social relations and structures.
72. For an important exposition of the importance of repressed shame in social life, and some unusual empirical data, see Thomas J. Scheff and Suzanne M. Retzinger, *Emotions and Violence: Shame and Rage in Destructive Conflicts* (Lexington: Lexington Books, 1991). The quote from Leon Fleischer earlier (note 10) suggests the power of this emotion. If the incidence of pianists in pain was significant thirty years ago (and it is impossible to know), but repressed, it would account for significant emotional and additional physical trauma.
73. For an argument that there are multiple institutional logics, see Roger Friedland and Robert R. Alford, "Bringing society back in: symbols, practices and institutional contradictions," in Walter W. Powell and Paul J. DiMaggio, editors, *The New*

Institutionalism in Organizational Analysis (Chicago: University of Chicago Press, 1991). There we defended the relative autonomy of the societal level of analysis, and the institutional logics were those of the family, the state, the capitalist economy, religion, and democracy. Our argument here is at the organizational level of analysis, by contrast. Each "social world" is a congeries of interorganizational relationships, but, as we already suggested, an individual may be a member of several.

74. We have not really dealt with what Bourdieu calls "classification struggles," wherein groups seek to promote the value of the types of symbolic or cultural capital to which they have greatest access or potentially the greatest power. All three of the social worlds have their own internal hierarchies of status and power, contested both at the boundaries and at the center.
75. See Roger Friedland and Richard Widick, "Mapping the space of Pierre Bourdieu," unpublished paper, University of California at Santa Barbara, for the argument from which this summary of some of Bourdieu's relevant points is drawn.
76. Bourdieu, in *Distinction* (Cambridge: Harvard University Press, 1984), 571. "Doxa" comprises the ways that the "primary experience of the social world" defines "relations of order as self-evident." A "habitus" is a set of deep-rooted predispositions to behave and think in certain ways. See also Bourdieu, *The Field*, and Loïc Wacquant, in *An Invitation*, 2–59, for a lucid exposition of Bourdieu's central concepts. In more Bourdieuian language, "habitus consists of a set of historical relations 'deposited' within individual bodies in the form of mental and corporeal schemata of perception, appreciation, and action" (ibid., 16).
77. Byron Janis "recounted instances in which the pain was so intense as he started to warm up that he could not imagine enduring the performance. But after a few minutes it went away. 'You just play through it,' he said, "and this is what kept happening" (*New York Times*, ibid.).
78. This issue is so new there is no scholarly literature on the topic. Our information is derived from *Time Magazine*, 24 October 1994, 61. A few months later, plaintiffs lost a suit against IBM and Apple Computers claiming that "computer keyboard makers should be held liable for repetitive stress injuries such as carpal tunnel syndrome, which most experts agree have no single cause." Attorneys for the plaintiffs intended to appeal (*San Francisco Examiner and Chronicle*, 12 March 1995).
79. It is relevant to note that a leading medical expert, Dr. Richard Lederman, completely rejects this pseudo-scientific explanation, confessing that very little is known about the causes of repetitive stress injury: "... unfortunately there are few reliable, if any reliable studies of actual pathology of overuse. One reads glibly, I'm afraid, about tissue tears, and scars, and all this sort of stuff ... the pathologic basis for this is in a few animal studies that have questionable relevance to what we're dealing with in everyday practice of seeing instrumentalists ... we have to plead a certain amount of inability to prove what we're talking about" (from Lederman's comments at the *Playing Hurt* conference cited above, from the transcripts).
80. The author, concert pianist Stephanie Brown, describes the "dangerous angle" (which piano pedagogue Dorothy Taubman labels "twisting"), and several other fundamental mistakes in holding and moving the hands ("clawing," "scratching," "curling"). Brown has codified a number of principles about hand position and movement which are beginning to be regarded as "common sense" among piano pedagogues. The book received enthusiastic blurbs on the cover from several neurologists and hand therapists, including Dr. Frank Wilson (cited earlier). See Stephanie Brown, *The Hand Book* (New York: Ergonome Publishers, 1995).
81. Several alternative keyboards have been invented, but none has been adopted.

Dr. Otto Goldhammer, for example, invented exchangeable keyboards, with five different widths of keys, to be used in music schools so that "every pupil plays on a keyboard fitted to his hands" (Gat, *Technique*, 272).

82. In response to the discovery of widespread pain, some actions are indeed being taken. Professor Gail Berenson, Ohio University, in a private communication (January 3, 1995) says that "several universities [are] incorporating new courses into the music curriculum that teach musician wellness strategies in a preventative effort." She directed a workshop on "Comfort in the Performance Spotlight" in June, 1995, with faculty members Dr. Thomas Mastroianni of Catholic University of America (a teacher of a "wide range of courses dealing with musician wellness") and Dr. Richard Norris, Medical Director of the National Arts Medicine Center. We might note that a recent addition to the repertoire of interest groups on the internet is one called "sorehand," headquartered at the University of California at San Francisco, which is accessible by the following command: listserv@ucsfvm.ucsf.edu. In the message area one writes: subscribe sorehand [enter your name, no brackets].
83. David B. Morris, *The Culture of Pain* (Berkeley: University of California Press, 1991), 2.
84. An interesting and important topic for study would be a comparison of the conditions under which pianists suffer pain with similar or different conditions for other occupations that require repetitive and stressful motions of the body: dancers, skiers, swimmers, and boxers, to name a few. Some of the same problems of linking pedagogical techniques with the incidence and causes of injury exist for sports: "...a direct link between injury and training methods is seldom made." See William A. Sands, et al., "Women's gymnastic injuries: a 5-year study," *American Journal of Sports Medicine* 21/2 (March, 1993): 271. For a study of boxers with a similar theoretical framework to ours, see, for example, Loïc Wacquant, "The pugilistic point of view," *Theory and Society* 24/4 (August 1995).