Dorothea Dix: A social researcher and reformer

Ciorstan J. Smark

University of Wollongong, csmark@uow.edu.au

Follow this and additional works at: https://ro.uow.edu.au/accfinwp

Recommended Citation

https://ro.uow.edu.au/accfinwp/31

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au
DOROTHEA DIX: A SOCIAL RESEARCHER AND REFORMER

Cirostan Smark
DOROTHEA DIX: A SOCIAL RESEARCHER AND REFORMER

Dr Ciorstan Smark, University of Wollongong, Wollongong.

Abstract

Dorothea Lynde Dix (1802 – 1887) was a passionate and pioneering nineteenth century mental health reformer. Bound by the conventions and proprieties of her time, she was nevertheless a ground breaking advocate of people with mental illness. Her methods of research, lobbying and advocacy were both innovative and effective. This paper traces Dorothea Lynde Dix’s researches in Massachusetts from 1841 until 1848. Her methods of research and lobbying are illustrated in the context of social and legal conventions that did not allow women to directly address the state legislatures of the time. The detractors of “Dragon Dix” are examined. Her successes are also celebrated in this paper.

Dix; Mental Health; Reform; Nineteenth Century.

Dorothea Lynde Dix (born in Maine on 4th April 1802) was one of the most influential social reformers of the nineteenth century. She actually managed to pack four separate careers into her rather long life. Before her death in 1887 (Brown, 1998) she had been involved in education; writing; nursing and in campaigning to improve the conditions of people with mental illness. It is this last role for which Dix is best known and on which this paper focuses.

In her role as an advocate for mental health, Dix was initially influenced by her own traumatic discovery of the conditions under which people with mental illness were kept in the United States of America in the mid nineteenth century. She was also influenced by two particular movements of her time. Firstly, the rise of “Moral Therapy” in Europe showed Dix (Gollaher, 1995, 111; Schlaifer et al, 1991, 37) that such conditions were not only inhuman, but also counterproductive for any rehabilitation. She also had a deep admiration for another contemporary woman, Florence Nightingale (Brown, 1998, 232; Schlaifer et al, 1991, 130; Gollaher, 1995, 398) who showed by example that, whatever nineteenth century society might think of such females, they did have the power to make a difference in the world.

Dix was called many things both in her time and after her time, some in praise, and some in frustration:

- ‘the most effective advocate of humanitarian reform in American mental institutions during the nineteenth century’ (Viney & Zorich, 1982). And
- ‘A "voice for the mad" Dorothea Dix did more than anyone else of her generation to improve the lives of mentally ill people in America.’ (U.S. History.com, 2005)
- She was also derided with such derogatory epithets as "Dragon Dix" (U.S. History.com, 2005). And
- "Meddling busybody" (Freeberg, 1999, 685-686). And
- Comments ‘that "no proper lady would expose herself to the moral danger” of the places which she toured.’ (Freeberg, 1999, 685-686).
Dorothea Dix was, in short, a strong woman in a time which prized meekness and malleability in it’s women-folk. Single minded and sincere, she also had a certain talent for being abrasive as was attested to in the later (nursing) aspect of her career:

‘Predictably, Dix made herself unpopular with many of her nurses. She had trouble relating to them on a human level. Yet their complaints were a mere whisper to the roar of many doctors in the medical corps, who resented the intrusions of women in what was then an exclusively male field. A reorganization of the medical department in 1862 put in place a new surgeon-general, who would ultimately curtail Dix’s authority and the autonomy she demanded. Her independence is what compromised her war service the most, as noted by diarist George Templeton Strong, treasurer of the Sanitary Commission, when he wrote, “She is energetic, benevolent, unselfish, and a mild case of monomania. Working on her own hook, she does good, but no one can cooperate with her, for she belongs to the class of comets and can be subdued into relations with no system whatever.”’ (The Smithsonian Institute, 2005).

In order to tease out some of the colourful threads in Dix’s fascinating life this paper uses a Foucauldian lens to filter information from one aspect of her many careers – her campaigns in Massachusetts to better the condition of the “pauper lunatics” of that state. In order to appreciate Dix’s research journey and her impact on people with mental illness, it is necessary to place Dix in the context of her times, of her class and of her gender.

This paper begins by using Foucault’s (1965) *Madness and Civilisation* to set the scene for the treatment of People with mental illness that so shocked Dix when she first became aware of it in 1841 (Viney, 2005; Ordway, 2005). This section of the paper also introduces the new ideas of Moral Therapy that were gaining hold in Europe at the time when Dix began her campaigning for people with mental illness and by whom she was profoundly influenced.

Dix’s techniques of discovery and advocacy are then detailed. In a long and successful life of advocacy, across many countries, this paper will use a very specific aspect of Dix’s career - her campaigning for better conditions for people with mental illness in Massachusetts – as an exemplar for her work. Given the many aspects of her career and the very international nature of the reforms that she generated, a fuller treatment of her exploits is beyond the modest scope of this paper.

Given the gulf of time and custom that separates the modern reader from Dix, this paper also seeks to contextualise Dix in terms of her class and gender by looking at some of the comments and criticisms that were levelled at her. It is interesting to note that these sort of (often personal and frequently unflattering) comments were also levelled at two of her female contemporaries Florence Nightingale (1829 – 1910) and Elizabeth Fry (1780 – 1845) who faced many of the same class and gender barriers that were faced by Dix (The Quakers, 2005; Holliday, 1997; Gollaher, 1995) and also, despite these barriers, came to have a profound influence on nursing and prison conditions respectively. That all three of these women attracted similar criticisms might tend to suggest that these criticisms were aimed at many women who sought to change society and the fact that all three (to a greater or lesser extent) succeeded in their goals suggest that these barriers were not insurmountable.

**FOUCAULT – MADNESS AND CIVILISATION**

Foucault’s (1965) *Madness and Civilization* sets a complex scene as the background against which Dix’s campaigns took place. Foucault (1965) offers many interesting insights into the
changing relations between people with mental illness and others in society. In his commentary on the work of Foucault, Ingleby (1983, 143) offered an initial cautionary note. Foucault (1965) wrote primarily about the treatment of people with mental illness in France, whereas Dorothea Dix operated primarily in the United States of America. Nonetheless, there are many interesting themes developed by Foucault that are relevant to the treatment of people with mental illness at the time (1841) that Dix began her campaigns in Massachusetts.

Foucault categorized the great change in the treatment of people with mental illness as coming with "the Great Confinement" of 1657 in Paris (Ingleby, 1983, 146). This was when about one per cent of the city's population was incarcerated in the Hôpital General. This confinement was not specific to people with mental illness, it also included other groups of "dependent people" who were incapable of productive work. For Foucault, the creation and use of this huge institution marked a change in outlook. Up until this point, madness had been viewed as somewhat akin to leprosy - unfortunate, scary, but not necessarily calling for society's moral judgment on the sufferer. After this time, Foucault saw society condemning people with mental illness for their failure of will:

the asylum of the age of positivism, which it is Pinel’s glory to have founded, is not the free realm of observation, diagnosis, and therapeutics; it is a juridical space where one is accused, judged, and condemned, and from which one is never released except by the version of this trial in psychological depth - that is, by remorse. (Foucault, 1965, 269).

Foucault (1965) emphasized this change in outlook as the driving factor behind the new institutionalisation. Ingleby (1983, 147) noted that Foucault's view was that the Classical Age's confinement of madness was as much about morality as economic rationality. The confinement (rise in institutionalization of people with mental illness) was based on intolerance of madness.

Foucault associated the climax of the classical age with the birth of "moral treatment" or "moral therapy". In particular he referred to a famous (and possibly apocryphal - Bynum, 1985, 37) act of drama. This act was Philippe Pinel striking off the chains hobbling insane inmates of the foul Bicêtre prison in Paris in 1794. Pinel then attempted (with some success) to cure them with encouragement and kindness rather than with brutality. (Ingleby, 1983, 149). This is a key point in Dix’s intellectual antecedents as it was largely through her lobbying that moral therapy was brought to the United States of America. Or at least that it was brought to the poor in the United States who had no wealthy relatives willing to pay for the finest private treatment.

Foucault’s ideas about Tuke and Pinel - in the orthodox view generally considered to be the fathers of compassionate treatment of the mad - are quite revolutionary. Foucault credited them, not so much as with compassion for the appalling physical conditions and cruelty in which people with mental illness were kept, but rather with a thorough understanding of the efficacy of guilt and a sophisticated knowledge of fear:

Tuke created an asylum where he substituted for the free terror of madness the stifling anguish of responsibility; fear no longer reigned on the other side of the prison gates, it now raged under the seals of conscience... The asylum no longer punished the madman’s guilt, it organized that guilt. (Foucault, 1965, 247.)

Thus, to Foucault, the reformers forged chains of the mind, rather than using physical chains and forced patients to internalise morality rather than requiring it to be imposed by external
agents. The new wave of “alienistes” had not decided that madness was anything other than abhorrent, they had merely adjusted their views on the most effective means of curtailing it (Ingleby, 1983, 150). Dix forged links with many Quakers while traveling in England in 1836. During this time, she not only she stayed at Tuke’s retreat but also met with many other socially active Quakers of the time. Amongst them was Elizabeth Fry, to whom this paper will return later (Gollaher, 1995, 111) She left England with a good knowledge of the techniques of Moral Therapy and with great admiration for what could be accomplished by using it to effect a relief of symptoms, even if not a complete cure, for people with mental illness. It is one of Dix’s crowning achievements that she relentlessly and successfully (in the main) to have Moral Therapy institutions made available to the insane poor of, firstly, Massachusetts and, later, throughout much of the United States.

The spread of moral therapy was hastened by three main factors. First, the reformers of the nineteenth century revealed the squalor of the asylums. This will be discussed in more detail later on in this thesis. Second, the dominant mindset of the day was (somewhat) open to change and was very alive to the wonders of science and medicine and all agog to see what these forces could do when allowed to work on mental illness. Finally, moral therapy was in the offing as a new, much more “scientific” and high-minded approach to the problem. It advocated self-discipline and reason - two virtues very much prized in the nineteenth century. Also - it worked. However, in some ways it was this very success and the fact that its support base was largely drawn from those with a great respect for science and quantification that were partly responsible for its downfall.

One of the most surprising things to the modern eye (accustomed to treatment of mental illness with medication) - is just how successful moral therapy was:

By all accounts, moral treatment was startlingly successful, even in terms entirely familiar to today’s administrators - discharge and readmission rates. The Bloomingdale Asylum, for example... admitted 1,841 patients between 1821 and 1844. Of these, 1,762 were discharged, including 672 cured, 104 much improved, and 318 improved; cure was defined as minimal function within both the patient’s family and society at large. Most of those discharged were not readmitted. (Johnson, 1990, 7). This is borne out by Kiesler and Sibulkin (1987, 34) with the caveat that those judging what comprised a "cure" were philosophically committed to the system of treatment.

Moral therapy was very dependent for its success upon the relationship built up between the superintendent and the patient. In order for this to flourish, it was necessary to have the correct sort of personal magnetism in the superintendent and a sufficiently small number of patients to allow the relationship to exist. This limited number of patients was also necessary to foster a sense of community - almost of family - with the superintendent as the pater familias (Johnson, 1990, 7; Jones, 1972, 49-54). Of course, after money ceased being spent on these huge state mental hospitals, and after they became so overcrowded, understaffed, dilapidated and inundated with chronically ill people (as happened in the late nineteenth century), they ceased to work and became little more than cheap warehouses for lunatics. But that is outside the scope of this paper.

The shift in culpability for madness was very instructive to Foucault. Before these reformers, the mad were no guiltier for their condition than a leper for their leprosy (although leprosy was sometimes viewed as a judgment of God in the middle ages). It was not the responsibility...
of the leper to cure themselves. After Tuke and Pinel, madness was more a moral failure than a disease - and the sufferer’s responsibility.

In Madness and Civilization (1965) Foucault wrote of the dynamics between society and the mad. According to Foucault these relations changed between the middle ages / renaissance period and the classical age. Up until the mid-seventeenth century, madness was a subject for drama, paintings and literature. An example of this from literature is Erasmus’ *In Praise of Folly*. Another example of the role of madness in the arts is found in the nightmarish works of Hieronymus Bosch where madness, damnation and temptation are chaotically depicted. After the mid-seventeenth century, madness was a subject only for confinement, not for dialogue or fascination.

It would be very wrong to suppose, however, that Foucault’s perception of the classical age’s moral disapproval and confinement of madness in any way suggests that the middle ages / renaissance “dialogue” with madness was necessarily approving or gentle. Foucault speaks of ritual exclusion (sometimes including whipping) from towns - much like the lepers whom he argued that the mad in some ways replaced in the public mind. Also the use of “ships of fools” filled with people viewed as mad and then cast adrift. (Foucault, 1965, 11). Foucault’s point seems to be that however harassed and excluded the mad were in the Renaissance, they were at least considered to be part of the world.

Tuke’s ideas and his establishment of the “Retreat” along the lines suggested by the moral therapy movement had profound impacts on Dix. This approach towards moral therapy was not sourced from Tuke’s Retreat alone. According to Levine (1981, 14) and Kosky et al (1991,3) Philippe Pinel’s writings of his experiments with humane treatments in Paris were translated into English in 1806 and were widely read. Thus Pinel’s ideas as well as Tuke’s were influential in the willingness to try moral therapy in the United States of America, Australia and England. The moral therapy movement can be dated either from Pinel’s reforms in the Bicetre prison in Paris in 1794 or from William Tuke establishing the York Retreat in England in 1792 (Ingleby, 1983, 149).

The nineteenth century, then, was a time of great change in mental health. Conditions in European asylums were not only dreadful; they were seen to be dreadful. After Pinel’s early protest in Paris, other reformers followed. Public attention was called to the overcrowded, cruel and dirty conditions that were the lot of almost all (some moral therapy institutions excepted) mental institutions at the time. It was Dix who raised awareness of the appalling conditions in which Massachusetts (and later she highlighted conditions in other sates and other countries) kept its insane poor.

Conditions for people with mental illness in the United States of America by 1800 appear to have been roughly comparable with conditions in England (Jones, 1991, 6). Although the development of asylums in the United States of America was somewhat slower than in England (Grob, 1994, 23) and thus a smaller proportion of people with mental illness would have been institutionalised and prey to these conditions. As in England, increased industrialisation and the rise of the capitalist system brought with it the break-down of care (such as it was) by the local community. Many people with mental illness wound up incarcerated in general-purpose jails and workhouses. The first institution specifically earmarked to deal with mental illness in the United States was not opened until 1773 (Levine, 1981, 16). Conditions were similar to those in English mental hospitals at the time. The emphasis was on the control of the patient and on discipline rather than on rehabilitation.
However, these new institutions were regarded as a great advance at the time. (Johnson, 1990, 6).

It was Dix who was to have a great influence in promoting the ideals of Moral Therapy in the United States of America and who spent many years of her life lobbying State Legislatures in order to have State Asylums along moral therapy lines built and funded.

Dorothea Dix was influenced by reports of the moral treatment system provided in Tuke's Retreat in England. She began her role as advocate and lobbyist for improved conditions for people with mental illness in 1841 (Freeberg, 1999, 681). She visited thousands of mentally ill people in poorhouses, jails, cellars and barns across the United States. Dix was horrified at the conditions she found and began a crusade:

- In each place, her method was the same. She started with an exhaustive fact-finding tour, visiting every mentally ill person she could find in an area. While she had no authority to enter and search most of these places, no jailer ever refused her, awed as they were by her forceful personality and her obvious gentility. Concluding her tour, she would then draft an eloquent memorial, which summarized the horrors she had seen, and propose the creation or expansion of hospitals for the mentally ill. (Freeberg, 1999, 686).

The hospitals that she hoped to create were to be run along the lines of moral therapy and be funded by the state legislatures who held responsibility in that area. Dorothea Dix could not (as a woman) address the state legislature directly. She had her memorials presented on her behalf by sympathetic men. Her success, single mindedness and passion cannot be doubted. She survived taunts that she was a "meddling busybody", and that "no proper lady would expose herself to the moral danger" of the places which she toured. Over her forty year career she was personally responsible for the creation of 32 state asylums in the United States and the expansion and improvement of many others (Freeberg, 1999, 685-686).

**DIX’S RESEARCH AND ADVOCACY IN MASSACHUSETTS 1841 - 1848.**

Dix’s campaign for better conditions for people with mental illness began on 28th March, 1841 when she was asked to teach Sunday school at the Middlesex County House of Correction in East Cambridge, Massachusetts (Brown, 1998, 79). This prison served not only to hold people awaiting trial on criminal charges, but also many people with mental illness for whom there was no room in the overcrowded Worcester State Mental Hospital and who did not have sufficient means for private treatment.

Dix was shocked at the conditions in which these people were held. Her indignation on these inmates behalf initially met with little sympathy from the authorities:
- ‘When Dix visited Boston’s East Cambridge Jail, she saw scantily clad mental patients living alongside the criminals in cold, filthy cells. Dix was outraged at the conditions and voiced her concerns for the mental patients. The jailer responded to her by saying the lunatics could not feel the cold. This incident was the turning point in Dix’s life.’ (Essortment, 2005).

Dix might have been a respectable woman, but persistence and courage were intrinsic to her indomitable personality. Far from accepting this dismissive answer, Dix launched her crusade:
‘She visited jails and poorhouses around the U.S. and documented her findings. In her report to the Massachusetts state legislature in December, 1842, she said, “I have come to present to you the strong claims of suffering humanity. I come as the advocate of the helpless, forgotten, insane men and women held in cages, cellars, stalls, pens; chained, naked, beaten with rods, and lashed into obedience. I beg, I implore you to put away the spirit of selfishness and self-seeking. Lay off the armor of local strife and political ambition. Forget, I beg you, the earthly and perishable, the thought without mercy. Gentlemen, I commit you to a sacred cause!’” (Essortment, 2005).

The aim of Dix’s campaign was to bring to Massachusetts a system of state hospitals based on moral therapy as practiced at Tuke’s Retreat. Her challenge was to convince a legislature that she, as a woman, was not even permitted to address directly to build and fund these hospitals. Slightly before the turn of the century, but very much a precursor of things to come, was Tuke’s Retreat. The religious society known as the Quakers founded a revolutionary hospital in York in the 1790’s. This hospital came to be known as Tuke’s Retreat. The revolutionary aspects of Tuke’s Retreat were that the use of physical restraints was minimized and improvements in patients behavior was sought by appealing to the patients’ “moral capacities” (Lewis, 1988,8; Kosky et al, 1991,4).

Dix had met a descendant of William Tuke, by the name of Samuel Tuke, during her travels in England in 1836 (Gollaher, 1995, 99). Tuke believed in the humane treatment of the mentally ill and advised that they be given books to read and allowed to listen to music. Tuke told Dix, “Just because a person may be insane upon one subject, does not necessarily mean that he will be insensible to human kindness.” (Essortment, 2005). In Foucault’s (1965) terms, Moral Therapy might just have been a different form of constriction. To most people, however, a self-binding of the mind and behaviour would be much preferable to physical incarceration in cold, filthy, violent conditions.

Dix became one of the most famous and influential of reformers the United States of America had ever witnessed. (Kiesler et al, 1987, 30-31; Johnson, 1990, 8). Once launched, Dix tirelessly lobbied state legislators over conditions in almshouses and asylums. She lobbied state government legislators because it was the state governments which were responsible for funding mental hospitals - this point will become important later in this thesis. She informed people about the appalling conditions of mentally ill people whether they were incarcerated in jails, almshouses or workhouses (Levine, 1981, 24). She was responsible for a great expansion in the number of state funded mental hospitals in the United States and for a great improvement in the humanitarianism of treatment within those hospitals.

As an illustration of her tremendous energy, during her Massachusetts campaign she:

‘Traveling by coach, train, or riverboat, she had by 1848 covered 80,000 miles and visited more than 9,000 mentally ill and epileptic people in prisons, detention houses, asylums, almshouses, orphanages, and hidden hovels. Documenting all that she saw, she would then write a memorial and present it to a legislator who she knew would introduce it to the legislature in each state she had studied.’ (Psychiatric News - History Notes, 2005).

The reason for her writing these memorials to the State Legislature instead of presenting them directly was that women were not allowed to directly address the State legislatures in the
1840’s. As was the case with Florence Nightingale, Dix had, to a large extent, exercise her influence and win her arguments indirectly, via sympathetic men.

It is a tribute to Dix that, despite very strong disapproval of a woman who would not only subject herself to the immodesty and indignity of jail, asylum and almshouse visits, she was not only tireless and diligent in them, she also won many of the reforms she sought despite not being able to directly address the decision makers of her time.

Viney (2005) noted her success in the face of great opposition:

‘Though jailers and proprietors of almshouses often tried to prevent Dix from seeing their worst cases, she demanded and usually got full access. “I cannot adopt description of the condition of the insane secondarily; what I assert for fact, I must see for myself.” Based on her observations, she crafted a powerful memorial which was presented in 1843 to the Massachusetts legislature by Dr. Samuel Gridley Howe, Director of the Perkins School for the Blind and himself a strong advocate for the mentally ill. The memorial first met with criticism and denial, but independent observations soon supported the truth of her claims. The legislature allocated funds for a large expansion of the State Mental Hospital at Worcester. A major victory for Dix and for the insane poor of Massachusetts, the act was also a stimulus for wider efforts’.

Her successes must be contextualized in terms of a woman of the middle classes in nineteenth century society.

CLASS AND GENDER – THE ROLE OF NINETEENTH CENTURY “LADIES”.

In her role as researcher and reformer, Dix frequently came up against the expectations of how a middle class spinster “should” behave herself. ‘Her peripatetic style created a tension between her aspirations as a moral crusader and her deference to social convention’ (Brown, 1998, 137). It was considered somewhat scandalous that she should on occasion travel unchaperoned, let alone that she should expose herself to the moral dangers of visiting “pauper lunatics”. Still, she overcame this claiming that ‘quiet manners and self-respect will command respect and sufficient attention from others’ (Brown, 1998, 137.)

Her respect for proprieties whilst at the same time her willingness to break with them should other moral considerations cause her to do so brings Florence Nightingale strongly to mind. She admired Nightingale greatly (Holliday & Parker, 1997). There are a number of interesting corollaries between the two women in the matter of overcoming gender and class restrictions whilst at the same time having a keen sense of “the Proprieties”.

Florence Nightingale (Holliday & Parker, 1997, 483–488) and Dix shared a number of traits. Both had been raised at a time where education was considered to be of very limited importance to women and ambition as unfeminine. Both were accused of “wilfully rejecting society” through their outlandish behaviour. And both (to some extent) could only achieve power through convincing men who held the power in nineteenth century society to speak on their behalf. Both were, nonetheless, extremely successful in their chosen fields. This is so especially considering the nineteenth century background described by Selanders (1998, 227-243).

‘Victorian women suffered from a lack of legal status, education, financial independence, and support from either the family or church as social institutions.’
Dix also had interesting similarities to the great nineteenth century Quaker prison reformer Elizabeth Fry. She met Fry (Brown, 1998, 68) and had many acquaintances in common with her through her contacts with the Tuke family who, as well as being leaders in the Moral Therapy movement, where also Quakers. The research methods of the two women had some similarities in that Fry also went personally into the jails that she sought to reform and testified to legislatures about conditions there. Unlike Dix, she was able, in 1818, to give evidence directly to the House of Commons in London on conditions in prisons (the first woman ever to do so) instead of having to use a male intermediary as Dix had to (The Quakers, 2005).

**CONCLUSION - DIX’S ACHIEVEMENTS AND LEGACY**

Dix was very successful in getting state mental hospitals built and funded. This hugely increased the spread of moral therapy. The first moral therapy asylums had generally been privately run, choosing patients from families who could afford to pay for treatment. Campaigners such as Dorothea Dix sought funding for state-based institutions. At the time of Dix’s campaign most people with mental illness were consigned to very overcrowded and unpleasant county-run almshouses (Johnson, 1990, 8). So here it can be seen that funding for mental institutions begin to shift from the local (county) level to the state level.

Dix was energetic and bold in her campaigns. She enlisted not only the guilt and shame of legislatures by reporting on the conditions in which poor lunatics were held, she was also quite savvy in her use of the media and private sponsorships. She also enlisted public officials to present her reports. As a result of her reports published in the “Boston Advertiser” and the “Boston Courier,” many states passed laws, provided funding and built hospitals for the humane care of mental patients. In 1845, she successfully campaigned to establish New Jersey’s first mental hospital in Trenton. From 1845 to 1848, she traveled across the U.S. investigating the treatment of mental patients and advising government officials about how to improve conditions. In support of her cause, railroad and steamboat companies paid for all her travel expenses. (Essortment, 2005). In Foucauldian terms, she turned her knowledge of conditions and the shame and guilt of legislatures into the power to bring about change.

**REFERENCES**


**COPYRIGHT DECLARATION**

Smark © 2005. The author assign to WiR and educational and non-profit institutions a non-exclusive license to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant non-exclusive license to WiR to publish this document in full in the Conference Papers and Proceedings, which may be published on CD-ROM or in printed form. Any other usage is prohibited without the express permission of the authors.