Chapter 13

The Growth of Complexity: Shaping Meaningful Lives

Being Adolescent

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FLOW experiences provide evidence that life is worth living. When they play football, dance, or do the hundreds of other enjoyable things they do, teenagers *feel* the harmony between dimensions of consciousness: between goals, thoughts, emotions, and activation. Their psychic energy is focused, and their being functions as an efficient whole. But the ability to find enjoyment is not enough to ensure that a person will grow up to make the most of his or her potential. After all, some adolescents learn to enjoy activities that do not build habits of discipline or skills: activities that waste human and material energy. Others grow up enjoying activities that are not only wasteful, but destructive. Therefore, one must conclude that the ability to enjoy everyday experience is necessary, but not sufficient to avoid psychic entropy in the long run. One must

also learn to enjoy activities with increasingly complex goals, activities integrated with the goals of others. Optimal conditions for growth are present when a person experiences flow while doing things that are negentropic in the long run—for the self as well as for the social system.

This chapter will explore some of the paths for accomplishing this. First we will show how flow experiences, by their very nature, require gradual increases in the complexity of a person's skill. Flow activities can be just temporary shelters to protect one from entropy, or they can provide life-long patterns of order. Second, we will examine longitudinal data from our adolescents and some retrospective data from adults to show how these processes actually take place.

The kind of psychic dissipative structure we will consider is the capacity to create meaning. This is the ability to relate isolated bits of information to each other, and ultimately to one's goals, for example, the ability to see a passage from Shakespeare as pertinent to one's life. I understand the meaning of a smile on a friend's face when I comprehend the feelings or purposes to which it is related—and when I know how the friend's purposes are related to mine. The meaning of a book is revealed when we understand its goal and we see how it is related to ours.

Events in the world are not ordered by nature to conform with our desires. They occur, rather, in random or threatening sequences. To see this, all we have to do is look at the haphazard struggle among living things that takes place on a forest floor, or at the political relationship among nations. According to Prigogine, the species that can cull fragments of energy from whatever is available, that can pull order out of this chaotic jumble, are those that survive. In a sense, adolescents face a similar situation. What is true of organisms at the biochemical level seems to be also true of persons trying to cope with the world. The key to growth is the ability to make sense of disordered information and energy, to make it serve one's goals.

Teenagers cannot avoid psychic entropy only by playing football or playing the flute. They also must learn to give order to the events that normally produce boredom, rage, or despair.

When teenagers learn to reinterpret disorder in ways that make sense, when they can turn boredom into useful reflection, when after an argument with their parents they don't just brood but get to see the parents' point of view and how it relates to theirs, then they have learned to use a powerful tool for decreasing entropy: the meaningful interpretation of experience.

Perhaps the ultimate achievement in this effort is the development of a personal *life theme*. This process consists of transforming misfortune in one's life—or in the wider social environment—into a goal that gives direction and meaning to a whole life. For example, a young man whose mother dies of cancer might feel the integrity of his self teetering under the blow; but he might pull himself together, vow to become a doctor, and to help defeat the disease that killed his mother. This story—a true one by the way—is in its main outlines so common as to be almost trivial. It is an example of how a person builds his life around a theme, a meaningful arrangement of goals and of means, out of deepest tragedy. Thus it represents the most permanent and solid dissipative structure that individuals can use against the constant threat of entropy in their existence.

Flow activities and life themes are by no means the only hedges against disorder that it is possible to devise. Political institutions, religious beliefs, feelings of solidarity and love are extremely important systems of order that can act as dissipative structures mediating the impact of random frustrations. If we limit the discussion to enjoyment and the creation of meaning, it is simply because these processes are more directly under the control of teenagers, and because to deal with all the other alternatives would require a separate volume. But enjoyment and meaning promote the whole of experience, and when they are present, it is likely that the rest of life will be ordered, too. Let us begin, then, by considering how flow activities contribute to permanent growth processes.

Complexity and Flow

It is relatively easy to enjoy pleasurable sensations, the kind we are biologically programmed to seek out: food when hungry, sex, the primitive beat of music that mimics states of physiological arousal. It is easy to enjoy power, the ability to spend money and control other people. But pursuit of these spontaneous sources of pleasure does not lead to growth. Experiencing pleasure simply returns the organism to a homeostatic balance; it does not propel it to change toward greater complexity. The man who is motivated only by the pleasure of sex or power might accomplish many impressive things; he might build palaces for his mistresses or start gigantic wars of conquest. However, despite all his accomplishments, he is unlikely to grow as a person because the goal he pursues is as old as the pyramids or the caves of our hairy ancestors. At the end of his efforts, he is the same man he was at the beginning.

Persons who wish to fulfill their potential for growth must learn to invest psychic energy in goals that are not yet given automatically in the genes. Only by superimposing the pursuit of *voluntary* goals on that of *spontaneous* ones does a human being become a *person* who consciously chooses behavior. Only by achieving control over attention does someone transcend the life of a mere organism.

An adolescent who enjoys only what he is biologically programmed to find pleasurable misses many opportunities. He will play out the part handed down to him through his genes but will not experience the negentropic interaction with more complex challenges that cultural evolution has made possible. The runaway positive feedback spiral teenagers experience with friends, the total participation in a rock concert, the oblivion induced by drugs feel good while they last, but afterward one is not very different from what one was before: No muscles, no skills, no mental structures were developed that would allow one to meet future entropy better prepared.

But when one passes from the positive experience of biologically programmed pleasure to enjoyment, which is dependent on the use of skills, it becomes clear that enjoyment and growth are closely related processes. To see the connection, it is useful to represent the conditions that make flow possible by the set of coordinates in Figure 13.1. Enjoyment tends to occur whenever a person feels that his or her capacity to act matches the opportunities for action in a given situation. In short, flow is experienced when personal skills match situational challenges, that is, when a person is in the central channel of the graph.

For instance, a tennis player will not enjoy a game if the opponent is either much more experienced, or much less experienced. Surgeons do not enjoy trivial, routine operations, nor the ones where the patient's odds of survival are slight. But they do get into flow when all their skill is just barely enough to save the

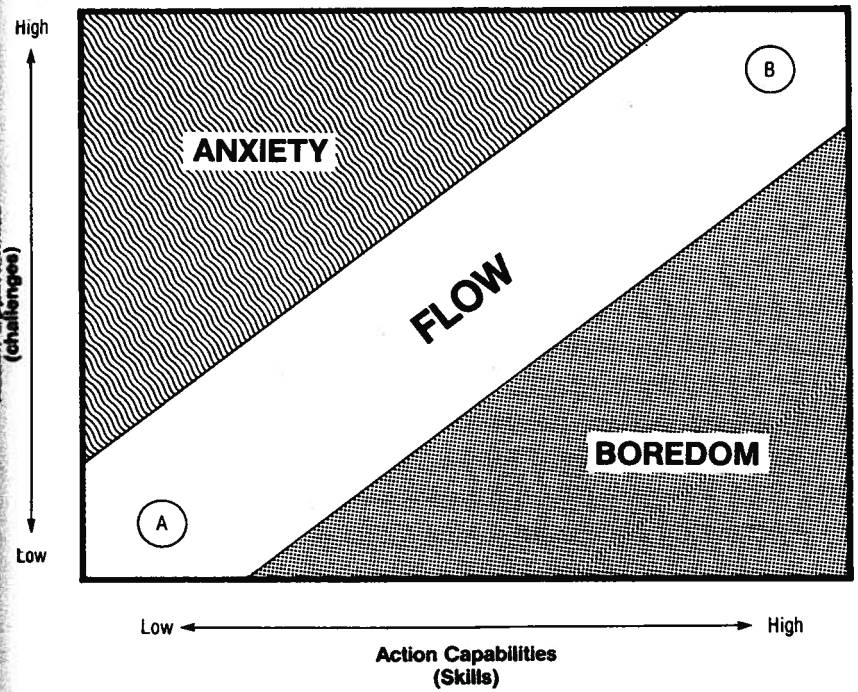

FIGURE 13.1
Model of the Flow Experience

patient's life, and the outcome hangs in the balance. High school students do not enjoy classes in which they are overwhelmed by assignments, nor the ones so easy that they are boring, but the ones where knowledge can be mastered when the student really tries hard (Csikszentmihalyi 1975, 1978b, 1980; Gianinno, Graef, and Csikszentmihalyi 1979; Mayers 1978).

Ordinarily, when people enjoy an activity, it is because of this balanced tension between challenges and skills. If the challenges get to be too high, and a person begins to doubt that he can make it, worry ensues and eventually turns into anxiety. If, on the other hand, a person feels frustrated because there is no way to make use of his or her skills, then boredom follows; when boredom becomes extreme, it yields to anxiety.

With these simple rules in mind, it is easy to see how enjoyment and growth are related. One characteristic of the diagram in Figure 13.1 is that the "flow channel" encloses a diagonal area. What this suggests is that flow experiences differ: they differ in terms of the amount of challenges attended to, and in terms of the amount of skills involved. In the diagram, point *A* represents a situation which requires few skills and in which the person is using just the skills needed—for instance, someone playing with a kitten might fit the description. Point *B*, on the other hand, represents something that requires great skill—perhaps playing a Beethoven violin solo—and only a person who has the necessary skills will enjoy doing it.

This does not mean that *B* on the diagram stands for a more *enjoyable* experience than *A*. Playing with a kitten can be just as much fun as playing a violin sonata. But there is no doubt that *B* is a more *complex* experience than *A:* playing the violin requires greater skills than playing with a cat. To say it in other words, *A* and *B* correspond to equally negentropic effects in the player's consciousness. But because *B* requires a larger investment of psychic energy, it results in a more complex and permanent pattern of order.

The action-pattern involved in playing with a kitten could almost happen by chance. It is a spontaneous act that does not require unusual concentration of attention or previous knowledge. Anybody could do it any time. But a Beethoven violin solo could not happen by chance. Its existence depends on a voluntary focusing of attention, on prolonged practice coordinating sensory-motor pathways, memory, and imagination. Its unlikelihood is a triumphant challenge to entropy. Complex accomplishment is admirable, because it is rare to shape order out of chaos. It is difficult to make things happen that would not happen if left to themselves. And once a complex challenge is mastered, it provides a skill that can be used again and again.

The action pattern indicated by *B* on the graph is in some sense "better" than the one marked *A*. The advantage is not given in the experience itself—*B* does not "feel" better than *A*—but rather in its consequences. The more complex action represents growth, the actualization of human potential in the face of chaos. If this is true, why doesn't everybody move up the diagonal? Why is so much of what people choose to do banal, and why does so little of it require complexity of any kind?

Growth is the natural condition of life. Action patterns over time tend to become more complex. This process is represented in Figure 13.2. Let *A* in the figure stand for a boy who has just learned to play the piano; his skills are low, but because he plays very easy pieces, he can get involved with them and enjoys the experience.

If he keeps on playing the same easy pieces, *A*'s skills will increase relative to the stable challenges, and he will become bored (represented by A_1 in the figure). At that point, he is likely to do one of two things. He might stop playing the piano because it is no longer enjoyable. Or he might take on greater challenges by learning more complex pieces; this would return him into the flow channel at point A_3.

Another possibility is that *A* is forced by his teacher to play pieces that are too difficult in relation to *A*'s skills (A_2 in the figure). This produces a sense of anxiety in A_2, who is overwhelmed by the demands of the situation. To reduce the anxiety, he might do one of three things. He might give up playing altogether. He might return to playing the easy pieces as in *A*. Or he might practice long enough to develop his skills so he can

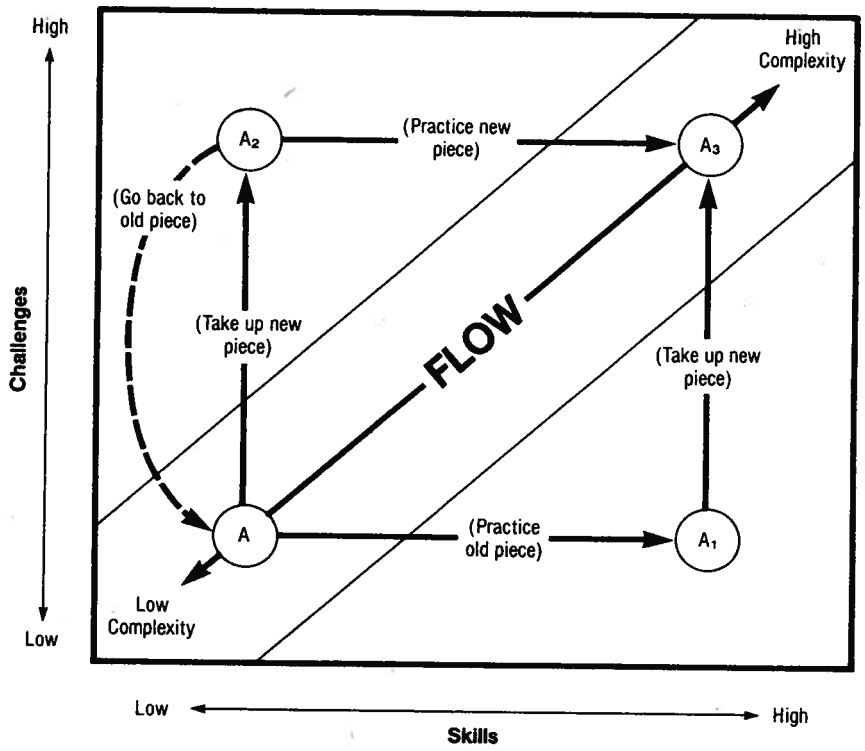

FIGURE 13.2
Alternative Paths for Returning to the Flow Channel When Playing the Piano

master the more complex music, and end up back in the flow channel at A_3.

This means that enjoyment is an unstable state that always drifts into boredom or anxiety. To keep experiencing flow one must try doing new things, and do them better every time. Like the dissipative structures in the physical realm, flow is a precariously balanced state that tends to break down with time, unless it reconstitutes itself into a more unlikely system of interaction. Boredom and anxiety represent the negative feedback that makes us realize we no longer enjoy what we are doing. To recapture that enjoyment, we must formulate increasingly complex goals, face new challenges, and learn new skills.

Thus enjoyment is like a built-in thermostat that indicates whether we are operating at full capacity, at the leading edge of growth. Yet many people resign themselves to lives of boredom, or of constant worry, and give up the opportunity to grow.

Perhaps the main reason adolescents stop growing is because their initial lack of skills is exposed too suddenly to excessive challenges. A child who cannot draw—or thinks he cannot—will keep doodling stick figures; anything more complex is too difficult, and failure might expose him to ridicule. A student who has been confused by long division in elementary school will tend to freeze when confronted with an equation, knowing that its solution is beyond reach. The expectation of failure becomes a self-fulfilling prophecy that precludes further growth. A certain amount of skill is required even to perceive challenges in the environment. If you cannot play, a piano is just a piece of furniture; if you can, it is a source of endless opportunities for action. To a climber, a wall of rock might offer days of challenging experiences that will be treasured all through life. The same wall is just a featureless slab of granite to the nonclimber, barely noticed and immediately forgotten.

Most persons' environment is a potential playground full of exciting things to do. The catch is that, to the naked eye, they are invisible. A person must be already initiated to enter one of the cosmic games. The price of admission is learning to recognize the challenges, making the effort to see what can be done. Complex activities, like mathematics, music, poetry, or rock-climbing, require substantial investment of psychic energy even to be perceived as options. To actually practice them takes continued focusing of attention in ever-more-unlikely patterns. But only by paying this price does one grow, and taste enjoyment.

For some adolescents, growth has been blocked by external obstacles: a harsh environment, an oppressive social system, a depressive childhood. The more attention is required just for physical survival, the less of it is left to discover paths of growth. The Greeks took it for granted that their slaves were not fully human, since they spent all their psychic activity in goals dictated by survival. Not so long ago teenagers had to work in

factories from dawn to dusk, six days a week, with hardly a moment's rest. Today they have to work less than half as hard, yet many of them, when they get home in the evenings, have barely enough energy left to turn on the TV and relax in a dazed stupor until it is time to go to bed.

External obstacles can drain away attention, and leave us too exhausted to start on one of the many paths of growth beckoning just outside our range. But the impediments that the physical environment or the social system place across the path often become excuses to rationalize away the unwillingness to make the necessary effort. Hardships can prevent growth, but only if one lets them. Even in the most precarious situations, when most people do give up, some do not. Instead of huddling up under stress and conserving their psychic energy, they use it to find new opportunities for action, develop new skills, and, instead of stagnating, they grow.

It is probable that most workers of the industrial revolution spent the few hours they had free drinking gin and playing cards. The strict routines of the factory left them too exhausted to tackle anything more complex. The sociologist Le Play found that typical French workers of the nineteenth century spent over 10 percent of their income on liquor, and none for the education of their children (Le Play 1879). Although potentially there were thousands of things they could have done, most genuinely felt that they could do nothing but drown their sorrow in drink. But not everybody did this. As the anthropologist Anthony F. C. Wallace shows in his careful reconstruction of life in early industrial Pennsylvania, despite the grueling hours in the mills, some workers found the strength to write or to involve themselves in politics, religion, or even science; many others used their savings to start a business, and to strike out in a new direction (Wallace 1978; Thompson 1963).

The Ordering of Experience

To know how to take a neutral or adverse situation and redefine it as a challenge that will sharpen one's skills is a tool that makes it much easier to confront adversity in later life. This ability is closely related to another dissipative structure of consciousness, which consists in the interpretive skills teenagers develop to give meaning to their experiences. To see how these skills are learned, we shall report briefy on a reinterview of twenty seven adolescents from the original sample, two years after the first study. These were teens who had been freshmen and sophomores the first time around, and were now juniors and seniors. In addition to repeating the ESM procedure, these students answered questions in interviews directed at uncovering change during this period. Two years is a short period, but we hoped that some of the growth trends would be visible even in such a reduced time span.

The four years of high school are in some respects all part of adolescence, but one does not have to look very carefully to see differences between a freshman and a senior. At fourteen, the young in our culture are still considered children; at eighteen, they are expected to behave like adults. Somewhere in those four years a mature human being is supposed to emerge out of the cocoon of childhood.

In the past chapters we have noticed several differences in the activities and experiences of teens at the beginning and at the end of this period. For instance, seniors spend 10 hours less a week with their families than freshmen, and 10 hours more with their friends. The type of friendship interaction changes from large same-sex groups to opposite dyads, and whereas for freshmen the most favorable experiences are with same-sex chums, for seniors they are with one person of the opposite sex. Solitude, which is strongly entropic for younger teens, becomes tolerable, in mild doses, for older ones. These were some indications of how life experiences change as the crucial years of adolescence pass by.

The first surprising result in comparing ESM data from two years apart was how much similarity there was in the consciousness of individual teenagers. Those who usually said they were happy as freshmen also said they were happy as juniors. The correlation of overall affect means was .77, and of overall activation .62, both extremely significant. If one looks at the separate contexts, however, one notices that affect with family and in solitude are not predictable from early to late adolescence, while affect with friends and in school remains consistent (Appendix D.21). Apparently friends and school, the most voluntary and the most involuntary contexts respectively, remain stable over this period in the quality of feedback they provide. Relationship with family and with the self, by contrast, undergo enough change to make some teens who had been happy alone or with their parents now unhappy, or vice versa. But overall it seems that by tenth grade most adolescents have developed a consciousness that is either basically ordered, or vulnerable to frustration—at least as measured again two years later.

So far we have looked at stability of experiences over time and between persons. This has shown that if John rated himself happier than Jim at fifteen, chances were he would still rate himself happier at seventeen. But one could look at stability in a different way, and ask: are adolescents on the whole happier at seventeen than at fifteen? The results suggest that, as far as immediate experience is concerned, the two years seem to make no great difference. Except for a significantly higher level of activation with friends, teens report essentially the same moods across the two-year period. If anything, moods tend to be more negative at the later date, even though the drop is not significant statistically. It would seem, however, that the only reason the overall experience is not more negative is because relationships with friends have improved. This gloomy conclusion is somewhat altered, however, by results from a different part of the same study.

Other data indicate that their lives have gotten better. When asked to rate how they felt globally compared to two years ago the majority reported that things had improved. For example, in

their relationships with their families, 52 percent said they were happier now, 12 percent that they were less happy, while the remaining 36 percent reported no change. Roughly the same pattern held for friends, alone, and overall. In fact, the majority rated their experiences as having improved in every context, both in terms of affect and activation (Freeman 1982).

How can the results of the pager reports, which show no change in experience, be reconciled with the questionnaire answers showing improvement across the board? To answer this question, we must consider some of the things adolescents said in the interviews. What they describe is a change, not so much in the quality of experience itself, but in the way experience is interpreted, the way it is evaluated and stored for future reference.

What emerges overall is an improved ability to use psychic dissipative structures, that is, to give purposeful meaning to entropic experiences. For instance, here is what one girl says about how her family relationships have changed:

> It used to get on my nerves, the time with my family; like they do something that bugs me it'd make me mad; like I'd be sitting and watching TV and someone would jump in front of me and that would make me real mad; now I still get mad but not that mad; a lot of my friends went off to school, so they're gone; but my family will be there; I think I accept them more; like my grandmother had a stroke a year or two ago, so she was real sick, so we spent a lot of time there, and when she talked to my father it was like he was a boy, and I never thought of him as growing up and being my age, so then I started to think about that and that he must have had a hard life, so I felt less selfish, and I don't get that mad at him when he asks me [to do things] . . ."

She still gets just as mad when the family crosses her, but the anger does not mean the same thing it did earlier. She can accept it better, she can identify with members of her family, and thus be less selfish. The immediate experience of anger is placed in a broader context of information, including values and goals; therefore, the effect of the experience is transformed. How to control and integrate entropic states with the family is well expressed by this advice given by a boy:

> Your parents can't completely understand you; you gotta understand where they're coming from. When you have something that goes wrong, getting pressure not just from them but from friends and school, don't take it all out on the family; try to sit down and explain instead of blowing up; try to be more calm. . . . I think that's the best way.

This boy is beginning to assume responsibility for ordering social relations beyond his own selfish goals: "You gotta understand . . . ." Instead of wasting energy in "blowing up," he sees the value of achieving a harmony of goals by sitting down and discussing calmly. By investing a little attention in creating order, he saves a great deal of the psychic energy he formerly spent in brooding about disorder.

The ability to reflect on the broader consequences of action, and thus to tolerate experience that is entropic, applies to relations beyond the family. Solitude, too, changes its meaning, even though the immediate experience is still negative. Here is a typical account from the interviews.

> Instead of thinking I'm alone because others aren't with me, it is because I choose to be alone; I don't think 'Oh, no one likes me'; I'm not alone because there aren't things for me to do, I'm just alone because I choose to be alone and I'm not as self-conscious being alone, doing something myself. Sometimes around here I'm just not up to going out, I'll just stay home and read or watch TV and I don't mind shopping alone and running into a bunch of my friends; I used to do a lot of camping, but don't have much time for it this year, but when I go up into the north woods I get really reflective; I like to go for walks by myself, I don't think about being alone, separated, isolated as much as I did 2 years ago.

And another one:

> When I was younger like freshman and sophomore year I didn't think you should be spending a lot of time alone or even some time alone; you should be out being social; it used to bother me sometimes being alone. . . . I used to think it wasn't healthy to be alone and now I think it's a lot healthier sometimes just to be alone. . . . I used to sometimes be really bored when I was by myself; now I always find an interesting thing to do, I'm never bored.

The major change is that earlier these teenagers perceived solitude to be involuntary: They thought they were alone because others were avoiding them. Now, however, they feel they can be alone by choice. With age and experience the threats are less intimidating (Coleman et al. 1974); more importantly, they know how to find interesting things to do by themselves. The experience is still painful, but now it provides opportunities for using skills that were not seen before. The psychic energy spent in solitude is no longer wasted in self-pity, but can be used to pursue the teenagers' goals.

The ability to stand solitude goes hand in hand with emancipation from the peer group. Many older adolescents seem to have developed a strong enough identity to resist the pressures of friends:

> Two years ago if they had bothered me I wouldn't have told them to leave me alone; now if they bug me I tell them to go somewhere; (Why?) 'Cause we just built that relationship; I'd rather be alone than with my friends, cause they always want you to do things and I'd rather do what I want to do.

One teen is willing even to break the sex-role taboo against boys cooking, in his assertion of independence from peers:

> I'm looking at myself more not so much as how other people look at me, I always used to worry about what other people thought and now it doesn't matter because I'm the only one I have to please; I take a new attitude about life; kids in my class might go out and get wild drunk, but that doesn't appeal to me, and I think, heck, if that's what they want to do let them go out and do it, but I'm not gonna do it; whatever I want to do I'm going to do it, like some kids wouldn't get caught dead in the kitchen baking cake, but I enjoy it so I'm gonna do it, who cares?

Liberation from external peer pressure implies that friendships become more meaningful: more freely chosen, more clearly related to the teenagers' goals. The potential for runaway positive feedback becomes checked. They learn to find enjoyment without yielding control. With time, interactions with friends might

become more than an opportunity for uncontrolled dissipation of raw energy; intimate friendships might provide a discriminating and constructive dissipative structure in their lives. If immediate experience has not gotten better, it is partly because they are taking on more complex and sophisticated challenges.

These maturational trends have been described by previous researchers. For instance, it has been said that, as they move through the high school years, teenagers learn to recognize their parents' needs and thus become less estranged from them, less ready to engage in "token empty rituals of disaffection" (Douvan and Adelson 1966). Decreasing preoccupation with popularity and peer approval also has been often documented (for example, Looft 1971; Conger 1977; Costanzo 1970; Berndt 1979). Teens still feel angry when parents attempt to socialize them, they still feel lonely when alone. But they are learning to put experience in perspective, to control psychic entropy by ordering information in consciousness. If they can explain a negative emotion, if they can see reasons for a painful subjective state, this very process of interpretation creates order and reduces the entropic effects of the "raw" experience. The obstacles to their goals are still present, but now teenagers accept their necessity, understand the reason for their existence, and begin to see how they can reach their goals despite these obstacles.

These processes of reinterpretation are particularly visible in how people cope with trying experiences. In recent years an increasing number of psychological approaches have come to acknowledge that human development occurs within a context of stress and frustration. The notion of conflict, of course, is central to psychoanalysis. In dialectical psychology, the basic tenet is that growth takes place as a result of the continuous resolution of radical polarities between the self and the environment (Riegel 1976; Rychlak 1976). Existential psychology claims that to live an authentic life one must face up to the unavoidable stress and uncertainty of the future (Kobasa and Maddi 1977).

In turn, psychologists have come to recognize that a powerful means for reducing the negative impact of stressful events lies in how we think about or how we reinterpret experience. Freudian

therapy and its offshoots are based on the premise that if one only talks about painful events, there is a chance that they will lose their power over the psyche. Lazarus, Averill, and Opton (1974) single out "reappraisal" as one of the main mechanisms by which the effects of stress are mitigated. Even behaviorists are beginning to use cognitive reinterpretation techniques. Meichenbaum's (1977) stress-innoculation training involves the "relabeling" of painful experiences, a process which increases tolerance of pain and decreases its perceived intensity (Sanders 1979). The same training works when applied to other experiences. If, for instance, an angry person is given a word to label his emotion (for example, "anger"), he might be able to reduce the emotion (Novaco 1975).

By talking and thinking through their problems, adolescents learn to control conflict in everyday life. This process is a powerful tool for creating order out of chaos, for changing the valence of feedback from negative to positive, thereby turning a source of weakness into an input that strengthens the self. Of course, it is a tool that must be used with caution. To deny the reality of something unpleasant is just as bad as to let oneself be overwhelmed by it. Reinterpretation that distorts the actual state of affairs becomes a deceptive defense rather than realistic coping (Lazarus, Averill, and Opton 1974; Kobasa and Maddi 1977).

A boy whose girl friend has left him might feel despair because of the loss of all the psychic energy he had invested in the goal of being with the girl. He can reinterpret the event by denying the importance of the relationship. This is the classical "sour grapes" response. It is a way of coping that distorts the actual state of affairs, however, and thus cannot lead to psychic negentropy, which requires a harmonious order among the contents of consciousness. A more effective way is to recognize the hurt caused by the breakup of the relationship, while at the same time recognizing that the future holds other opportunities for friendship and love, and that from an objective viewpoint the loss cannot be as acute as it is experienced at the moment. In other words, the experience is placed in a more realistic perspective. Its sting is removed, not through denial, but by relating the

event to the full range of the person's hierarchy of goals. In the new context, the distressing event acquires a new meaning which is less entropic than it originally was. This solution allows the memory of the past relationship, however painful, to remain in consciousness, and to become integrated with new experiences. The psychic energy invested in the relationship is not lost, but remains at the disposal of the self. This kind of reinterpretation maintains psychic order while preserving the integrity of the self and allowing further growth.

The ability to take disorder and turn it into order is perhaps the major skill adolescents perfect as they grow into adulthood. Learning to use the dissipative structures culture provides to alleviate frustration is the main task of maturity.

The Development of Life Themes

In our research we could not observe how teenagers go through the steps of building a permanent set of goals that would serve to give purpose and meaning to their lives. This is a slow process, with many stops and starts. Only a few adolescents actually develop fully authentic life goals—most are satisfied to pursue the goals society prescribes: a college education, a job, marriage, children, and life within conventional standards of morality. To the extent that these prescribed goals give order to their lives, they will be satisfied adults. But some young people are unable, or unwilling, to shape their attention exclusively according to cultural blueprints. They struggle to define their own goals, to build a custom-made dissipative structure to direct their psychic energy. Only a longitudinal study, in which people are followed from early teens into adulthood, can give a clear picture of how such life themes develop.

A less reliable source of information is a *restrospective* study, where adults are interviewed to find out how the goals by which they order their lives were developed. Some years ago we con-

ducted such a study with Olga Beattie Emory, and a brief summary of it will begin to show how life themes originate and give direction to life. Thirty adult men were interviewed; half were successful intellectuals—professors, physicians, lawyers, and politicians—and the other half blue-collar workers. The childhood environment for all thirty was as similar as it could be: Both groups came from poor immigrant families, both were equally plagued by illness, alcoholism, illiteracy, and poverty. Yet somehow half escaped its entropic background and achieved rare heights of complexity, while the other half led lives that were predictable given the conditions of their childhood. What made one group able to reshape its life conditions?

There might have been many reasons that we have not begun to fathom. But one clear difference was that practically all the men who broke away from the constraints in which they were born had developed in adolescence goals that were to focus their energies for the rest of their lives. Each constructed for himself a *life theme,* a set of challenges that kept him struggling, and that forced him to develop skills of a rare complexity. The men whose lives were predictable did not create such a scheme. At most, they gave order to their lives by adopting a ready-made goal suggested to them by their parents—like honesty or thrift—and let that goal shape their psychic energy (Csikszentmihalyi and Beattie 1979).

For both groups the goals that gave direction to their lives emerged out of entropic experiences: poverty, loneliness, helplessness. And both groups survived by focusing their attention on goals that acted as dissipative structures by restoring order in their consciousness. The difference was that the men who overcame their handicaps saw their plight as part of a broader human problem, and so were able to attack it at a more general level than the others. For example, Henry and Julian, two typical respondents in the study, were both poor as children. But Henry got to see his deprivations as caused by the social exploitation of illiterate immigrants, while Julian learned to ascribe his family's poverty to his father's lack of thrift. Henry attributed the cause of poverty to laws and institutions that could be changed,

whereas Julian blamed human nature. As a teenager, Henry decided to learn the law in order to help other poor immigrants in situations like those his family had encountered. Julian decided to save every cent he earned so that he would not end up poor, as his father had.

The two adolescents found different meanings in poverty; that is, they related it to different causes, which in turn suggested different strategies of solution, different life goals. Henry became a lawyer, achieved a high position in President Truman's cabinet, and helped to implement legislation that made the lot of the destitute easier. Julian worked hard, bought up a number of apartment buildings, and was able to save several hundred thousand dollars by the time he was sixty. He never got married, and lived in a small room all his life, fixing the buildings he owned and being as thrifty as was humanly possible.

Why were the lives of Henry and Julian, and the two groups they represent, so different when the environment they grew up in was the same? The answer seems to be that while the environment was the same in terms of material obstacles and opportunities, it was not the same in terms of meaning and information. Despite poverty, illness, and family strife, Henry's parents trusted that the culture held solutions to their difficulties, and they encouraged him to find them. They believed that education could provide knowledge to improve life. So from the earliest years Henry remembers his parents reading stories to him, and he remembers himself reading voraciously. As a teenager he drew from books examples of people who had been able to cope with problems similar to his own. It was from these successful solutions preserved in the cultural heritage that Henry, and other men who escaped the deterministic forces of their childhood, fashioned their life goals (Beattie Emory and Csikszentmihalyi 1981).

Those who spent their lives in their parents' footsteps do not remember being read to, nor did they read on their own as children. They do not seem to have realized that the predicaments they faced occasionally had been surmounted by strong-willed individuals; they lacked cultural models whose example might have helped them to formulate more complex goals.

Thus, growth in adolescence depends in large part on the amount of meaning one is able to extract from the culture. Culture is made up of patterns of information shaped by the psychic energy of previous generations. It constitutes a potential resource because it can increase the efficiency of the psychic energy of those who use it. For instance, arithmetic evolved over thousands of years as a system for ordering numerical quantities. Untold individuals spent their lives refining the four basic operations. Nowadays a child can learn them in a few weeks, spending a minute fraction of his psychic energy in doing so. The same is true of almost any complex pattern—from making music to building bridges, from growing grain to understanding the causes of disease.

Growth in complexity involves extracting as much order as possible from the information stored in the culture. Some of this is done automatically; every child learns a language spontaneously in a few years, whereas it took his ancestors tens of thousands of years to invent it. But much of the information requires voluntary effort to decode and reconstitute it as a useful pattern of psychic energy. Those who have enough free energy to invest in these patterns learn to integrate the power of past generations into their own consciousness. This is how a person grows beyond the limits of individuality. Among teenagers of this study there were some who were learning to draw on the skills of past generations, and in so doing were increasing the complexity of their own consciousness—Katherine Tennison and Andy Gridwell, for example. Others seemed to face life almost alone, relying only on their native skills to achieve their goals. This is a pattern he saw in Greg Stone and Jerzy Madigan, who were caught up in the early search for good times.

The paradox is that those who absorb skills from the culture—like Katherine and Andy—do not automatically accept cultural goals to direct their lives; whereas people who do not benefit much from the cultural heritage—like Greg and Jerzy—tend to spend their life chasing the traditional rewards their society has to offer. As long as everything goes well, as long as health and prosperity reign, the two solutions work equally; they both keep consciousness in an ordered state. But where entropy enters the

system—as it usually does, sooner or later—persons equipped with broad cultural skills and a self-forged approach to life have a chance to weather the storm. They can take negative feedback and change it around in such a way that positive adaptation can be brought about. They can make meaning from disordered experience. The order in consciousness, instead of being destroyed by the stressful event, gets reconstituted around a more complex goal.

A life theme may not increase the net enjoyment in people's existence. But it seems clear that it affects *where* they find it, and whether that enjoyment contributes to their ultimate goals and the well-being of society. Julian found pleasure in a simple and repetitive way of making money; he could enjoy nothing more challenging. Henry, in contrast, learned to gain pleasure in tackling the demanding and difficult challenges of the legal profession. His life theme provided the structure to teach him to cull satisfactions from the more complex struggles faced by a lawyer and politician.

None of the teenagers we studied revealed a fully developed life theme. All were trying and testing different channels in which to invest their attention. Greg and Jerzy pursued good times with friends relentlessly, a direction not likely to lead toward greater complexity. Katherine and Andy, in contrast, were learning to direct their attention to more challenging opportunities. They were learning to find enjoyment in more complex systems of order. Progressively, such lives might coalesce into the overall pattern of a life theme.

Being Adolescent, Becoming Adult

To grow means to learn to interact with more and more complex dimensions of reality. A child knows the world in which its body moves, a world of simple sense impressions and basic emotions.

Around this concrete world are discovered concentric envelopes of meaning, increasingly difficult to understand and increasingly hard to master. These deal with physical, technical, and mathematical concepts, with morality and responsibility, with beauty, with love, and with the stuff of the galaxies.

In this book we have learned how this process of growth is encountered in teenagers' everyday life, how it threatens and invigorates them as it unfolds in daily experience. Every experience can be either a challenge that stimulates growth, or an obstacle that retards it. What happens in adolescence depends on the order a person is able to impose upon the complex opportunities of daily life.

In negotiating the path to adulthood, adolescents can draw upon many sources of aid. Most parents try hard to assist their teenage children in dealing with the difficulties of daily life. Schools exist at great expense to society in order to facilitate learning about everything from the English language to physical health. And friends can be a useful source of support whatever one's problem might be. The culture provides numerous agents to help make sense out of this complex world.

However, when all is said and done, only teenagers can help themselves. Opportunities are important, but they make no difference unless the adolescent uses them. Beauty, wealth, talent, intelligence—all of these gifts easily become traps that retard growth instead of fostering it. Handsome young men and beautiful young women all too often become so absorbed with their looks, with their power to attract others, that they never learn to focus their attention on anything else. Affluent teenagers frequently learn to assume that their goals can be reached with money, and thus fail to develop their skills; by the time they realize that it is not what they own, but what they do that makes life rich, it may be too late. Likewise, an adolescent's talent easily becomes an obsession that stamps out every other goal, leaving a narrow and unhappy young genius behind.

Illness, poverty, and discrimination, on the other hand—all considered to be major impediments to development—sometimes spark a response from an adolescent that will start pro-

gressive growth toward a competent, directed existence. Every teenager has the power to ignore the precious knowledge and skills of adulthood. Yet every teenager also has the power—as Lincoln and Malcolm X demonstrated—to search out knowledge and inner strengths no matter how difficult they may be to find.

But if none of the help we try to give children is sure to make any difference, what can an adult do for an adolescent? Perhaps the best thing we can offer is examples—examples of how to choose among goals, how to persevere, how to have patience, how to recognize the challenges of life and enjoy meeting them. We can help adolescents by letting them share our own hard-won habits of skill and discipline. We can help by letting them see that achieving control over experience can bring serenity and enjoyment in its wake.

At least some of the teenagers in this study were demonstrating that they understood the requirements of growth. They had found out that it is impossible to avoid constraint and frustration in life. They had grasped that it does little good to deny disorder, or to attempt to escape complexity through refuge in the pleasant and familiar. They had learned to face obstacles squarely and see them as challenges that provide opportunities for their skills. To the extent that each comprehends these basic lessons of experience, he or she will find enjoyment while growing into an increasingly complex person, able to create order within, and in the complex, surrounding world.