



The Journal of Sociology & Social Welfare

Volume 29
Issue 2 June

Article 9


June 2002

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Recommended Citation

Bride, Brian E. and Nackerud, Larry (2002) "The Disease Model of Alcoholism: A Kuhnian Paradigm," *The Journal of Sociology & Social Welfare*: Vol. 29 : Iss. 2 , Article 9.

Available at: <https://scholarworks.wmich.edu/jssw/vol29/iss2/9>

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The Disease Model of Alcoholism: A Kuhnian Paradigm

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Despite the fact that the disease model of alcoholism has lost its status as paradigm in international circles, the alcoholism research and treatment community in the United States maintains steadfast allegiance to the tenets of the disease model. The disease model and the related treatment goal of abstinence continue to overwhelmingly dominate the treatment of alcoholism in the U.S. Critics have suggested that financial and political motives have served to maintain the dominance of the disease model, despite findings that violate its basic tenets. This paper presents an alternative explanation of the reluctance of the alcoholism treatment community to relinquish the disease model by utilizing Kuhn's (1996) model of scientific progress in an historical analysis of the disease model. To support this position, evidence of the emergence of the disease model as a paradigm, alcoholism research as normal science, and the appearance of anomaly followed by crisis in the alcoholism research and treatment community are presented.

The disease model of alcoholism has a history dating back more than two hundred years, and is considered by many to be the dominant paradigm guiding scientific inquiry and treatment approaches for much of the 20th century. However, as early as the 1960s, the disease model came under attack due to the emergence of anomalous scientific and clinical findings. Outside of the United States, the disease model is considered by many to

have been discredited, and has long been abandoned in favor of alternative models, such as social-learning theory (Heather & Robertson, 1997). Yet, in the United States, the disease model and its primary treatment goal of abstinence continue to overwhelmingly dominate the treatment of alcoholism (Rosenberg & Davis, 1994; Rosenberg, Devine, & Rothrock, 1995; Weisner, 1996). Among other explanations, the financial and political motives of the U.S. alcoholism treatment community have been offered to explain why the U.S. continues to lag behind other countries in moving beyond the disease model (Fingarette, 1988; Peele, 1989; Sobell & Sobell, 1995). However, an alternative reason for the reluctance of the alcoholism treatment community to relinquish the disease model is revealed by utilizing Kuhn's (1996) model of scientific progress in an historical analysis of the disease model.

In his widely read and highly influential book, *The Structure of Scientific Revolutions*, first published in 1962 and now in its third edition, Kuhn (1996) explores the role of paradigms in the cyclical process of scientific discovery. Kuhn defines paradigms as "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners" (p. x). In his view, paradigms structure scientific communities by defining group commitments and shared examples. Paradigms represent a constellation of beliefs, values, techniques, and so on, shared by the members of a given community of scientists and practitioners. In a period of "normal science," scientists tend to agree about what phenomena are relevant, what constitutes an explanation of these phenomena, what problems are worth solving, and what constitutes a solution of a problem. Despite the structure provided by a paradigm, inevitably new and unsuspected "anomalies" are repeatedly uncovered by scientific research. Recurrent anomalies lead the scientific and professional community to a "crisis" which may be resolved in one of three ways: (1) a new candidate for paradigm may emerge, (2) the problem may be set aside for a future generation to contend with, or (3) the paradigm may prove successful in resolving the anomalies.

Although the "science" in Kuhn's title refers almost exclusively to the physical sciences, the applicability of his model to the social sciences has been addressed by authors in social work

(Skerrett, 2000), psychology (Ardilla, 1992; Buss, 1978; Friman, Allen, Kerwin, & Larzelere, 1993; Gholson & Barker, 1985; Kirsch, 1977, Leahey, 1992; Palermo, 1971; Peterson, 1981; Walter & Palermo, 1973); sociology (Colclough & Horan, 1983; Eckberg & Hill, 1979; Lemke & Picou, 1985; Restivo, 1983); and other areas of social scientific inquiry (Shareef, 1997; Sloan, 1987; Stephens, 1973). Further, a number of authors (Gregoire, 1995; Heather & Robertson, 1997; van Wormer, 1995; Walters, 1999) have alluded to the applicability of a Kuhnian perspective to the disease model of alcoholism, although in each case the matter is given only cursory attention. The present paper seeks to employ Kuhn's perspective on the history of science in order to provide an alternative explanation for the U.S. alcoholism treatment community's reluctance to relinquish the disease model of alcoholism, as has much of the international alcoholism research and treatment community. To do so, the paper provides evidence of the emergence of the disease model as a paradigm in the context of alcohol problems, alcoholism research as normal science, and the appearance of anomaly and crisis in the alcoholism research and treatment community.

Emergence of the Disease Model as a Paradigm

According to Kuhn (1996), the early developmental stages of most scientific disciplines are characterized by continual competition between a number of distinct views of nature. This pre-paradigm period is marked by the existence of competing schools, each of which may make significant contributions to the body of knowledge and experience from which the accepted paradigm emerges. However, in order to be accepted as a paradigm, a theory must seem better than its competitors. In the study of alcoholism, this pre-paradigm period was seen in the competition between the moral and disease views of alcoholism, during the 19th and early 20th centuries.

The origin of the disease concept of alcoholism is credited to Benjamin Rush in the United States and Thomas Trotter in Great Britain. In the late 18th century, these two physicians independently offered the earliest clinical descriptions of alcoholism as a disease in which the alcoholic suffered a gradual and progressive addiction leading to loss of control over the consumption

of alcohol (Gregoire, 1995). Abstinence was considered to be the only effective treatment for this diseased state (Burman, 1994; Jellinek, 1960; Lender, 1979; Meyer, 1996). Through the first half of the 19th century, the disease concept gained acceptance in the medical community despite the absence of a systematic empirical foundation. This uncritical acceptance of the disease concept paved the way for the establishment of numerous "inebriate asylums" for the treatment of alcoholics, providing the opportunity for the scientific study of alcoholism (Lender, 1979). During this time, the progressive nature of alcoholism, with its symptomatic course from moderate drinking to addiction to craving gained wide recognition (Lender, 1979). By the end of the 19th century, views of alcoholism as a disease began to build empirical support from findings in the fields of pathology and microbiology (Meyer, 1996).

At the same time that empirical support for the disease concept began to build, the temperance movement reached the height of its influence. The movement was committed to a moral interpretation of chronic drunkenness in which the alcoholic was seen as weak-willed (Lender, 1979). The growing influence of temperance ideology around the turn of the century shifted concern about addiction to the role of alcohol in social problems such as crime, accidental injury, and labor unrest (Meyer, 1996). Temperance workers, however, had no scientific evidence for their claims, relying instead on an emotional appeal to support their position (Fingarette, 1988). Paradoxically, the temperance movement co-opted the disease concept of addiction, claiming that alcohol in any form would lead to habitual drunkenness in anyone who drank, thereby justifying the goal of national prohibition (Fingarette, 1988). The temperance movement's success in outlawing the production, distribution, and consumption of alcohol in the United States shifted public perception of alcoholism from a medical problem to one of law enforcement. Alcoholism as a disease became less a scientific hypothesis than a powerful political and social construct (Gregoire, 1995).

Following the repeal of prohibition, the theoretical and scientific contributions of Jellinek (1952, 1960) and his colleagues are considered by many to be the most credible and influential in renewing interest in and defining the disease concept. In *The*

Disease Concept of Alcoholism, Jellinek (1960) used letters of the Greek alphabet to explicate five "species" of alcoholism, although he felt there could be more (Lender, 1979). *Alpha alcoholism* represents an undisciplined use of alcoholic beverages, often in order to relieve emotional disturbance. This type of alcoholism may result in relationship problems, however no progression is seen. *Beta alcoholism* involves heavy drinking which results in physical complications such as cirrhosis of the liver, but does not result in physical or physiological dependence. *Gamma alcoholism*, is characterized by increased tissue tolerance, adaptive cell metabolism, withdrawal symptoms and craving, and loss of control. Gamma alcoholism is marked by a definite progression from psychological to physical dependence and marked behavior changes, and interpersonal relations. *Delta alcoholism*, manifests the first three characteristics of the gamma type, but instead of loss of control, there is an inability to abstain for even one day. The delta alcoholic is able to control the amount of intake on any given occasion, but is unable to abstain for even short-periods of time without the manifestation of withdrawal symptoms. However, there is little impairment in interpersonal relations. *Epsilon alcoholism* is periodic alcoholism, otherwise known as binge drinking. This type of alcoholism results in a great deal of physical and emotional damage during periods of consumption, but there may be few consequences during non-drinking periods. For Jellinek, only the gamma and delta types of alcoholism could be classified as disease, although he was careful to caution that his theory was a working hypothesis in need of empirical testing and refinement (Lender, 1979; Miller, 1982).

Kuhn (1996) suggests that the establishment of a new paradigm is marked by a number of occurrences. First, a new and more rigid definition of the field emerges. Second, when a paradigm can be taken for granted, the scientist need no longer attempt to build the field anew with each work. Jellinek's work accomplished both. The concept of alcoholism as a disease that is "progressive, transmitted through heredity, and characterized by loss of control over consumption once drinking begins" (Gregoire, 1995, p. 342) became firmly established following the publication of Jellinek's *The Disease Concept of Alcoholism* (1960). In addition, the manuscript "became the canonical scientific text for the classical disease

concept" (Fingarette, 1988, p. 20) to which later authors began to refer. Third, the formation of specialized journals and specialist societies are associated with the reception of a single paradigm. Dozens of academic journals are dedicated to the study of alcoholism, such as the *Quarterly Journal of Studies on Alcohol, Alcohol & Alcoholism*, and *Alcoholism Treatment Quarterly*. The American Society of Addiction Medicine, the National Association of Social Workers' subsection on Alcohol, Tobacco, & Other Drugs, and Division 50 of the American Psychological Association are just a few of the specialist societies.

Alcoholism Research as Normal Science

Kuhn (1996) notes that paradigms gain their status because they are more successful than their competitors in solving particular problems. Once established, an emergent paradigm requires further articulation and specification under more stringent conditions. The success of that paradigm, at its start, is a promise of success discoverable in select and still incomplete examples. The goal of normal science is the actualization of that promise achieved by: (1) extending the knowledge of those facts that the paradigm displays as particularly revealing; (2) increasing the extent of the match between those facts and the paradigm's predictions; and (3) further articulation of the paradigm itself. In summary, normal science is directed to the articulation of those phenomena and theories that the paradigm already supplies (Kuhn, 1996).

The scientific community's response to Jellinek's call for testing and refinement of the disease concept heralded the advent of normal science in the field of alcoholism. Once a paradigm becomes established, research can concentrate exclusively upon the subtlest and most esoteric aspects of the phenomena with which the group is concerned (Kuhn, 1996). With the emergence of the disease paradigm, researchers began to do just that. Jellinek's seminal work was followed by a period of intense "puzzle-solving" activity aimed at further articulation and specification of the paradigm, leading the scientist to scrutinize some aspect of nature in great detail (Kuhn, 1996).

Investigation into the genetic correlates of alcoholism is but one example of this detailed scrutiny in alcoholism research

(for an understandable and illustrative review, see Anthenelli & Schuckit, 1998). Studies of adoptees (Cloninger, Bohman, & Sigvardsson, 1981; Goodwin, Schulsinger, Hermanson, Guze, & Winokur, 1973) have led to the general acceptance that there is a genetic component to alcoholism (Jurd, 1992). The study completed by Goodwin et al. (1973) followed 55 adoptees whose parents were alcoholic. They were found to have four times the rate of alcoholism of control adoptees. Furthermore, even if the adoptive parents were alcoholic, the adoptees without an alcoholic biological parent did not become alcoholic. These results were largely confirmed by Cloninger et al. (1981) who followed 962 male and 813 female adoptees into adulthood. More recently, a group of researchers found an association between blind diagnoses of alcoholism and the presence of the A1 allele of the dopamine D2 receptor gene (Blum et al., 1990). Two years following the study by Blum et al. (1990) it had been replicated with statistical significance no less than five times (Jurd, 1992).

Anomaly and Crisis

Kuhn (1996) states that normal science "is a highly cumulative enterprise, eminently successful in its aim, the steady extension of the scope and precision of scientific knowledge" (p. 52). Discoveries are not isolated events, but extended episodes with a regularly recurrent structure. Discovery initially commences with the awareness of anomaly in which nature has violated the paradigm-induced expectations that govern normal science and continues with an extended exploration of the area of anomaly. The process of discovery closes when the paradigm theory has been adjusted so that the anomalous has become expected. Anomalies, though not necessarily prohibited by established theory, violate deeply entrenched expectations. The perception of anomaly plays an essential role in preparing the way for perception of novelty (Kuhn, 1996).

Perhaps the most persistent anomaly of the disease paradigm is the repeated finding, in violation of the entrenched expectations of irreversibility and loss of control, that persons diagnosed as alcoholic can sometimes return to normal, controlled patterns of drinking (Heather & Robertson, 1997). Attention was first drawn

to this anomaly by the results of a study reported by Davies (1962) in which the records of 93 individuals treated between seven and eleven years prior were reviewed for evidence of a return to harm-free drinking. The subjects had been routinely followed up through outpatient attendance, contact by a social worker, and correspondence with relatives. Based on these records, Davies visited each of the subjects at home and sometimes at work, and made specific inquiries with relatives regarding drinking history since discharge. Davies found that 7 of the 93 individuals whose records were reviewed had returned to normal, harm-free drinking of at least five years duration. Each of these individuals had been previously diagnosed as an "alcohol addict" with the cardinal symptom of loss of control over drinking (Heather & Robertson, 1981).

This anomalous finding by Davies was replicated when Sobell and Sobell (1976) conducted a second-year follow-up to an experimental trial of controlled drinking treatment with 70 male "gamma" alcoholics. Subjects were assigned by staff decision to one of two treatment goals, abstinence or controlled drinking. Within these two groups, subjects were randomly assigned to a controlled drinking treatment or standard abstinence based treatment. First year follow-up data suggested that both controlled drinking groups had functioned significantly better than the abstinence groups. The investigators concluded that controlled drinking can be considered as an alternative treatment goal to abstinence for some alcoholics. A third-year, independent follow-up in which interviewers were kept blind as to the treatment group confirmed the results of the earlier study (Caddy, Addington, & Perkins, 1978).

The third major study to highlight anomalous findings is known as the Rand Report (Armor, Polich, & Stanbul, 1976), by far the largest follow-up of treated problem drinkers ever completed (Heather & Robertson, 1997). Between 1970 and 1974 the Rand Corporation collated and analyzed data from the National Institute of Alcohol Abuse and Alcoholism's (NIAAA) network of Alcoholism Treatment Centers (ATCs). Basic changes in the client outcomes from admission to six ($n = 2371$) and eighteen months ($n = 1340$) after intake were evaluated. The authors concluded that for some alcoholics, moderate drinking is not necessarily a

prelude to a full relapse and that some alcoholics can return to moderate drinking with no greater chance of relapse than if they abstained. Four years later, the same researchers reported a four-year follow-up of the same treatment population (Polich, Armor, & Braiker, 1981). This second study sought to correct faults and answer criticisms of the previous report. Based on their sample of 922 alcoholics contacted four years following their initial contact with an ATC, the researchers concluded that some persons labeled as alcoholic may engage in drinking behavior without adverse consequences.

Each of these examples conforms to Kuhn's (1996) thesis that "novelty emerges only with difficulty, manifested by resistance, against a background provided by expectation" (p. 64). In each case, intense resistance followed presentation of the findings. The publication of Davies (1962) findings in the *Quarterly Journal of Alcohol Studies* was followed by the journal's publication of an unprecedented 18 commentaries from experts around the world, the majority of which were critical of Davies and his research. Following the report of their findings, the Sobells were accused of fraud. The controversy surrounding their findings was to such an extent that it was reported in a *New York Times* article and the subject of a special report on *60 Minutes*. Similarly, the Rand Report was condemned as dangerous and unscientific. The conclusion regarding normal drinking was described as unethical, unprincipled, and likened to playing Russian roulette with the lives of human beings. It was even suggested that the report should have been suppressed (Heather & Robertson, 1997).

The Davies study (1962) also illustrates Kuhn's (1996) observation that "initially, only the anticipated and usual are experienced even under circumstances where anomaly is later to be observed" (p. 64). Prior to Davies, a number of published studies (DeMorsier & Feldman, 1952; Harper & Hickson, 1951; Lemere, 1953; Moore, & Ramseur, 1960; Selzer & Holloway, 1957; Shea, 1954) reported the occurrence of resumed normal drinking in diagnosed alcoholics, however, the earlier studies were not accompanied by controversy. Perhaps, this was because Davies was the first to draw attention to the phenomena as an anomaly (Heather & Robertson, 1981).

Each of the three controversies is also consistent with Kuhn's (1996) observation that it is scientists, either very young or new to the field who, being little committed to the paradigm's rules of normal science, conceive of another set which can replace them. At the time of Davies' discovery, he was not particularly interested in alcoholism, other than as one component of general psychiatry (Heather & Robertson, 1997). It was perhaps this lack of specialization in treating alcoholism that allowed him to see beyond paradigm-induced expectations. In the case of the Sobells, at the time that they became interested in experimenting with controlled drinking treatment he was just completing his Ph.D. in experimental psychology and she was an undergraduate. Both were neophytes in the alcoholism research and treatment community. Similarly, the Rand Report was a product of the Rand Corporation, a private organization specializing in broad social science research to improve public policy, not specifically, alcoholism research.

The Response to Crisis

Kuhn (1996) states that just as the awareness of anomaly plays a role in the emergence of new sorts of phenomena, it is also a prerequisite to all acceptable changes in theory. The anomalous discovery is both destructive and constructive. Sometimes anomaly will call into question explicit and fundamental generalizations of the paradigm. Early attacks on the resistant problem will have followed the paradigm closely. With continuing resistance, however, more and more of the attacks upon it will have involved modified articulations of the paradigm, no two of them exactly alike. Though there is still a paradigm, few practitioners prove to be entirely agreed upon what it is. The awareness of anomaly opens a period in which conceptual categories are adjusted until the initially anomalous has become the anticipated. Assimilation of anomalous findings permits a wider range of natural phenomena to be accounted for. But this only occurs by discarding some previously standard beliefs, and simultaneously replacing those components of the previous paradigm with others. Kuhn (1996) further notes that a scientific theory is declared invalid only if an alternate candidate is available to take its place. When confronted by anomaly, scientists devise numerous ad hoc

modifications of their theory in order to eliminate any apparent conflict. By proliferating versions of the paradigm, crisis loosens the rules of normal science in ways that ultimately permit a new paradigm to emerge. That proliferation of versions of a theory is a characteristic symptom of crisis.

In the decades since the first awareness of anomaly, numerous modifications have resulted in a proliferation of definitions of alcoholism (American Psychiatric Association, 1987, 1994; Criteria Committee, National Council on Alcoholism, 1972; Edwards & Gross, 1976; Morse & Flavin, 1992; Seixas, Blume, Cloud, Lieber, & Simpson, 1976; World Health Organization, 1981). A number of studies have even examined the impact of the differential use of these definitions (Bjurulf, Sternby, & Wistedt, 1971; Boyd, Derr, Grossman, Lee, Sturgeon, Lacock, & Bruder, 1983; Boyd, Weissman, Thompson, & Myers, 1983; Meyer, 1986; Rollnick, 1982). In response to this proliferation of versions of the paradigm, the Joint Committee of the National Council on Alcoholism and Drug Dependence and the American Society of Addiction Medicine undertook a two-year study of the definition of alcoholism in light of contemporary scientific knowledge (Morse & Flavin, 1992). The result was the creation of a consensual definition of alcoholism that was deemed to be "scientifically valid, clinically useful, and understandable by the general public" (p. 1012). The following is the 23-member multidisciplinary committee's definition:

"Alcoholism is a primary, chronic disease with genetic, psychosocial, and environmental factors influencing its development and manifestations. The disease is often progressive and fatal. It is characterized by impaired control over drinking, preoccupation with the drug alcohol, use of alcohol despite adverse consequences, and distortions in thinking, most notably denial. Each of these symptoms may be continuous or periodic" (Morse & Flavin, 1992, p. 1013).

While this new definition does not suggest radical revision of the disease paradigm, it does incorporate modifications that permit the paradigm's assimilation of the previously anomalous findings. As previously stated, two of the pillars of the original disease paradigm, that alcoholism is progressive and characterized by loss of control over drinking behavior, have been called into question due to anomalous findings (Armor et al., 1976; Davies, 1963; Sobell & Sobell, 1976). By stating that the

disease is "often progressive and fatal" and that the symptoms of alcoholism may be "continuous or periodic," the new definition allows for the possibility that the progression of the disease may be abated and that some persons with alcoholism may return to drinking without adverse consequences. Additionally, the original disease paradigm emphasized the physiologic and genetic sequelae of alcoholism, failing to recognize the spectrum of biopsychosocial factors that influence its development (Morse & Flavin, 1992). By stating that alcoholism is a disease with "genetic, psychosocial, and environmental factors influencing its development and manifestations," the new definition acknowledges the multidimensional origin of alcoholism.

Resolution of Crisis

According to Kuhn, all crises begin with the blurring of a paradigm and the consequent loosening of rules for normal research and close in one of three ways. First, normal science may prove ultimately able to handle the crisis-provoking problem, despite the despair of those who have seen it as the end of an existing paradigm. Second, the problem may resist new approaches and be set aside for a future generation. Third, a crisis may end with the emergence of a new candidate for paradigm. The consensus definition suggests that it is the first option that has occurred in the United States. Modifications to the disease paradigm's structure have permitted the U.S. treatment community to maintain the disease model as paradigm by allowing the formerly anomalous to be expected. Regardless of the outcome, when confronted with anomaly or crisis, scientists take a different attitude toward the existing paradigm, and the nature of their work changes accordingly. A paradigmatic crisis results in a proliferation of modifications and competing theories, a willingness to try anything, expression of discontent, recourse to philosophy and debate over fundamentals of the paradigm, each of which has occurred in the course of the disease model's paradigmatic crisis. Kuhn (1996) states that each of these responses to crisis is a symptom of transition from normal to extraordinary science.

The paradigmatic crisis experienced in the alcoholism research and treatment community has had a number of beneficial

impacts on the field. First, it has strengthened the view that a dichotomy between alcoholic and not alcoholic is no longer valid. Instead, alcoholism should be viewed on a continuum of severity (Anderson, 1995). Second, there has been a shift from seeing alcoholism as a unitary, biological disease to viewing it as a multidimensional phenomenon in which biological, psychological, and sociocultural factors interact to produce illness (Kahler, 1995; Wallace, 1990). Third, as a result of the previous two impacts, a broadening of the base of treatment, including prevention and primary care approaches, has occurred, although the dominant approach to treatment continues to be abstinence oriented (Weisner, 1995).

Summary

This paper provides evidence that the disease model of alcoholism conforms to Kuhn's conception of a paradigm in crisis, the purpose of which is to provide insight regarding the U.S. treatment community's reluctance to relinquish the disease model in favor of alternative conceptualizations of alcoholism. With the work of Jellinek, (1952, 1960), the disease model emerged as a paradigm, providing the field of alcoholism research and treatment with shared beliefs and expectations regarding the nature of alcoholism. The anomalous discovery made by Davies (1962) and replicated by others seriously challenged these shared beliefs and expectations resulting in a crisis marked by considerable resistance. Numerous ad hoc modifications have permitted the alcoholism research and treatment community in the United States to assimilate the anomalous findings, permitting a wider range of anticipated findings, and maintaining the disease model as paradigm. Given the priority of paradigms and the hold that they have on the community of scientists and practitioners whose work they guide, the steadfast allegiance to the disease model within the U.S. is not as surprising nor sinister as some critics propose.

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