Chapter 3. To Theorize or Not To Theorize: Anthropological Research in Drugs and AIDS

J. Bryan Page and Robert T. Trotter II

ABSTRACT

Anthropology's atheoretical stance in its inductive approach to scientific inquiry has proven advantageous in its interactions with other disciplines. Transdisciplinary studies that involve anthropologists in solving research problems related to human behavior have benefited from contributions by coinvestigators whose disciplinary backgrounds form a complementary configuration of interests and capabilities. Specific examples of this complementary relationship include, for example, studies that characterize HIV contamination in the syringes of injection drug users, risk of mortality in coinfection, and the prediction value of immune markers. Theory related to anthropology's fundamental paradigm of culture has provided conceptual frameworks for studies of specific complexes of behavior. Large-scale initiatives funded by the National Institute on Drug Abuse provide numerous examples of successful applications of midlevel anthropological theory in studies that focus on HIV-related risk among drug users. Together, theories of culture change, cognitive domains in culture, and social structure have formed frameworks for research on risk of HIV infection and prevention of that risk. Both transdisciplinary studies involving anthropologists who take atheoretical approaches to inductive research and theoretically framed anthropological studies utilizing midlevel theories have made substantial contributions to knowledge about drug users and the consequences of drug use.

Key words: Transdisciplinary research, anthropological theory, cultural paradigm, midlevel theory, HIV risk and drug use

INTRODUCTION

This chapter cites examples of research projects on drug use and acquired immunodeficiency syndrome (AIDS) that to varying degrees combine the capabilities of disparate scientific methods and

link them to health outcomes and other aspects of the human condition. The projects described here derive their strength from the cooperation of multiple disciplines. Most importantly for the issues of concern in this research volume, anthropological inquiry provides both specific information and overall guidance in the production of useful and theoretically relevant results.

Anthropological contributions to the study of drug use have taken two different forms: (1) the traditional, lone anthropologist who gathers predominantly qualitative data to improve our understanding of drug-using behaviors and (2) anthropologists who work as members of a team comprising scientists from various disciplines and who focus their attention on one set of research questions. The work presented in this chapter consists primarily of the latter variety of anthropological endeavor. Two approaches to anthropological research have dominated this type of inquiry: (1) theory building, or "atheoretical" approaches, and (2) approaches that develop and apply midlevel anthropological theory. The following discussion provides explanations and examples of both kinds of anthropological inquiry, pointing out their contributions to the literature on drug use and highlighting the contributions of the National Institute on Drug Abuse's (NIDA) Cooperative Agreement Program, especially in terms of midlevel theory.

THEORY BUILDING (ATHEORETICAL APPROACHES)

In many fields, specialization among scientific disciplines has led to intensive elaborations of highly specific methods to extract information in minute detail on closely defined phenomena. In an age that has encouraged specialization, the disparate capabilities found among narrow fields of inquiry often work in isolation, fomenting their own bodies of theory, literatures, and orthodoxies. Much of the research conducted in medical schools, research institutes, and corporate research and development laboratories operates within well-defined boundaries of established disciplines. In the context of transdisciplinary research, however, highly developed but narrow disciplines can form synergistic relationships that reunify the laboratory result with the human condition. In this context, the anthropological approach to inductive research often uses an atheoretical, or theory-building, point of view.

The attempt to build theory while gathering data begins with the advantage of researcher openness to a wide variety of possible findings, but it has the disadvantage of seeming directionless. Inductive studies, whether conducted by sociologists (Strauss and Corbin 1990) or anthropologists (Agar 1986, 1996; Spradley 1997), start out with few assumptions about how the phenomena to be studied fit together in causal or other explanatory schemes. The lack of assumptions encourages the investigator to collect information and examples of the studied phenomena wherever and in whatever condition they may be found.

Not surprisingly, much of what the investigator collects may seem only tangentially related to the phenomena of interest, but this process allows the investigator to differentiate among the phenomena of interest and other phenomena. For example, in the study of needle use among injection drug users (IDUs), it became clear through participant observation that needle "sharing" was inadequate as a descriptive term for use of contaminated injection paraphernalia (Page 1990). By not accepting the term "sharing," which had general acceptance among health researchers (Magura et al. 1989) before going into the field, it was possible for the investigator to identify more accurately the kinds of risky behavior that took place among IDUs. These behaviors included use of "pooled" syringes (syringes stored in a common receptacle such as a basket or coffee can) (Page et al. 1990*a*), transfer of drugs from syringe to syringe (Inciardi and Page 1991), use of common water containers (Page and Smith 1990; Page et al. 1990*c*), and "cookers" (receptacles used for mixing and heating a drug solution) (Page et al. 1990*a*). Sharing—in the sense of passing a used needle from one person to another—did not occur in any of the observational settings reported in these articles. Subsequent investigations by Koester (1994) and Jose and colleagues (1993) have supported the concept of "indirect contamination" by these and other means.

Atheoretical approaches to research on drug abuse predated AIDS research. Agar's *Ripping and Running* (1973) provided a useful and highly instructive map of the process of "getting off" (alleviating the craving for more drug) through use of free listing and pile sorting techniques designed to discover the key components of self-injection behavior and array them in an emically logical sequence.

Somewhat later, atheoretical research took on interdisciplinary components in the study of cannabis use and its consequences

(Carter 1980; Rubin and Comitas 1975). Rubin and Comitas (1975) pioneered the participation of various disciplines in a single study of cannabis use in Jamaica, although the medical and sociocultural substudies recruited separate populations. Carter's (1980) research team conducted a study of the effects of long-term marijuana smoking in Costa Rica. Their research combined the strengths of several specialized disciplines to achieve a unified view of cannabis' effects through examining the health statuses and careers of a single group of long-term smokers. Two examples of interdisciplinary collaboration in this study include the following: (1) The psychometric component used as a framework for some of its analyses a typology of marijuana smokers developed by the anthropological component (i.e., assigning group membership according to the typology and comparing among groups for differences in personality profile), and (2) the anthropological component used findings of several other components in summarizing lifestyles of the study population (Carter 1980). Additional studies supported by NIDA focused on cognitive function and work performance (Fletcher et al. 1996; Page et al. 1988), but always maintained an interdisciplinary approach with attention to the cultural contexts in which the study participants lived. When the AIDS pandemic progressed to the point of general alarm, some of these investigators became involved in already active interdisciplinary efforts to understand how people incur risk of human immunodeficiency virus (HIV) infection.

The need for access to populations engaged in behavior that places them at risk also helped bring disparate disciplines together in response to the AIDS pandemic. Anthropologists who had received funding from NIDA to study street-based drug users became especially important in the effort to understand the epidemic among IDUs in terms of the kinds of risks incurred (Page et al. 1990*a*).

Transdisciplinary Study of HIV

Risk of HIV infection among IDUs attracted attention in the AIDS literature, especially because once the source of immunosuppression was known (i.e., a retrovirus that spends much of its life cycle within the cell), it became obvious that prevention of exposure would have a better immediate chance of preventing disease than would a vaccine.

Interdisciplinary study of the nature of risk had left major questions unanswered regarding the state in which pooled needles and syringes (hereinafter referred to as "works") available to drug users in "safe

houses" (sites where IDUs can inject drugs in privacy and obtain syringes and other necessities for injecting) or "shooting galleries" (safe houses) pass from user to pooling container to user. Chitwood and colleagues (1990), on the strength of the observations of Page and coworkers (1990*a*), set out to determine how risky pooled works were. A field team collected works from several different "get-off" houses (Miami, FL, term for safe houses) and sorted them by appearance and functionality. The laboratory team developed a strategy to apply water to the syringes that still had operative plungers to obtain a sample from each syringe. Team members then tested the water that had been placed in the syringe for evidence of the HIV antibody by means of the highly sensitive enzyme-linked immunosorbent assay (ELISA). The result of this collaborative effort, which could be termed "transdisciplinary," suggested plans of intervention that focused on the proprietors of get-off houses (Chitwood et al. 1990). Transdisciplinary research denotes several disciplines working toward a unified goal in which the product cannot be identified with any single discipline.

Among the investigations conducted pursuant to the study of serostatus in needles, viability of virus in needles and syringes demanded early attention. A molecular biologist and his staff (Shapshak et al. 1994) teamed with sociologists, an anthropologist, and a pharmacologist to investigate how effectively bleach neutralized active HIV in syringes. To frame experiments that resembled the behaviors of IDUs, the team relied on the observations of the anthropologist and the workers who conducted outreach for a large intervention study. The observations provided a basis for instructing the laboratory staff on what kinds of needles to test, how to expose the needles to HIV, and how to approximate the behaviors of the users in rinsing their works. Results from this study suggested that IDUs needed instructions on how long to hold chlorine bleach in the works to ensure neutralization of the virus. If the virus in the syringe had fewer than 30 seconds exposure to full-strength household bleach, the laboratory was able to culture viable HIV from that syringe. In syringes with exposures of longer than 30 seconds, the laboratory could not culture viable HIV. This result increased the specificity with which health educators could frame instructions to IDUs on cleaning syringes and other paraphernalia.

Pursuant to that study, the same team members (Shah et al. 1996) came together to conduct tests on the other paraphernalia used in injecting drugs. They found that the aluminum bottle caps used to

heat or dissolve heroin and cocaine, the filters through which the drugs are drawn into the syringe, the water used for mixing drugs, and the water used for rinsing all had detectable evidence of the presence of HIV. This research team had recognized a cultural context in which works were not the only possible vehicles for contagion. Furthermore, the testing of "clean" water, which is used only to mix drugs (Page et al. 1990*a*), also had demonstrable presence of HIV.

Similar collaborations have taken place in Connecticut, where Heimer (a virologist) and Singer (an anthropologist) have joined forces on two projects—one that evaluated the Hartford syringe exchange program (SEP) and one that studied the diffusion of benefits of SEPs (Heimer et al. 1997; Singer et al. 1997). Both studies included an assessment of contamination of syringes that had been marked with bar codes before distribution by the SEP. The first study (Heimer et al. 1997) analyzed syringes that were collected by the SEP, and the second (Singer et al. 1997) analyzed syringes that were collected in known injection locations in the community. These studies hold promise for advancing the understanding of how SEPs affect not only the risk of IDUs for HIV infection but also the risk found in the surrounding community environment, a continuation of work begun in 1991 on community context of risk (Singer et al. 1991, 1992). These investigators have also published work on the impediments to implementing syringe exchange (Heimer et al. 1996).

Recently, Page and Salazar (1999) found a widespread pattern in the mixing of heroin that capitalized on already established interdisciplinary cooperation. Whereas heroin users in the rest of the world dissolve heroin by heating and mixing it in water, heroin users in Valencia, Spain, mix it with two or three drops of lemon juice before adding water and injecting. This observation required the investigators to test the pH of the lemon juice solution and investigate the solubility of heroin compared with that of other opiates. The investigators were able to answer these questions rapidly, because a collaborating biochemist tested the pH and a collaborating pharmacologist found indices of solubility for various opium-derived drugs in the literature. The initial findings suggest further directions for the study of lemon juice and HIV risk. Lemon juice in the concentration usually found in Valencian drug doses produces a relatively high level of acidity (pH=2.77), but because of the high solubility index of pure heroin (1.6 parts water to 1 part heroin), the juice appears to be necessary only to dissolve the

adulterants in preparation for self-injection. Additional studies will examine the processes of heating heroin and compare them with those of adding lemon juice to determine what impact they have on the viability of the virus. Additional considerations for future research will include determination of interactions between heroin and lemon juice and presence of pathogens in lemons reused by "chutadero" (the Spanish name for shooting gallery) clients.

Transdisciplinary Study of HIV Progression to AIDS

Joint NIDA and National Institute of Mental Health funding of a multidisciplinary center for the study of AIDS provided a unique environment for development of transdisciplinary perspectives on HIV infection and its progression to AIDS. The Center for the Biopsychosocial Study of AIDS drew participation from a wide range of disciplines, including immunology, psychiatry, psychology, internal medicine, biostatistics, anthropology, sociology, social work, neuroendocrinology, nutrition, and pediatrics. At the suggestion of a pediatrician, Page and colleagues (1990*b*) investigated the seroprevalence of human t-cell lymphotropic virus type II (HTLV-II) in a cohort of IDUs and discovered that 23 percent of the cohort had HTLV-I or -II. Furthermore, on followup with those who were coinfected, they found that a high proportion had died of AIDS. This accidental finding led to further analysis using proportional hazards modeling (a form of survival analysis), which indicated that coinfected individuals were more than three times as likely to die in a comparable period of time than individuals with no coinfection (HIV alone). Subsequent studies of immune parameters among IDUs suggested that different conditions of retroviral infection were associated with different immune statuses (Klimas et al. 1993). These results led to additional investigations that combined monitoring of risk behavior, immune status, nutritional status, and health status.

Page and coworkers (1996) have used survival analyses to show that immunoglobulin G (IgG) is an important predictor of health outcomes in IDUs with HIV infection, in some cases overriding the importance of CD4+ cell counts. Detailed prediction of health outcomes among North American IDUs has received relatively little attention in the literature, but these and other studies clearly indicate that clinical approaches to AIDS patients who are IDUs need to anticipate responses to AIDS and immunosuppression that differ from those of AIDS patients who are not IDUs.

Behaviorally, IDUs who become AIDS patients have their own patterns of response to treatment and medication (Smith and Page 1996). In a study of 20 thoroughly characterized IDUs who had presented with AIDS-defining illnesses, the investigators took advantage of long-term, regular interaction with IDUs to examine how they gained access to treatment and medication, how they adhered to treatment regimens, and how they lost access to treatment and medication. Their most consistent sources for antiretroviral (reverse transcriptase-inhibiting) medications were prison infirmaries. Once the study participants were released from prison, they lost reliable access to these medications. Availability of data on blood levels of zidovudine, immune parameters, health status, and risk behaviors helped make this study possible, a product of ongoing collaboration of anthropologists with various other disciplines.

THEORY IN ANTHROPOLOGICAL INQUIRY

A substantial volume of anthropological and other ethnographic theory forms a solid base for understanding not only single cultural traditions but also the similarities and differences between cultural traditions. These conditions are well established and have been well critiqued in the anthropological literature. Nevertheless, pragmatic classification of these theories can place them into five cultural themes and their accompanying critiques and dialectics. The theoretical discussions include:

1. Evolutionary theories that focus on the cultural parameters of "change through time"

2. Cognitive theories that promote the exploration of the relationships among thought processes, beliefs, emotions, knowledge, and so forth and the observable behaviors that individuals exhibit

3. Theories about the organization of human behavior beyond the individual level (e.g., kinship, social networks, associations)

4. Theories of human manipulations of symbols (e.g., symbolic anthropology, communication theories)

5. Theories that explore cultural-ecological relationships (biology and behavior interactions at multiple levels), including

relationships of humans to their biological and physical environments

The parallel development of consistently evolving ethnographic research methods—including "participant observation" and other multimethod, multitechnique approaches to ethnographic data collection—has enhanced these theories. Methodological developments have led to increasingly sophisticated definitions, systematic conduct, computer-assisted analysis, and practical application of enhanced methods (Agar 1986; Bernard 1988; Pelto and Pelto 1978; Strauss 1987; Weller and Romney 1988; Werner and Schoepfle 1987). Some of the NIDA Cooperative Agreement sites have presented an overview of their methodological work in the NIDA monograph *Qualitative Methods in Drug Abuse and HIV Research* (Lambert et al. 1995).

Key advances also have improved ethnographic sampling designs. Johnson (1990) provided the first thorough exploration of the similarities and differences between the probabilistic sampling used in surveys and experimental designs and the purposive sampling strategies necessary for successful qualitative research. NIDA's Cooperative Agreement Program advanced these concepts for the multifocal research required for HIV and drug abuse intervention programs (Bluthenthal and Watters 1995; Carlson et al. 1994; Elwood et al. 1995; Siegal et al. 1993).

All of the midlevel theories described below assume that the qualitative sampling designs have been correctly constructed for the intent of the project and that the special conditions necessary for ensuring reliability and validity in ethnographic research have been accommodated.

The Cooperative Agreement Program as an Arena for Development and Application of Midlevel Theory

One of the comprehensive examples of the use of successful ethnographic approaches to HIV risk reduction is found in the NIDA Cooperative Agreement Program. This program funded 23 sites (22 domestic and 1 international), which shared the common goals of establishing the epidemiological characteristics of active drug use in the United States, identifying the key characteristics of HIV transmission risks for active drug users, and testing the efficacy of locally designed HIV interventions against a nationally established

NIDA standard intervention (a combination of HIV counseling, testing, and information). From the beginning of the program, ethnographic research methods and theories were considered an essential part of the theoretical and methodological tools being applied to these issues. More than half of the Cooperative Agreement sites maintained an ongoing ethnographic research program as an adjunct to and an expansion of the psychosocial and epidemiological research methods that were also utilized within the Cooperative Agreement Program design.

The ethnographic research programs within the Cooperative Agreement sites utilized a diverse set of midlevel anthropological theories, which allowed them to

- Describe the cultural models of health and illness that provide a framework for understanding individual and group knowledge and beliefs about HIV infection and transmission dynamics
- Monitor both the stability and the change in drug use practices among different cultural groups
- Identify the key social contexts in which cultural beliefs and values are turned into action
- Establish the intervening conditions that either allow for change (protective forces) or prevent change (barriers) in risk behaviors
- Understand the cultural-environmental and the political economy of drug use, HIV infection, and the behaviors associated with risk taking in a broad sense
- Provide a theoretical framework for determining the decision making and sustainable actions of the group and identify the conditions necessary for sustained maintenance of behavioral change for individuals
- Identify the symbolic and communication conditions imposed by cultural systems that relate to health behavior and behavioral change
- Either initiate or restructure culturally competent and effective interventions at the individual and group levels

The Cooperative Agreement Program structure also facilitated multisite ethnographic research programs that followed the same data collection protocols, which could be more fully generalized across geographic regions and compared within and between cultures in different locations in the United States. These multisite ethnographic projects were extremely valuable in assessing larger social conditions and trends beyond the reach of single-site investigations. Each of these programs, projects, and processes was informed by both "grand" ethnographic theory and midlevel theories of cultural processes. The following sections summarize some of the theoretical constructs that were developed and tested within the context of the Cooperative Agreement Program.

Midlevel Theory and the Cooperative Agreement Program. Several recent Cooperative Agreement Program studies exemplify the use of anthropological theory to assess change through time. Booth and colleagues (1993) provide a model for combining qualitative and quantitative measures of behavioral change in risk-taking behavior through time at the community level, whereas Singer (1996) provides an evaluation of programmatic change through time on HIV prevention issues. Elwood and Ataabadi (1997) present a complementary use of diffusion theory in evaluating the impact of radio public service announcements at the local level, compared with individual-level influence.

Connections Between Internal (Cognitive) and External (Psychological) Approaches. Research on aspects of the internal-external connections between thought and behavior has developed predominantly within psychological anthropology and cognitive anthropology, although other approaches have also played a part in this area of midrange theory development. The midlevel theories that appear to be the most commonly used include the cultural models approach, cultural beliefs systematics, and cultural cognition (domain analysis). Specific examples of the use of a cultural model or cultural health beliefs model in the Cooperative Agreement sites include research on building culturally congruent prevention systems, which are more than models; they are structural programs that test the models (Weeks et al. 1996*a*) and gender-sensitive or congruent models for intervention programs (Weeks et al. 1996*b*).

Cultural domain analysis provides another arena within which midrange theories have been successfully applied to both research

questions and the development of HIV and drug interventions. These approaches represent excellent models for providing culturally competent, locally motivated information for HIV prevention, as in the case of a Puerto Rican study of what individuals wanted to know about substance abuse and AIDS education from risk-reduction programs. They can also provide key information for qualitative-quantitative bridges to find predictors of risk perception among female drug users (Singer et al. 1998) or explore the attitudes of active drug users toward needle sharing.

Systematic explorations of mental health and other illness domains can be pursued subsequently through the use of three interlocked cognitive anthropology methods, including (1) techniques for exploring the content and limit of cultural domains (e.g., free listings, sentence-frame completion, contrast sets); (2) techniques for establishing structural and cognitive relationships among the elements of cultural domains (e.g., pile sorts, dyad and triad tests, Q sorting, matrix profile analysis); and (3) techniques for establishing the cultural consensual framework for these systems of knowledge and belief (Trotter 1991, 1995; Weller and Romney 1988). These techniques are amenable to use in a standard pretest/posttest design to analyze changes in cultural models or cognition over time. Many of these techniques provide a format for systematic ethnographic rapid assessment. They also provide a methodological basis for bridging between ethnographic and standard survey or experimental (quantitative) research designs, since they are typically analyzed using both qualitative (description of meaning) and quantitative (cluster analysis, multidimensional scaling, correspondence analysis) algorithms. For example, Trotter and Potter (1993) conducted an HIV risk pile sort with Navajo teenagers, using a list of risks that had been generated in focus groups and ethnographic interviews with Navajo cultural consultants. The results demonstrated that the students were linking risks within bounded risk areas (e.g., drug risks, school risks, violence risks) and that the linkages between those areas were weakly associated. The models of risk for the teenagers were valuable in constructing HIV and other risk prevention programs. These techniques permit ethnographers to produce greater analytical breadth and depth of detail and make rapid-assessment ethnography feasible in ways that have not been possible before.

Social Organization and Structure: Cultural Context Research. The bulk of health-related research has focused on either individuals

and their attributes or population samples collected through probabilistic sampling procedures. Although these approaches have a number of strengths, their weaknesses are twofold. First, the cultural context of health problems is all too often ignored by individual-centered approaches. Second, people spend a significant portion of their lives within the context of small interactive groups, where their behavior may be affected as much or more strongly by the group than by any individual characteristic that they bring to the group. Anthropological midlevel theory has been highly productive in establishing the importance of cultural contexts and the organization and structure of human systems. These approaches derive from theories of kinship and social network analysis and the impact of cultural structures on human behavior.

Ethnographic network mapping allows an ethnographer to describe the participants, behaviors, kinship and friendship ties, and consequences of small "bounded groups" (groups with clearly defined network links within a geographic area) in a community, through extensive qualitative interviewing at the community level. The composite ethnographic characteristics of the networks can be used to create a "drug network" typology or classification system and can describe the individual and group context of drug use (such as crack houses, local manufacturing and distribution, etc.). Cooperative Agreement researchers (Trotter et al. 1994, 1995*a*, 1995*c*; Williams and Johnson 1993*a*, 1993*b*) have demonstrated that this type of data is extremely useful for targeting intervention and education activities for the highest risk groups, based on multiple risk criteria. The data can also provide important information about the subepidemics that are likely to be part of drug use in network groups (Trotter et al. 1994; Williams and Johnson 1993*b*).

The NIDA Cooperative Agreement projects have tested some useful midlevel theories to identify network structural elements. These findings provide public health measures of HIV and drug risk conditions (Trotter and Baldwin 1995; Trotter et al. 1995*b*) as well as epidemiological comparisons of HIV risks within the personal network context in cities around the United States (Williams et al. 1995*a*, 1995*b*).

Cultural Ecology, Critical Anthropology, and Cultural Epidemiology. The midlevel theories related to cultural ecology, critical anthropology, and cultural epidemiology that are currently being tested by participants in the Cooperative Agreement Program include barriers to change research (environmental factors research), cultural congruency models (conflicts in belief and process), human-biological interactions research, comparative cultural models research, deconstructionist models, critical theory approaches, and studies of the political economy of health and illness (Hill 1991; Lambert et al. 1995; Singer and Baer 1995). Cooperative Agreement participants have provided a wide range of evidence for the effectiveness of midlevel theory in the areas of critical theory, cultural ecology, and HIV risk reduction. These range from more theoretical constructions (Singer 1994*a*), to models for application of the theories (Singer 1995) and the politics of HIV research (Clatts et al. 1994; Singer 1994*b*).

Observational studies—direct observation of behaviors to determine the impact of the environment on behavior—constitute the primary methodology needed to accomplish the research goals of ecological or critical studies. Some of these studies have targeted the results of prevention or behavioral change programs and culturally competent interventions in risk-taking behavior. A linked series of studies of needle-sharing and needle-hygiene practices supported by NIDA exemplifies midlevel theory combined with observational methods in a cultural ecological context. The component studies of this project focus on context-specific uses of injection equipment among IDUs in the United States, as part of HIV risk-reduction efforts for IDUs. Research that replicates and extends Page's work (Clatts 1994; Koester 1994; Page 1990; Page et al. 1990*a*, 1990*c*; Singer et al. 1991) explores both the meaning and the processes of injection drug use, needle sharing, and the public health consequences of drug paraphernalia laws (laws that restrict the possession of syringes that might be used for drug abuse). Later studies (Clatts et al. 1994; Koester 1995; Needle et al. 1996; Singer et al. 1995) explore in depth the microenvironmental consequences of needle hygiene and needle sharing. One example of the latter approach is the Needle Hygiene Project, conducted by the NIDA Cooperative Agreement Program (Koester 1994; Needle et al. 1996). These studies have led to changes in the recommended messages and training processes for HIV risk reduction among IDUs. Indepth qualitative methods, applied for sufficient amounts of time, allow researchers to achieve clear characterizations of how people interact and exchange key materials, such as drugs and the paraphernalia used to ingest drugs.

CONCLUSIONS

Anthropologists and other qualitative investigators who maintain a holistic perspective on their objects of study can help achieve needed assignment of meaning through participation in collaborative research efforts. The introduction of the phrase "assignment of meaning" denotes the process in which teams of scientists are both cautioned and edified in their studies of human beings. Firsthand knowledge of behaviors in cultural contexts that affect biomedical measurements and outcomes improves the construction of experiments in the laboratory and improves the analysis of epidemiologic data. Reciprocally, understanding biological processes and the likelihood of medical conditions that require care improves the qualitative behavioral scientist's grasp of the human condition under study. This kind of interaction has the effect on the anthropologist of reframing the observation and interpretation of behavior. For example, findings of cognitive deficits related to HIV infection (Wilkie et al. 1990) add perspective on observations of behavior among HIV-infected people. A street hustler who shoots heroin may encounter increasing difficulty in hustling because of the neurologic sequelae of HIV infection. The anthropological observer of that person could benefit by knowing that the hustler is HIV positive and has cognitive test results normally expected from a person three times his age. Overall, the knowledge acquired from these different perspectives—anthropological and neurological—can lead to a practical understanding of the impact of HIV in naturally occurring behaviors.

In the effort to understand and prevent drug abuse and its consequences, such as HIV infection, anthropologists working as qualitative behavioral scientists have much to offer to transdisciplinary teams of investigators, and their nonanthropologist colleagues likewise have much to offer. Most importantly, however, transdisciplinary teams as a whole offer the fields of drug use and AIDS studies the opportunity to advance those fields in ways that monodisciplinary, multidisciplinary, or interdisciplinary teams cannot.

Transdisciplinary scientific teams address the conceptual interstices of problems that require attention from more than one scientific frame of reference. In implementing a transdisciplinary approach to a problem, team members begin to internalize their colleagues' key paradigms, making hybrid paradigms of increased vigor and generalizability. The findings emanating from NIDA's Cooperative Agreement Program exemplify this kind of vigor and generalizability

in aggregates of predominantly behavioral scientists. In that particular company of scholars, it is especially important to use the theoretical tools described in this chapter to speak to other behavioral scientists about progress in research. The anthropologist in a mix of bench researchers, whether he or she uses an atheoretical stance or one that employs existing theories, can encourage colleagues to think about the total human condition, and the colleagues can encourage the anthropologist to add specific considerations of subcellular processes, immunologic activities, or any number of other paradigms to his or her holistic perspective. In this kind of interactive context, participants' identities as practitioners of specific disciplines blur, and their collective capabilities increase synergistically. For anthropologists, this process has the added attraction of extending appreciation for the anthropological view into other sectors of scientific research.

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AUTHORS

J. Bryan Page, Ph.D.
Professor and Chair
Comprehensive Drug Research Center
University of Miami School of Medicine
Suite 1108
1400 NW 10th Avenue
Miami, FL 33136
(305) 324-2700
(305) 284-2110 fax
bryan.page@miami.edu

Robert T. Trotter II, Ph.D.
Professor and Chair
Department of Anthropology
Northern Arizona University
Director
Flagstaff Multicultural AIDS Prevention Project
P.O. Box 5615
Flagstaff, AZ 86011-5615
(520) 523-5087
(520) 523-1600 fax
robert.trotter@nau.edu