average lifetime, shortened geographical distances, increased industrial productivity, reduced poverty and in the long trial of war contributed significantly to the cause of freedom. . . . If science and technology were to founder or stagnate many of our hopes would collapse. To the extent that we neglect this source of our greatness and to the extent that we fail to preserve the conditions of openness and order that made our progress possible, we are living off the land of civilization without refertilizing it. . . . Instead we must bring about a new dawn of scientific freedom and progress.

I could not agree more.

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Addiction as a Necessity and Opportunity

Edwin H. Land

Last Christmas, while riding through London, I found that in spite of my delight in the galleries, libraries, and concerts, there was within me a deep and insatiable need. I found myself saying to our driver, "Green, did you know that I am an addict?" He is of the old school so that he did not turn his head. "No, sir, I did not know that." "I am addicted to at least one good experiment a day—sometimes I can arrange it by telephone. When I cannot, the world goes out of focus, becomes unreal." Possibly somewhat disappointed, but clearly relieved: "I see, sir."

And then last month I was participating in a student seminar at one of our great universities. We were in the professor's room. We sat on the floor, and the boys and girls sat in a circle around me. The men, including the professor, wore magnificent long hair and, of course, the whole variety of handsome beards. It was rather hard for the women to compete with the colorfulness of the men. Furthermore, the women seemed somewhat restive, with an inner concern about the relationship to reality of the new world they were all trying to create together. As we all talked, I found myself describing the wonders of the scientific experience. I told of the way in which one yearns for a deep insight in some domain; of the strange intuitive program of collecting observations; of the mystery of formation of hypothesis within one; of the competence of the mind-body system to select the crucial experiment; of the excitement of interaction between experiment and hypothesis; of the sense of relief and even of nobility when the hypothesis is proven true by the experiment and the stage set for the next hypothesis. I remarked on the sense of awe that one could be the instrument of this process, as if input had flowed into one and significant outputs emerged from one. I was pleased to note the comprehension on one of the bearded faces. He turned to the neighboring girl and said with firm conviction, "Why, it's just like heroin, isn't it?"

And, finally, a few weeks ago, sitting with the board of a foundation, I shared in the sense of helplessness and impotence, confronted with the problem of how to use money to block the sweep of drugs across our nation. As an inveterate hypothesis maker I had an insight into the nature and function of addiction, and it is that insight I should like to examine with you tonight.

Some years ago, talking to a group of brilliant high school students about the life of a scientist, I said, "My own recollection of your age is a curious alternation which, I think, goes on through life for the scientist. It is alternation between the one mood and attitude of feeling part of the race as a whole, part of the family, part of the neighborhood; the mood of being in love with friends, women, men, people all over the world; the mood of being in love with what is great in music and art—all that on the one hand and then, quite suddenly, a separateness from all that—a separateness that comes during the preoccupation with a particular scientific task. There is a need, a transient need, a violent need for being just yourself, restating, recreating, talking in your own terms about what you have learned from all the cultures, scientific and non-scientific, before you and around you. During that period you want to be almost alone, with just a few friends. You want to be undisturbed. You want to be free to think not for an hour at a time, or three hours at a time, but for two days or two weeks, if possible, without interruption. You don't want to drive the family car or go to parties. You wish people would just go away and leave you alone while you get something straight. Then, you get it straight and you embody it, and during that period of embodiment you have a

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feeling of almost divine guidance. Then it is done, and, suddenly, you are alone, and you have a need to go back to your friends and the world around you, and to all history, to be refreshed, to feel alive and human once again. It is this interplay between all that is richly human and this special, concentrated, uninterrupted mental effort that seems to me to be the source, not only of science, but also of everything that is worthwhile in life."

In examining this description I want to avoid both the obvious clichés of drug-taking terminology and the professional characterizations of Freudian categories. I suggest that this description deals with two different modes of relationship between the individual and the world around him. In the first, the social mode, a perfectly normal and healthy mode, the individual is not at all an integrated single being. A thousand as yet unnamed and unisolated components of personality interplay with analogous fragments in the people around him. Except for his image in the camera, he has really vanished to become part of the composite creature, a social group. Through this group entity, feelings, thoughts, hopes, and speculations travel from boundary to boundary, resonating and reflecting within its confines. Most vicarious participation in music and sports involves this mode of existence. Talk programs on radio, the nationally shared entertainment on television, a poker game, the committee on pollution, the mad ecstasy of riots, the Easter parade, traffic jams, Mylai murders—all these are not groups of individuals in aggregations of units, but examples of the non-unity of the components of an individual when those components are intermixed with the components of other individuals to form the biological unit, the multiple-man. The multiple-man can be grand, or trivial, or elegant, or decadent, or noble. He moves through our bodies leaving them rejoicing or desperate, helpless participants in this mode of human existence. The interests of multiple-man are only in feeling, affect, emotion, conquest, discovery, victory, vast inchoate revelation. When the great symphonies of multiple-man echo through us, our individual conditioning, background, and predispositions introduce only trivial variations on a main theme.

Before we go on to singular-man we should note what a horrible problem for him multiple-man is. For while multiple-man is richness, vastness, glory, and triumph, multiple-man is interested in intellect only as a tool for power, joy, conquest, and the delights of monumental destruction. For him, indeed, war is an extension of politics and, more seriously, politics is an extension of war. Multiple-man can never analyze except for aggrandizement or rejoicing. Facts are slaves for his amusement, to be toyed with, savored, destroyed, distorted. Life is a game with ever-changing rules, a game of glorious pretensions for good or evil, as the winds may blow. The multiple-man is not a vast, racial, historic composite. Multiple-man is three people, or seven, or fifty, or a thousand, or sometimes a nation. As our world is organized, the government, the universities, the scientific society, the committee, the group of neighbors, all are multiple-man who uses reason and intellect only as one of the most delightful pawns in the electric game of group living. During the time that the components of our personality are part of multiple-man, they exist in that mode.

As I talk I wonder if that mode may not be the only one for animals. My thesis is that for us another quite different mode is frequently possible. This is the mode in which the components of the individual's personality are integrated with each other instead of being cross-integrated with those of the group. In this mode, which we might call singular-man, talents, aptitudes, senses, competences of the individual, serve an entirely different set of purposes. Although the product of this activity may have inestimable significance for the race, again for good or evil, the first function of the total activity of singular-man is to serve himself. The intellect, when it serves himself, can be enjoyed for what it is, a tool for analysis, synthesis, speculation, a tool for hypothesis and experiment. For singular-man, emotion can be controlled, utilized, enjoyed, at his will. He can discover for discovery, learn for learning, be ethical for ethics, be moral for morality, be noble for nobility. He can discover causes and create effects. He is a god in his freedom for self-integration and controlled search. Often his independence and freedom are unbelievably poignant, frequently terrifying, and the trip from singular-man to multiple-man can be as agonizing as that from Jekyll to Hyde. The ready transition between modes is the deepest of human needs, for without it man is either animal or derelict, and yet the transition, as with so many human needs, is not practiced intuitively. Success for an individual may be an accident in the profligacy of evolution. When I was talking with the students, both in high school and in college, about the scientific experience—it could as well have been any newly created aesthetic experience—I was talking about one technique for making the transition. Presumably, there are many. The important point is that the bona fide transition from multiple-man to singular-man involves the full integration of the components of the individual for a singleness of purpose and for ends of no interest to multiple-man—the purpose, the ends, must be real if singular-man is to survive. The "drug," the "addiction," is the pursuit by singular-man of this real purpose—a purpose, the achievement of which provides continuous interaction and satisfaction, feedback if you will, for the integrative process.

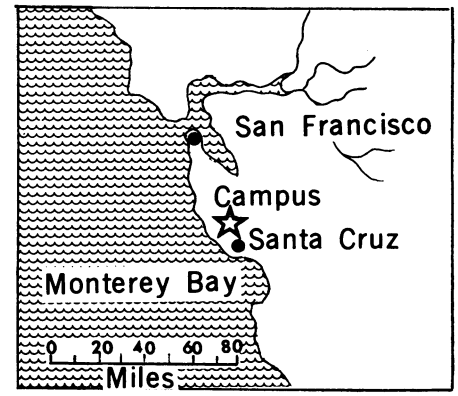
My suggestion is that the need for the transition to singular-man is so great that if an individual has been unfortunate enough not to learn bona fide healthy techniques for the transition, if he has not been able to find objectives in the real world to which he can relate in this mode of living, then he will seek escape from permanent entrapment in the mode of multiple-man—he will seek escape from multiple-man to singular-man through artificial means such as drugs. My hypothesis for the evening is that the expansion of consciousness through drugs is merely a synthetic production of integration in the mode of singular-man. Drugs in this concept serve not as an escape *from* one's self but rather as an escape *to* one's self. The use of drugs is a shortcut, which presumably is also a blind alley, for there is no feedback between the product and the integrative process. In the bona fide situation, the interplay between the integrative process and the artistic or scientific product leads to a strengthening of the integrative process and to increased mastery of the technique of willful transition between the multiple and singular modes. With drugs, tragically, the first phases of integration are achieved along with the wonderful sense of relief of being a singular human rather than part of an animal

group, only to find that because of the lack of feedback the process is not self-supporting and self-strengthening. Obviously, we are much too far away from understanding the biochemical differences between the bona fide situation and the synthetic one to hazard any analysis of why one is constructive and the other destructive. The lesson from the hypothesis, however, is that unless we can provide the bona fide techniques of transition, unless we can provide the healthy addictions, disaster will eventuate. Individuals may stay too long in the multiple mode, where in addition to enjoying the rich variegation of the world of feeling, they will also substitute, permanently, the important irrational absurdities of politics, committees, and boards, for the discerning rationality that can exist only in the mode of the singular-man. Even if they do not become drug addicts, they are in danger of becoming habituated to the slap-happy excesses that are as valid for the multiple-man as are magnificence and grandeur.

It occurs to me as we explore, there are indeed many lonely souls trapped in the *second* mode, the mode of singular-man. I suspect that alcohol enables many of them to make the transition to the first mode of multiple-man. In the few days during which these ideas have been crystallizing, I have found them very useful in understanding the mysteries of the Iagos and the Judases; the astonishing number of small betrayals by men of honor; the eternal paradox of the politician as a man of honor at one moment and of low credibility at the next; the deadly conclusions of decent souls when they gather together to make decisions; the alternations between inspired insight and unbelievable stupidity of a handful of brilliant scientists en masse; the magnificent elation that we can feel together; the kind of transcendency that we can achieve when we are a group, and the evil that we can perpetuate—all this is an antithesis not between God and the devil, but between singular-man and multiple-man, both of which we are and between which we must learn early in life to migrate skillfully.

NEWS AND COMMENT

U. of California at Santa Cruz: New Deal for Undergraduates?



Santa Cruz, California. The opening of a new campus of the University of California here in the fall of 1965, less than a year after the beginning of student upheavals at Berkeley, seemed a limited but hopeful response to a desperate need. This new institution, designed to allow growth without loss of intimacy and to restore the undergraduate to first-class citizenship, looked like the answer to some critical problems of the "Multiversity."

Today, only 5½ years since its birth, the University of California at Santa Cruz (UCSC) is still a fledgling. Already, however, if one may judge from only a brief visit, the Santa Cruz experience offers two important object lessons. First, it reveals that, regardless of the idyllic visions of campus planners, many students will spurn the living accommodations offered them unless these reflect the revolution in student tastes in such matters. Second, it shows that there is still no proven formula for breaking with academic tradition and building innovative and coherent programs of general education for undergraduates.

The genesis of UCSC goes back to 1957 when the University of California Board of Regents authorized the establishment of a new campus in the "south-central" coastal region, below the San Francisco Bay area. Later, in 1961, the regents chose as the campus site a remarkably scenic 2000-acre tract of meadows and second-growth redwoods overlooking Monterey Bay and Santa Cruz, a resort town now having some 30,000 inhabitants.

Clark Kerr, then president of the University of California system and formerly chancellor at Berkeley, was all too familiar with the major flaws found, especially on the larger campuses, in American university education: the bureaucratic confusion, the impersonal atmosphere, and the emphasis on research at the expense of undergraduate teaching. He wanted these shortcomings to be avoided at Santa Cruz. Kerr's assistant for academic planning, Dean E. McHenry, was appointed chancellor of the new campus, and plans for UCSC began taking shape.

Central to the Santa Cruz plan was the concept that a university that might have over 27,000 students by the end of the century could be begun in modular fashion by establishing a number of small coeducational undergraduate "colleges." To each college some 650 students would be assigned, with about two-thirds of them expected to live there, the rest to live off campus. Every UCSC professor would be a Fellow of one of the colleges, and at each college a few Fellows as well as the college provost would live in residence. Each college would be architecturally distinct and have its own classrooms, dining room, commons, faculty offices, reading rooms, walkways, and plazas. A freshman or sophomore would have most of his classes in his own college, regardless of his major. In sum, the college was to be a "scholarly village," a place with a relaxed atmosphere and a sense of community.

Another major purpose of the Santa Cruz plan was to have the Fellows of each college working together, across disciplines, to develop strong programs of general education. The program emphasis would vary from college to college. For instance, Cowell College, the first college to be established, would emphasize humanistic studies, particu-