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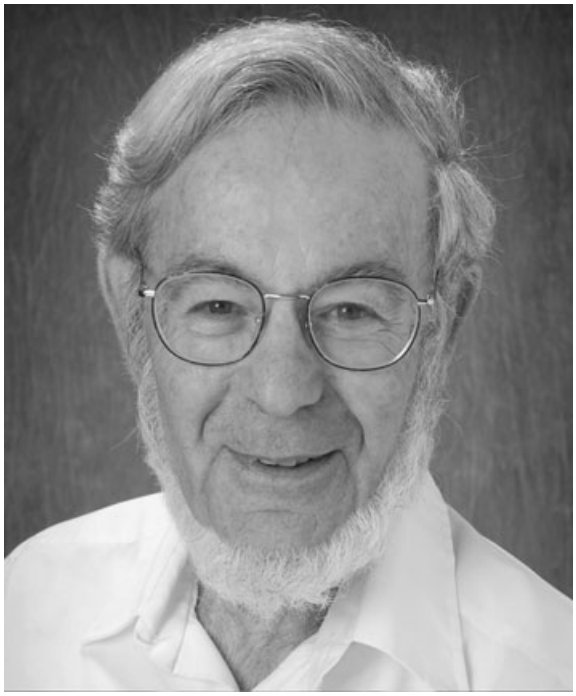
Conversation with Rudolf Moos



In this occasional series we record the views and personal experience of people who have specially contributed to the evolution of ideas in the Journal's field of interest. Rudolf (Rudy) Moos is a researcher whose work over many years has had a particular colouring of creativity and sensitivity toward the complexities of the human condition. His works have thrown much light on treatment processes.

EARLY YEARS: EMIGRATION AND IMMIGRATION

Addiction (A): Before we talk about your professional career, tell me something about your early life. What were your experiences growing up?

Rudolf Moos (RM): I had quite a difficult time in my childhood. I was born in Berlin, during the rise of National Socialism. My parents went to Italy to see whether life might be viable there, but decided it was not. After living in Berlin for a few years, I was hidden in a car and smuggled out of Germany into Belgium in the dead of night. I lived in Belgium with relatives for a few months until it became possible to immigrate to England. I was separated from my mother and father during much of this time, so it was quite a stressful upheaval, and I had a hard time adjusting to all the changes.

'I had quite a difficult time in my childhood. I was born in Berlin, during the rise of National Socialism.'

A: That is quite a story. How did you eventually get to the United States?

RM: At the beginning of World War II, I lived with my aunt and uncle in Birmingham, England, and I had some more problems at that time. London and other cities in England were being bombed, and the British decided that young children would be safer if they were evacuated into the countryside. So I was evacuated, but this entailed another separation from familiar people and surroundings. I became quite upset at this new change and was eventually taken back to Birmingham. Soon after, my parents and I obtained a visa to enter the United States. We were fortunate to be able to come directly to San Francisco, where we had a distant relative. It was then that I conjured up a Guardian Angel, who I thought must have helped me come through all these experiences.

A: How were the next years as you were growing up?

RM: I had a difficult time adjusting to the new circumstances. I was somewhat isolated and did not have many friends at school. I also was rather unruly and difficult to control. My family was quite poor at the time, and so I began to take odd jobs as soon as I could. My first job was to deliver newspapers; however, I was fired because I dumped all the newspapers into a neighbor's basement instead of delivering them. My saving grace was that I loved to read and I lost myself in historical and biographical novels. My high school experience was also not very pleasant. I was still not very well adjusted and had trouble fitting into school social life. I enjoyed my courses and did relatively well academically, but this was at a school where less than 5% of the graduates went on to university. For the 50-year reunion of my graduating class I was asked to recount my best experience in school, and I replied 'Graduation'. I think that just about sums it up.

REJUVENATION

A: So what happened after you graduated from high school? Where did you go as an undergraduate?

RM: At that time, there were not as many choices as there are now. In fact, my only two viable choices were the University of California at Berkeley or Stanford University, and I could not afford to go to Stanford. I went to the

University of California and, at around that time, my life took a turn for the better. I first lived with a family and helped with housework and childcare, so I had essentially free room and board. I enjoyed a few of my courses, and I did moderately well and was intrigued by some of the content, especially psychology. I also adapted much better socially; I joined a cooperative living group and later became House Manager and President, and was elected President of the Scholastic Honor Society.

A: What influenced your choice of graduate school and the field you specialized in?
RM: I was told I should go elsewhere to graduate school, but I had moved around so much earlier in my life that I was happy to stay put. So I stayed at the University of California and chose to pursue graduate work in clinical psychology; but my interests were much broader. I considered medicine and even entered Medical School for a brief time, but it was a little too practical and 'hands on' for my taste. I almost went into law, but decided that it was too abstract and impersonal. I loved history, and still do, but I wanted to live in the present and not the past. I chose psychology, because I thought it would enable me to study people and their motivations, to find out why some individuals were able to overcome severe life crises and live normal lives, and perhaps to apply my knowledge to improve the world. I had rather grand ideas about what I hoped to do.

A: What happened after graduate school? Where did you begin your research career?
RM: I took a postdoctoral fellowship at the University of California Medical Center in San Francisco that combined clinical and psychobiological training. I was always interested in the biological substrate of behavior and, in graduate school, I was a little unusual because I immersed myself in both clinical and physiological psychology. Mark Rosenzweig and David Krech had just shown that rats raised in enriched environments developed different brain structures and chemistry than rats raised in deprived environments [1,2]. I was fascinated by these findings, which supported my ideas about the importance of social context. During the postdoctoral fellowship, my clinical work was supervised by a psychoanalyst and my research focused upon psycho-physiological factors involved in hypertension and rheumatoid arthritis. So I was bombarded with contradictory ideas.

A: And next?
RM: Due to chance and luck (or perhaps it was my Guardian Angel), Stanford University Medical Center was just expanding and becoming more research oriented. The Department of Psychiatry was looking for a clinically trained research psychologist who was comfortable with biological concepts and could help to mentor young psychiatrists and develop a bio-behavioral research agenda. I was offered a position and, true to my wish to settle in one place, I accepted and have remained at Stanford and the affiliated Department of Veterans Affairs (VA) Medical Center ever since. I have to admit that I rather enjoyed the irony: I could not afford to go to Stanford as an undergraduate, and Stanford did not accept me when I applied there for medical school, and yet here I was poised to join the Stanford faculty.

DISORDER AND RECOVERY

A: How did your research get started after you came to Stanford?
RM: I had a keen curiosity about the harsh conditions of life and the disorder and dysfunction that often seem to accompany them. I wanted to know why some people become depressed and consider suicide; why they drink or drug themselves into oblivion; why they lose touch with reality and develop severe psychiatric disorders. One of the reasons I became a clinician was to find the answers to these questions. As chance would have it, my first clinical experience was with alcoholic patients. I tried to predict how well these patients would respond during and after treatment and, of course, I found it hard to do so. However, one fact quickly became clear. Some patients relapsed and became worse over time, whereas others improved gradually and recovered. Although dwelling on positive outcomes was not fashionable, the more I looked for them, the more frequent they became. This led me to ask why some people who become dependent on alcohol and drugs can stop using them and lead essentially normal lives; and why do some people who suffer from depression improve and manage to live free of apparent symptoms? Some colleagues chided me for asking the wrong questions. Recovery is a whimsical concept, they said. People do not recover from dependence on alcohol or, for that matter, from the depression and dysfunction that often accompany severe, long-term life crises.

'I had a keen curiosity about the harsh conditions of life and the disorder and dysfunction that often seem to accompany them.'

A: You took this advice?
RM: No, this was an idea I could not accept. My world was an ever-changing place, full of optimism and hope. Someone who had slipped from the top of the mountain had to be able to find a way to regain the summit. I found support for my ideas in the concept that life crises are turning points, times of opportunity as well as risk [3]. I

was fortunate when Erich Lindemann came to Stanford; I formed a bond with him and benefited from his wise counsel. I learned that many people are remarkably resilient and even thrive in the face of adversity. They manage to confront and transcend the most profound life crises and to lead healthy, productive lives. How could this be so? I thought the answer to this question would be a prize worthy of the chase.

A: What were some of the experiences that led to your focus upon social contexts?
RM: Personality theory and psychoanalytical thinking held sway when I was in graduate school. These theories posited that one could understand and predict what individuals would do on the basis of their personal predilections and characteristics. But I knew from my personal experience, and from the many stories I heard about the vicissitudes of life for family members and friends, that this was not true. I thought that these theories overlooked the role of the environment, or social context, as a key influence on human behavior, and I read avidly literature that supported my perspective. I first became interested in how small groups and social communities influence people's mood and behavior. I was impressed with Quaker values of community and social justice, so I worked with the American Friends Service Committee, a Quaker group, counseling inmates about how to readjust to community life after release from prison. From this experience, I learned that the post-discharge context, especially the family, workplace and social groups, played a large part in determining success after release. Later, I again worked with the American Friends Service Committee as a psychiatric aid at the then New Mexico State Insane Asylum, where I learned that the treatment environment played a key role in patients' morale and wellbeing. I was delighted to have found two real-life instances that supported my convictions.

A: These were ideas with a history?
RM: I quickly found out that these ideas were hardly new and that, more than 100 years ago, there had been a strong emphasis in psychiatry on moral treatment and the curative power of the social context. I was enamored by the idea that perhaps the social environment held the power to help alleviate mental disorders. This stimulated my interest in Therapeutic Communities and, as chance and luck would have it, I was able to learn more from Maxwell Jones during his visits to Stanford [4].

TREATMENT ENVIRONMENTS

A: So you decided to focus your work upon social contexts. How did that research develop and progress over time?
RM: My colleagues thought that personal characteristics were the main determinants of behavior, and they expressed considerable skepticism about the idea that social context was at least as important. Instead of following my intuition and moving on to characterize social environments, I heeded their objections and spent valuable time showing that individuals' behavior varied in different social contexts. I focused first upon patients and staff in psychiatric programs, and I showed that they behaved quite differently in the varied settings in these programs, such as community meetings, group counseling and free time. Soon, I had an opportunity to test my ideas in an ideal naturalistic setting. I was counseling patients in a clinic where each patient saw a different therapist each week, and each therapist saw different patients each week. Thus, each therapist provided a unique social context for a patient, and each patient provided a unique social context for the therapist. It emerged that individual patients changed quite a bit in how openly they discussed their problems with different therapists, and that therapists changed even more in how much empathy they showed with different patients. Thus, I had demonstrated what I already knew: people vary important aspects of their behavior in different situations.

A: What then led to the actual development of measures to assess treatment environments?
RM: Once I had shown that people's behavior varied a good deal from one context to another, I thought that the next logical step was to assess these contexts and find out how they differed. Because of my clinical work and experience with therapeutic communities, I chose to consider first hospital-based substance abuse and psychiatric treatment programs. I also made another important decision, which was to assess treatment environments as patients and staff perceived them. My colleagues thought that I should focus upon more 'objective' characteristics of these programs but, as a clinician and a confirmed contrarian, I was convinced that the perceived environment was most important. As a first step, I thought we needed to learn more about the everyday events in treatment programs, so we conducted intensive observations in a number of distinctive substance abuse and psychiatric programs. We used these observations to write items to characterize these programs and their differences. For example, one item we used was: 'Patients put a lot of energy into what they do around here'. We administered the items to patients and staff in a set of 14 diverse programs and, indeed, patients appraised these programs quite differently, and staff members did too. So when one examined them in detail, programs that appeared initially to be very similar were quite different. I was pleased and this energized me to obtain comparable data on 160 programs all over the United States, and the results were comparable [5,6].

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A: How did you move from specific items that characterized treatment programs to identify the underlying dimensions of treatment environments?
RM: We used a combination of conceptual and empirical approaches. The conceptual aspect involved in-depth reading to identify potential constructs or dimensions that characterized treatment programs, and the use of independent raters to sort items into potential dimensions. The empirical aspect involved selecting items that had good distributions, and items that discriminated among programs. These approaches led to the idea that treatment environments are composed of three main sets of dimensions. Relationship dimensions tap the quality of personal relationships in a setting by such constructs as involvement, cohesion, support and expressiveness. Personal growth or goal orientation dimensions reflect the goals emphasized in the program, such as patients' autonomy, learning, practical work and social skills and self-understanding. System maintenance dimensions assess the structure of the program in such areas as order and organization, clarity and staff control.

A: When you conducted this work, did you think that these dimensions might be related to patients' outcomes?
RM: Yes, and we began to pursue this idea right away. We looked first at in-program outcomes and found that patients in supportive and well-organized programs with moderate to high performance expectations were more likely to be satisfied and self-confident, and to become involved in program activities. In contrast, patients in programs who lacked support and organization were more likely to drop out of treatment. With respect to outcomes in the community, we found that patients in cohesive programs who were relatively well organized and emphasized self-direction, skills development and self-understanding showed more improvement in their symptoms, psychosocial functioning and self-care and community living skills [5,6].

OTHER SETTINGS, OTHER COUNTRIES

A: How did this work evolve to focus upon other types of environments?
RM: As we were conducting our work on hospital-based treatment programs patients were being moved rapidly into community programs, such as halfway houses and group homes. This movement was progressing so quickly that it seemed no patients would be left in hospitals and our laboriously produced assessment procedure would become extinct; so, again, I was faced with a change in the social context that was beyond my control. Perhaps it was my Guardian Angel who convinced me to use this impending crisis as an opportunity to see whether our findings would hold in community programs.

A: How did you proceed?
RM: We followed the same procedures we had used earlier and found that residents and staff perceived apparently similar community programs quite differently. More importantly, the associations between community program environments and patients' in-program outcomes were comparable to those shown in hospital programs. For example, clients in more supportive and well-organized programs that emphasized self-direction and self-understanding tended to be more satisfied and hopeful about treatment [5,6]. The work then progressed to focus upon the development of procedures to assess the social climates of correctional facilities for adults and youth, and we found that the same three sets of dimensions could be used to characterize these settings. Thus, even in so-called 'total institutions', we identified considerable variation among different programs in the quality of personal relationships, the emphasis on personal growth and the level of clarity and organization [7].

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A: Then you took these ideas even wider?
RM: We found out later that the same three sets of dimensions could also be used to characterize other types of settings, such as families, the work-place and social groups [8]. I also broadened these concepts to focus upon physical and architectural aspects of environments and applied them to assess the quality of residential settings for older adults [9]. Finally, together with a political scientist, I applied them to the analysis of small, self-contained communities and real-life attempts to create utopian environments, such as Reston in the United States and the kibbutzim in Israel [10]. I had a grand thought that some of these idea might help to understand and improve these communities and perhaps the human context.

A: What was your next step? Did you think these findings might hold for treatment programs in other countries?
RM: Yes, I was interested in applying the work in other countries. Moreover, I wanted to renew my contact with

my relatives in England, so I obtained support for a sabbatical year in London, England, where I was affiliated with the Maudsley Hospital, the Institute of Psychiatry and the Royal Bethlem Hospital. The environment there was a little more bureaucratic than what I had experienced in the United States. Nevertheless, we were eventually able to obtain permission to approach patients and staff and assess the treatment environment of all but one of the programs at these two facilities, and of programs in several other psychiatric hospitals in and around London.

We found that, except for a few colloquialisms (as an example, the British preferred 'tidy' to the American 'neat'), the items applied to hospital-based British programs, and that there were substantial variations among these programs [5,6]. We also completed comparable work in England on community-based programs, primarily Richmond Fellowship houses [5,6].

INTO THE FRYING PAN: ALCOHOL ABUSE

A: Over time your work began to focus more upon alcohol use and abuse; how did that come about?
RM: I had worked for a decade primarily to develop measures of the treatment environment and other social contexts, and I thought it was time to find out more about how treatment influenced patients' outcomes. I could have focused upon any number of disorders, but there were several reasons why I chose to study alcoholism. Most importantly, I wanted to focus upon a prevalent disorder, which would make the work more broadly applicable. I also thought that the disorder should have a clear behavioral component, which would make it more likely that the social context would affect it. Another criterion was that that the disorder should reflect one end of a continuum that ranged from normal to problematic behavior. It seemed that this would make the research relevant to both normal and disturbed populations. I thought that alcohol use, misuse and dependence met these criteria.

A: What were your samples?
RM: We recruited five diverse residential alcoholism programs and focused initially upon the treatment environment and its associations with patients' treatment experiences and treatment outcome. In general, patients who participated more intensively in treatment and those who perceived the treatment environment more positively tended to experience better 6-month outcomes. However, these treatment-related factors typically explained less than 10% of the variance in patients' outcomes [11].

A: These findings do not seem to be a ringing endorsement of the role of the treatment environment; how did that affect you?
RM: Well, we had found that high-quality treatment environments seem to engage patients in treatment, and that those patients seem to do better. However, treatment lasts only a short time in people's lives and explains only a small part of the wide fluctuations in their long-term adaptation. Moreover, many people with addictive disorders improve without any treatment. I thought that perhaps I had not yet studied the most important environmental factors. So I turned my attention to the real world in which people live and began to focus upon patients' broader life contexts.

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A: What did you find?
RM: In fact, if the current environment did matter, then it followed that people's ongoing life context should be more important than the somewhat evanescent treatment milieu. Following this logic, my colleagues and I identified the salient aspects of patients' extra-treatment life contexts, such as their family and work settings, and developed measures of the key aspects of these settings. We found that these settings could be characterized by the same three sets of dimensions identified earlier. With these ideas and assessment procedures, we extended the initial study to focus upon patients' lives in the community. The findings showed that patients with relatively severe disorders could improve. At a 10-year follow-up, more than half the surviving and successfully followed patients were in recovery and doing about as well as matched normal case controls. These findings confirmed my optimistic view of the world and my idea that people could always change for the better.

A: What accounted for these positive outcomes?
RM: Patients with fewer stressful life circumstances and more cohesive and well-organized families in the first 6 months after treatment showed better outcome at 2 years. Better family cohesion and organization at 2 years also predicted better outcomes at 10 years. For patients who did not have family support, those who were in more involving and cohesive work settings tended to

have better outcomes. Moreover, aspects of patients' life contexts predicted between 10 and 20% of the variance in long-term outcomes, and they predicted these outcomes somewhat better than did patients' personal characteristics [11].

INTO THE FIRE: SUBSTANCE ABUSE

A: Your work then broadened to focus upon other substance use disorders and an evaluation of 12-Step facilitation and cognitive–behavioral treatment. What was the impetus for that work?

RM: We had evaluated treatment for patients with alcohol use disorders, but again the context was changing and there were more patients who had drug use disorders. We wanted to examine the role of treatment and the extra-treatment environment among this more diverse group of patients. To study other possible reasons for recovery, we also decided to focus more carefully upon participation in continuing out-patient care and self-help groups as important aspects of patients' life contexts. We selected two of the most prevalent treatment orientations for substance use disorders; that is, 12-Step facilitation (TSF) treatment and cognitive–behavioral treatment (CBT). We studied more than 3500 patients, and we assessed them at treatment entry and discharge, and at 1-year, 2-year and 5-year follow-ups. Overall, patients did reasonably well, and it emerged that patients in TSF experienced outcomes that were as good as and perhaps slightly better than those of patients in CBT [12]. We also identified a direct connection between the quality of the work-place for staff, the quality of the treatment environment and patients' improvement [13].

We also found that participation in continuing out-patient care, and especially in 12-Step self-help groups such as Alcoholics Anonymous (AA), was associated with better outcomes. Moreover, compared to patients who had been in CBT, patients who had been in TSF were more likely to participate in self-help groups and less likely to need additional in-patient or out-patient care. Thus, their subsequent health care costs were about 50% lower than those of patients who had been in CBT [14]. Further, patients who had more stable and supportive relationships with their partners tended to experience better outcomes.

TREATMENT VIRGINS

A: At some point along the way, you began a study focusing upon individuals with alcohol use disorders who had never been in treatment. What was your motivation for that study?

RM: Most previous studies of the outcome of treatment, including our own, had focused upon patients who had had several previous treatment episodes. We thought that treatment might be more beneficial for individuals who were entering it for the first time, so my idea was to study a group of 'treatment virgins'; that is, individuals who had never been in treatment before. Also, very few treatment studies include an untreated comparison group, and I wanted to compare individuals who obtained treatment with those who did not. It emerged that about 75% of individuals obtained some help in the first year after initiating a search for help; that is, they participated either in treatment and/or AA. This meant that we had a comparison group of about 25% of individuals who did not obtain help. Moreover, in an unforeseen stroke of luck, a number of individuals initially sought help from AA and did not enter treatment, so we had another rather interesting comparison group.

A: What was the relationship with outcome?

RM: Individuals who obtained help in the first year after recognizing their alcohol-related problems had better 1-year and 3-year outcomes than did those who obtained no help. It also emerged that individuals who participated only in AA improved as much as did individuals who participated in treatment. Long-term follow-ups of this cohort showed that individuals who obtained help for a longer duration in the first year had better 8-year and 16-year outcomes. This finding held for participation in either treatment or AA, but it was strongest for AA. Unexpectedly, individuals who delayed obtaining help until after the first year did not benefit as much once they received help [15].

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We also found that individuals who participated in both treatment and AA did somewhat better than individuals who participated in only one of these two modalities of help. More importantly, the benefits of AA were independent of the benefits of treatment. Another interesting finding was that individuals who remitted after receiving help were more likely to sustain remission over the long haul, whereas individuals who had remitted 'naturally' (that is without treatment or AA) were more likely to relapse [16].

OLDER PROBLEM DRINKERS

A: You have also been involved in studying older adults who have problems with alcohol. What made you interested in this area?

RM: I had some intriguing questions about whether remitted individuals might be likely to relapse as they

grew older and faced the stressors of later life, such as widowhood and retirement. I also wondered about the prevalence of new problem drinking among older adults, and whether late-life stressors might contribute to it. To address these issues, we initiated a study of late-middle-aged individuals; there were remitted former problem drinkers, current problem drinkers and non-problem drinkers. We assessed these individuals at baseline, when they were between 55 and 65 years of age, and followed them after 1 year, 4 years and 10 years. We are now conducting a 20-year follow-up of this cohort. We were surprised to find that about 25–40% of older women and men had high-risk drinking patterns; we found that even quite low levels of alcohol consumption, such as two drinks or more per day, could be associated with late-life drinking problems, such as having a fall or accident as a result of drinking.

A more hopeful finding was that about 30% of older adults who were problem drinkers attained stable remission, so there were some persistent deficits in these older adults' health and social adaptation [17].

STRESS AND COPING

A: We have talked quite a bit about your work on social contexts and addictive disorders. You mentioned earlier that you had an interest in stress and coping. How did you continue to pursue that interest?

RM: Yes, the findings we had obtained focusing upon social environments were moderately robust and satisfying, but they raised new questions. We had not placed enough emphasis on people's active efforts to confront and manage their life circumstances. Why do some people select and maintain less stressful and more supportive social contexts? Perhaps how people construe and cope with the conditions of their life is as important as the conditions themselves. To consider this issue, we developed measures of salient aspects of approach coping (such as logical analysis, positive reappraisal, seeking support and problem solving) and avoidance coping (such as trying not to think about a problem and venting one's anger about it). In general, we found that people who rely more on approach and less on avoidance coping tend to be more successful in managing life crises and their consequences. These people are less likely to develop substance use or psychiatric problems, and are more likely to remit or recover if they do develop such problems, but there still were more questions to address. Engagement in high-quality treatment and in self-help groups is beneficial, but why do some people enter treatment and informal groups and participate more actively in them? Supportive life contexts are beneficial, but why can some people develop such contexts and others cannot? And why do some people develop and rely on more effective appraisal and coping strategies?

A: Did these ideas lead to new studies of how people manage to confront and overcome life stressors?

RM: Yes, now a new idea emerged. The adaptation of normal, healthy people might help us to understand more clearly the determinants of wellbeing [12]. We considered the role of personal resources, life contexts and coping processes in predicting wellbeing among healthy people who were experiencing life stressors. Individuals who had more personal resources, such as self-confidence, also tended to have more social resources, such as a supportive family context; these resources foreshadowed more reliance on adaptive coping.

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We have extended this work to examine the role of coping as a central mechanism in crisis growth [18]. I knew that common crises such as physical illness and bereavement, and dramatic events such as natural disasters and war, shape the lives of the people they touch in unique and lasting ways. It is now clear that people often show tenacious resilience and experience personal growth in the aftermath of adversity [19].

PROFESSIONAL CONTEXT

A: We have talked a great deal about your research and you have emphasized the importance of the social context. How did your professional work-place and context affect you?

RM: As I mentioned earlier, I was delighted to accept a position in the Department of Psychiatry at Stanford University. David Hamburg was Chair of Psychiatry at Stanford, and he established a cohesive, goal-directed and structured social context. He thought he ran the Department with an iron fist, but it was encased in a velvet glove. He mentored and taught me how to cope with some of the erratic excesses of academia. He supported my research on social climate and broadened my perspective to encompass the bio-behavioral aspects of psychiatric disorders, and he supported me in the development of the Social Ecology Laboratory, a research group that provided the context for much of our early work. He also helped me to formulate more comprehensible ideas when reviewers did not seem to grasp the substance of my first grant application.

A: You eventually changed the purview of the research group to focus more upon health care evaluation. How did that come about?
RM: Over time, due in part to my clinical interests and our work on evaluating treatment for addictive disorders, I wanted to focus more broadly upon the quality and outcomes of health care. I collaborated with a group of experts on health care decision-making, and we applied to develop a Center whose primary foci were on screening and decision-making in health care, and on the process and outcome of treatment for substance use and psychiatric disorders. The Center was approved and funded by the Department of Veterans Affairs and, to reflect its main foci, we named it the Center for Health Care Evaluation. The Center has grown exponentially, has provided us with stable support for more than 20 years, and is now a well-known mental health services research group.

A: What about other support? You must have needed considerable funding to conduct the different projects we have discussed, especially those that included long-term follow-ups?
RM: Very little, if any, of this work could have been conducted without substantial external funding. When I wanted to develop measures of the treatment environment, there was interest and funding from the US National Institute of Mental Health (NIMH). I even convinced the NIMH to help fund my sabbatical in London. When I wanted to extend this work to evaluate the process and outcome of residential treatment for alcoholism, there was interest and funding from the US National Institute on Alcohol Abuse and Alcoholism (NIAAA). Later, a MERIT award from NIAAA ensured longer-term funding for our study of initially untreated individuals with alcohol problems. Then, there was interest and funding from NIAAA to study alcohol problems among older adults.

Together with NIMH, the VA funded our research to develop measures of the quality of residential settings for older adults. The VA funded our nation-wide evaluation of substance abuse treatment and, as I mentioned, provided stable core support for our Center for Health Care Evaluation. It has always been difficult to walk the tightrope between our own research interests and the directions and mandates of funding agencies, but I think it is possible to negotiate this process reasonably successfully.

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COLLEAGUES

A: You have mentioned the overall professional context and your funding support, but what about some of the personal relationships and colleagues who helped sustain your work?
RM: I have been lucky to have had long-term productive relationships with several superb colleagues and collaborators. Initially, there was Evelyn Bromet, an epidemiologist, who worked with me on the first phases of our study on the outcome of alcoholism treatment. Other collaborators on that work included John Finney, a social psychologist with expertise in program evaluation, and Ruth Cronkite, a medical sociologist and biostatistician. I have continued to collaborate with these two colleagues for more than 30 years.

Three other long-term colleagues are Sonne Lemke, a life-span developmental psychologist, who worked with me to formulate a method to assess the quality of congregate residential facilities for older adults; Christine Timko, a social psychologist, who adapted this method to focus upon substance abuse and psychiatric programs and participated actively in the work on initially untreated individuals with alcohol problems; and Charles Holahan, a clinical psychologist, with whom I have worked to examine and understand the stress and coping process.

I have also had several other colleagues with whom I have collaborated for 15 years or more. Jeanne Schaefer, a psychiatric nurse researcher, and I conducted research on the health care staff work-place and on coping with physical illness and life crises and, together with Penny Brennan, a life-span developmental psychologist, and Kathleen Schutte, a clinical psychologist, I focused upon problem drinking among older adults. More recently Keith Humphreys, a clinical psychologist, and I conducted research on the outcome of treatment for addictive disorders and the role of self-help groups in the process of remission and recovery. These colleagues helped to provide a stable and supportive social context within which I flourished.

Most importantly, my wife Bernice has been a source of comfort and advice throughout my entire career. Bernice is a computer programmer; we have worked together for many years and have labored together over countless manuscripts. To my good fortune, I met Bernice on a blind date while I was in Hawaii. I was interested in small, self-contained communities and how they worked, and I had gone to Hawaii to study a leper colony on Molokai. Bernice and I met quite by accident (not at the leper colony). We were attracted to each other, but we lived in separate cities and did not have the money to commute, so what better solution than to get married! Now, more than 44 years later, we have six grandchildren. Our son Kevin and his wife Toni have four children, including a set of twins, and our daughter Karen and her

husband Dorjey have two children who are also twins. It is quite a fortuitous outcome of a chance meeting.

ROLE MODELS

A: You have mentioned several colleagues and your wife. Were there other individuals or role models who influenced you?
RM: Yes. In addition to my mentors and colleagues, there were three important personal role models. I was named after my grandfather, Rudolf Moos, who was a very successful businessman. He founded the Salamander shoe business, which is quite well known and still active in Germany and other parts of Europe. I like to think that he was the model for my orientation to detail, organizational skills, and love of learning and history. He made a fortune and became a rich man, and then lost everything because of the hyperinflation in Germany in the 1920s, and because he was not allowed to take any money with him when he left Germany for England. He exemplified a stubborn unwillingness to succumb to life crises.

'I was named after my grandfather, Rudolf Moos, who was a very successful businessman . . . He exemplified a stubborn unwillingness to succumb to life crises.'

Uncle Paul was Grandfather Rudolf's brother. He was an iconoclast, and a highly principled man who always followed his own path, however unusual it was. He became a musicologist, wrote about classical music and aesthetics, and became quite well known in Germany. I like to think that his example fortified my contrarian instincts and enabled me to focus my research in areas that were initially off the beaten track.

Albert Einstein was Grandfather Rudolf's cousin. My grandfather's mother was from the Einstein family; more importantly, my grandfather knew Albert Einstein quite well. My grandfather was a businessman and Einstein was eager to eschew all involvement in financial and practical issues, so my grandfather handled some of these matters for him. I have heard personal stories about Einstein all my life and, in a very real sense, I owe my career to him.

My family and I were able to emigrate from England and come to the United States because Einstein arranged a visa for us. Also, more conceptually, his work focused upon the universe as our broad context, and upon relativity or, if you will, the importance of perception in relation to the location of an observer. Moreover, he was a contrarian par excellence, as well as a great humanitarian. I like to think that his example helped guide me in my work on social contexts and utopian communities.

ONGOING ODYSSEY

A: You are in your fifth decade of work. What is your main interest now and what do you intend to pursue in your future work?
RM: Well, as I mentioned, we are conducting a 20-year follow-up of older adults with drinking problems who are now in their 70s and 80s. We are interested in how much older adults continue to engage in patterns of alcohol consumption that exceed current guidelines, and whether drinking problems occur at ever-lower levels of consumption as individuals age. We also want to know whether stably remitted older adults return eventually to normal functioning and life contexts. Are there permanent deficits that older individuals with former drinking problems never overcome?

Also, many older adults with health problems continue to drink heavily and incur drinking problems, so we want to identify risk factors that raise the likelihood of drinking problems among older adults in poor health, and how the use of medication and alcohol to cope with pain affect these individuals' drinking behavior. Also, as always, we are interested in how older adults' life contexts and coping responses influence these processes and adults' long-term morale and wellbeing.

I also have a renewed interest in active ingredients associated with effective treatments and stable remission. Quite recently, I have speculated about the role of four theories that may identify the main processes involved in the development and remission of addictive disorders. These are social control theory, which emphasizes the importance of bonding, goal direction and monitoring; behavioral economic theory, which emphasizes the role and importance of rewarding activities other than substance use; social learning theory, which focuses upon the importance of abstinence-oriented norms and abstinence-oriented models in recovery; and stress and coping theory, which emphasizes building self-efficacy and coping skills.

My goal is carry out more work in this area and to analyze some of our earlier data with these ideas in mind. I hope to integrate this material into a theory of how psychosocial factors that protect youngsters and adolescents from developing substance use problems are comparable conceptually to the factors that underlie effective treatments for addictive disorders, and to those that explain the benefits of self-help groups and stable remission and recovery.

A: There is more emphasis now on biogenetic and neurophysiological factors in the addictions. How can this emphasis be integrated with your focus upon psychosocial treatment and the social context?
RM: Because of my interest in biogenetic factors, I tried early in my career to conduct research that encompassed

this perspective. As I said, I studied psycho-physiological reactions in patients with hypertension and rheumatoid arthritis. I also considered the associations between emotions, immunity and disease, and examined some connections between genetic factors and behavior. I gave up these pursuits because, at that time, I thought that the concepts in these areas were too divergent to allow for productive integration.

This situation has changed. We now have much more sophisticated concepts about the neurobiology of addiction, the possibility that biological factors may moderate individuals' reactions to life stressors and the idea that genetic characteristics can alter how we perceive and react to social contexts. Now researchers are examining the extent to which biogenetic factors moderate patients' reactions to medications, such as naltrexone and buprenorphine, to the active ingredients of effective psychosocial treatments, and to such social contexts as families and self-help groups. But I want to insert a note of caution here.

Researchers assume typically that biogenetic and neurological factors are independent variables that have a causal relationship to psychological and social factors. However, we know that social stressors can cause biochemical and physiological changes. The thought that environmental factors could affect brain function and structure was entirely novel when I encountered it in graduate school. Now, more than 50 years later, this idea is accepted widely, and we are beginning to understand just how environmental factors affect brain function.

More broadly, it is hard to conceive of an Ultimate Blueprint where structure begins with genes, when genes are subject to contextual influences such as natural selection and mutation. The Ultimate Blueprint must encompass an ongoing interplay between structure and function in which biogenetic and contextual factors alter each other. In fact, epigenetics, the study of how environmental factors such as diet and stressors can lead to heritable changes of DNA, is a step towards a more balanced view of the role of contextual factors in the regulation of gene expression and behavior.

'The Ultimate Blueprint must encompass an ongoing interplay between structure and function in which biogenetic and contextual factors alter each other.'

A: Finally, from a personal perspective, how would you sum up what you have learned from your research experience?
RM: I have been on an odyssey of quest, discovery and renewed quest. We know that personal resources and specific aspects of treatment, life context and appraisal and coping are important, and that all these factors are linked closely. We also know that these basic processes are broadly relevant to remission and recovery from a number of disorders, especially those that appear to be more responsive to social influences, such as alcoholism and depression. We have made some progress, but the essence of why some people do better than others is still beyond our grasp. Each question we have posed has led to a set of intriguing but also more complex questions.

As I ponder this dilemma, I think I hear my Guardian Angel reminding me that the world is an ever-changing place in which we can have only an imperfect vision of the future. If now we can point to some important factors that help people overcome adversity, and we can frame our next set of questions more clearly, then we are somewhat wiser than before; and that is a prize worthy of the chase.

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