

A poor farmer's horse ran off into the country of the barbarians. All his neighbors offered their condolences, but his father said, "How do you know this isn't good fortune?"

After a few months the horse returned with a barbarian horse of excellent stock. All his neighbors offered their congratulations, but his father said, "How do you know this isn't a disaster?"

The two horses bred, and the family became rich in fine horses. The farmer's son spent much of his time riding them; one day he fell off and broke his hipbone. All his neighbors offered the farmer their condolences, but his father said, "How do you know this isn't good fortune?"

Another year passed, and the barbarians invaded the frontier. All the able-bodied young men were conscripted, and nine-tenths of them died in the war.

Thus good fortune can be disaster and vice versa.

Who can tell how events will be transformed?

Huai Nan Tzu

# 1. In Search of Integration

## 1.1 Background

The leitmotif of my professional life has been helping those who live at the edge of society, and who therefore suffer the consequences of discrimination and exclusion. This has included homeless people, sexual and ethnic minorities, the mentally ill, and the destitute. It is precisely these groups who have been most affected by the AIDS epidemic, which resulted in AIDS prevention becoming an ongoing concern of my work, regardless of the various roles and settings in which I have been employed. In our day, AIDS is the most dramatic and tangible expression of an ageless story of how social disadvantage predisposes some to greater suffering and an earlier death as compared to more privileged others.

The original question which I brought to this dissertation was a practical one: Which interventions are most effective in preventing the spread of HIV? I was most interested in the activities of the non-governmental sector because it is the NGOs which have focused on the needs of the most vulnerable populations. I limited myself further to considering only the sexual transmission of the disease (as opposed to needle-sharing, blood transfusion, etc.) so as to concentrate on the most common way of passing on the virus. I began by systematically collecting evaluation studies from the international literature and other sources with the intention of conducting a meta-analysis according to the standards of the Cochrane review process. Equipped with the most modern tools of evidence-based medicine I hoped to provide detailed answers to the question of what works and under which circumstances.

Having assembled nearly 200 articles and reports meeting my search criteria I became increasingly disappointed and frustrated with my findings. It was not so much the wide range in quality and design among the studies, nor was it the relatively limited scope of the interventions which disturbed me. The primary problem was the great disparity between theoretical and philosophical (epistemological) assumptions in the literature and the experience of the groups most vulnerable to the spread of AIDS. The largely behavioral and individualistic approaches did not speak to social exclusion as a fundamental cause of disease vulnerability, as observed in my practical experience and as reported in the broader public health literature.

The topic of this dissertation thus gradually shifted from a consideration of specific outcomes to an examination of the foundation on which such outcomes were conceptualized and evaluated in regard to interventions for marginalized groups. This resulted in the following reformulation of my research question: How can community-based interventions for vulnerable populations be most adequately evaluated? I thought I would find an established school of thought with which I could align myself, but discovered instead a cacophony of voices arguing for differing methodological approaches, often based on only partially articulated assumptions about the nature of the problem and its solution. This spurred me to cull the broader scientific literature for analytic paradigms which could provide new ideas for conceptualizing and implementing evaluations of prevention activities so as to take into account the various levels of causality underlying the phenomenon of HIV transmission.

My search for a theoretical framework came to an end when I discovered *complexity theory*. This relatively new approach to scientific knowledge was itself not in a ready-made form which I could directly adapt to a public health context. I needed to consult a variety of sources to achieve a synthesis which could be applied to the question at hand. On the basis of a second reading of the evaluation literature through a complexity perspective, I went on to outline an approach to evaluation research incorporating core elements of complexity theory. The resulting model includes many conventional elements, but the focus is placed on a broader view of causality and its measurement.

The work as a whole is my attempt to integrate the often disparate worlds of human suffering and social theory, practice and research, utility and intellectual integrity. My hope is to have contributed to the international discourse on the practice and evaluation of community-based HIV prevention by helping us to move from a narrow focus on a handful of methods and variables to considering the larger dynamic of the HIV epidemic, which includes both social and biological components. Complexity theory has opened my eyes to an exciting point of view, which raises new questions concerning strategy and process. If I have been successful in motivating the reader to consider re-thinking the HIV epidemic in complex terms and to experiment with what such a conceptualization may mean for the future of research and practice, then my most important goal has been achieved.

## 1.2 Overview of Chapters

Chapter 2 describes the problem presented by the sexual transmission of HIV. Background information about sexuality, HIV transmission, community-based HIV prevention, and the AIDS service movement is presented based on international research and practice and German sources. The multi-level nature of the problem of HIV transmission and the unique history and structures of AIDS prevention are made apparent.

In Chapter 3 the current theory and practice of evaluation research with regard to community-based HIV prevention is critically reviewed. Basic concepts are defined and central themes within the current discourse are discussed. Within this chapter the divergence of views becomes apparent as does the lack of a common foundation for the development of evaluation theory and practice in this area.

Complexity theory is introduced in Chapter 4 as an alternative to more conventional approaches to scientific research. The theory is explored using a diversity of sources which are, in turn, applied to examples from the public health literature. The cross-disciplinary comparisons make clear that complexity thinking is already present in several areas of research, including public health—if under a plethora of names and without a unified description. This chapter is designed to serve as a foundation for the further development of complexity theory for public health applications.

Chapter 5 is an excursion in a sort of *gedankenexperiment* with the assistance of data generated from a computer based simulation of the male prostitution scene in a mid-sized German city. Using agent based software a virtual world of male street prostitutes and their clients is created in which HIV is transmitted according to certain rules. The construction of the simulation itself, the patterns of HIV spread, and the results of virtual interventions to stop the spread of HIV are presented as an application of complexity theory to a concrete situation. This exercise demonstrates the potential of complexity theory as a conceptual tool for model building.

Chapter 6 draws the main points of all previous chapters together in order to describe the evaluation of community based HIV interventions from a complexity perspective. Both theoretical and practical issues are considered and the steps in a complex evaluation process are described.

In Chapter 7 we close with an exercise of the imagination, exploring the potential of complexity theory as a new metaphor for public health research and practice.