Current Comments

EUGENE GARFIELD

INSTITUTE FOR SCIENTIFIC INFORMATION 3501 MARKET ST., PHILADELPHIA, PA 19104

The Loneliness Researcher Is Not So Lonely Anymore

Number 5

February 3, 1986

Being alone is a state resulting in a variety of consequences, including loneliness and solitude. While solitude is thought to promote individuality, creativity, and self-awareness, loneliness is a painful state marked by a distinct lack of satisfying social relationships. This essay deals with the psychosocial issues of loneliness and solitude. I have made a concerted effort to steer away from the medical model of loneliness as a symptom of clinical depression, as this model deals with complex behavioral, biologic, and genetic problems. Instead, my intent is to describe a phenomenon that can affect everyone at some point in time, even the most physically and mentally fit.

Loneliness

All of us experience loneliness at some point in our lives. The impact of being alone varies according to the experiences we each have had along the way to maturity. Once considered a sign of inadequacy, loneliness is leaving the realm of embarrassing affliction and is gaining recognition as a widespread and complex problem. Carin Rubenstein, then associate editor, Psychology Today, and Philip Shaver, professor of psychology, University of Denver, Colorado, compare loneliness with hunger. Just as our bodies signal a need for food by sensations of hunger, our emotional systems signal a need for emotionally sustaining ties by the sensations of loneliness. Using this analogy, loneliness should be no more of an embarrassment than hunger.

To learn more about loneliness, Rubenstein and Shaver published a questionnaire in a 1978 Sunday supplement of several East Coast newspapers. More than 25,000 people responded, indicating that large portions of the populace—regardless of sex, socioeconomic level, race, and religious group—are indeed lonely.

The incidence of loneliness was studied by Richard Maisel, then at the Laboratory of Community Psychiatry, Harvard Medical School, who asked respondents in a national telephone survey if they had felt lonely within the past week.2 Eleven percent of the respondents reported loneliness. The survey showed that severe loneliness was less likely among married people. Ten percent of the married women and 6 percent of the married men reported loneliness, while among unmarried men and women, 27 percent of the female and 23 percent of the male respondents admitted to loneliness. Robert S. Weiss, professor of sociology, University of Massachusetts, Boston, notes that loneliness is severely distressing and "is a condition that is widely distributed...."3 (p. 9)

To characterize how loneliness feels and to learn the words most often used to define it, Rubenstein and Shaver conducted a series of interviews with people who described themselves as lonely. A list of 27 words or phrases describing feelings associated with loneliness was compiled from the interviews, shown in

Table 1, and this list was included in their newspaper questionnaire. The respondents were asked to circle all the feelings that described their sense of loneliness. Four categories were identified: desperation, impatient boredom, self-deprecation or underevaluation of oneself, and depression.

Respondents suffering from desperation had experienced broken attachments such as divorce or death. They described themselves as panicked, helpless, abandoned, afraid, and without hope. Loneliness resulting from unfulfilling social interaction produced feelings of impatient boredom. These feelings were characterized as an "edgy restlessness, a 'nothing to do, nowhere to go' kind of feeling." (p. 11) Both self-deprecation and depression were associated with prolonged periods of loneliness. Self-deprecation was experienced as anger at oneself, while depression, a resigned, passive state, was marked by self-pity.

Loneliness, like anger or elation, is a subjective feeling, making it difficult to define and its causes hard to isolate. Consequently, a wide variety of definitions and explanations have been offered. However, Letitia Anne Peplau, professor of psychology, University of California, Los Angeles (UCLA), and Daniel Perlman, Department of Psychology, University of Manitoba, Winnipeg, Canada, propose that there are three basic aspects of loneliness: it is subjective (in that being alone doesn't necessarily mean loneliness); it is distressing; and it is marked by a perceived deficiency in social relationships.4

Causes of Loneliness

Many psychosocial theorists have speculated on the causes of loneliness. Psychodynamic theorists emphasize the effects of childhood experience on later life. These theorists propose that loneliness results from an unmet basic human

Table 1: Rubenstein and Shaver's list of the 27 words or phrases describing feelings people often associate with loneliness.

 Down on myself 	own on myse	lf
------------------------------------	-------------	----

- 3. Unable to concentrate
- 4. Uneasy
- 5. Impatient
- 6. Sorry for myself
- 7. Insecure
- 8. Afraid
- 9. Melancholy 10. Bored
- 11. Ashamed of being lonely
- Without hope
 Stupid.
- incompetent
- 14. Depressed

- 15. Longing to be with one special person
- 16. Vulnerable
- 17. Empty
- 18. Alienated, "out of place"
- 19. Unattractive
- 20. Isolated, alone21. Desperate
- 22. Abandoned
- 23. Desire to be somewhere else
- 24. Panicked
- 25. Resigned
- 26. Helpless
- 27. Angry, resentful

need for intimacy during childhood. The late Harry Stack Sullivan, formerly of the Washington School of Psychiatry, Washington, DC, believed that, from preadolescence on, people need "intimate exchange with a fellow being, whom [they] may describe as a chum, friend, or loved one." 5 (p. 261)

Sullivan believed that loneliness could be traced to childhood, when social skills and a self-concept are formed. When opportunities to develop social skills are inadequate, perhaps due to the lack of playmates, children find it difficult to relate to their peers. Their social awkwardness may lead to rejection and a negative self-concept, resulting in loneliness they may carry throughout life.⁵ (p. 262)

Another psychodynamic model draws from the attachment theory of John Bowlby, Tavistock Institute of Human Relations, London. From extensive studies of mother-infant interactions in humans and other primates, Bowlby concludes that for an infant to feel secure, it must have complete faith in the availability and tenderness of an attachment figure, such as the mother. An infant whose needs are met only sporadically may come to regard others as unpredictable and potentially hostile. This distrust of others is maintained through-

out adulthood, resulting in loneliness.⁶ Weiss, following Bowlby's work, suggests that the absence of an attachment figure is the essential element in at least one form of loneliness.³ (p. 18) Bowlby's three-volume work, Attachment and Loss, is highly cited,⁷ and was the subject of a Citation Classic® commentary.⁸ Bowlby was one of the most-cited social-sciences authors between 1969 and 1977.⁹

The idea that a tendency toward loneliness is developed early in life is supported by Rubenstein and Shaver's survey. Lonely respondents described their parents as distant and untrustworthy more often than did nonlonely respondents. In addition, the study indicated that people whose parents had divorced when they were young were especially prone to loneliness as adults. Rubenstein and Shaver attribute this to children often interpreting parental divorce as abandonment, planting the seeds for distrust and alienation. 10

Sociologists examine the societal factors, such as social mobility and competitiveness, that can cause loneliness. David Riesman, Department of Sociology, Harvard University, and colleagues theorize that society since World War II has shaped individuals to be "other-directed." Individuals, in their search for acceptance, become driven by the opinions of others and experience constant anxiety about themselves and their relationships. 11

One of the first postwar books to reflect a self-conscious society, The Lonely Crowd: A Study of the Changing American Character by Riesman and colleagues¹¹ has been cited over 760 times since 1966. This book was the subject of a 1980 Citation Classic commentary in which Riesman noted that it used "materials from philosophy, history, popular culture, psychoanalysis, as well as sociology, [and] gave it an audience among educated people generally." 12

Weiss has taken an interactionist approach to loneliness, emphasizing the

importance of both personal and situational factors. Weiss distinguishes two kinds of loneliness: social and emotional. The loneliness of social isolation occurs when an individual has an inadequate supply of friends, relatives, and acquaintances with whom to share common experiences. Individuals suffering social loneliness feel bored, alienated, and out of the mainstream. Emotional isolation occurs when an individual lacks a partner or close friend with whom to be intimate, resulting in feelings of anxiety, restlessness, and emptiness.³

A cognitive approach to loneliness offered by Peplau and Perlman focuses on personal desires and preferences concerning social relations. Two people with similar social-interaction patterns may give opposite answers when asked whether they are lonely because each may have different perceptions of and preferences for their social relations.¹³

Loneliness and Depression

Loneliness is often mistaken for a form of depression. While studies show that loneliness may be closely related to depression, the two are not the same. In his doctoral research at UCLA, Martin E. Bragg compared a group of students who were both lonely and depressed with a demographically similar group who were lonely but not depressed. These groups were identified by their scores on questionnaires. The study revealed that the lonely and depressed people have suffered both social and nonsocial disappointments, while the lonely and nondepressed people suffered only social disappointments. 14 According to Weiss, "In loneliness there is a drive to rid oneself of one's distress by integrating a new relationship; in depression there is instead a surrender to it,"3 (p. 15)

Peplau and colleagues suggest a model for the relationship between loneliness and depression. According to Peplau, individuals tend to cope with loneliness by trying to determine its cause. Depression may develop if the causes for loneliness are considered unalterable. 15 (p. 56) For instance, if someone views loneliness as a result of ugliness or unlovability, they may believe change is impossible. Since loneliness is considered permanent, depression may result, perhaps causing withdrawal and decreasing the likelihood of forming a relationship that would allay loneliness. I have discussed the debilitating mental condition of depression in past essays. 16

In recent studies, loneliness has been closely correlated with disease, including alcoholism. James J. Lynch, scientific director, and William H. Convey, consulting clinician, Psychophysiological Clinic and Laboratories, Institute of Psychiatry and Human Behavior, University of Maryland School of Medicine, Baltimore, propose that isolation and lack of companionship are the greatest contributors to illness and premature death. Lynch and Convey believe that loneliness brings on self-destructive behavior such as recklessness, increased smoking, and excessive drinking.¹⁷ Vincent J. Nerviano, then at the Psychology Service, Eastern State Hospital, and William F. Gross, Psychology Service, Veterans Administration Hospital, Lexington, Kentucky, cited alcohol dependence as a means used to overcome feelings of loneliness. 18 The problems of alcoholism have been discussed in past essays.19 In addition, if loneliness continues for an extended period of time, the long-term emotional upset can cause sleeplessness, anxiety, and poor eating habits. This may alter physioneurochemical processes in the body, causing the immune system to break down, increasing the susceptibility to disease. 17

Minimizing Loneliness

There is no simple antidote that will cure the distressing effects of loneliness. Instead, numerous therapies attempt to

treat the causes of loneliness by removing the roadblocks between an individual and social fulfillment. Peplau and Perlman propose a cognitive approach to therapy that promotes strategies for improving individuals' perceptions of their social relations. These strategies may include doing more tasks that are enjoyed when alone, changing the standards for who is acceptable as a friend, making fuller use of existing relationships, or reducing the perceived importance of a social deficiency.¹³

A cognitive-behavioral therapy developed by Jeffrey E. Young, now at the Department of Psychiatry, Columbia University, challenges lonely people to question their assumptions about themselves and their behavioral patterns. Young's therapy focuses on the thoughts, beliefs, and expectations people have toward activities that cause them discomfort. The individuals are asked to describe their assumptions about the activities. By studying the factors leading to the assumptions, individuals can decide whether they are correct. In this way, each problem and its underlying assumptions are resolved so that individuals can initiate and deepen relationships without abnormal discomfort.20

Certain therapies focus strictly on behavioral elements. James P. Curran, Brown University Medical School, Veterans Administration Hospital, Providence, Rhode Island, found that social awkwardness and anxiety can be reduced through social-skills workshops. These workshops use role-playing techniques and self-observation with videotapes to help people develop better interpersonal relationships. Attention is given to basic skills, such as initiating conversations, handling periods of silence, and using nonverbal communication.²¹

Loneliness Versus Solitude

It is necessary, I believe, to distinguish loneliness from solitude. In his essay

"Loneliness and Solitude," the late Harvard theologian Paul Tillich contrasts the pain of loneliness to the glory of solitude. "In the moments of solitude, something is done to us. The center of our being, the inner self which is the ground of our aloneness, is elevated to the divine center and taken into it. Therein we can rest without losing ourselves." (p. 553)

Thomas Parkinson, professor of English, University of California, Berkeley, believes that solitude nurtures the imagination by allowing the freedom for contemplation and exploration.²³ Psychiatrist Albert J. Lubin, Stanford University Medical Center, California, wrote an essay on the productive influence loneliness had on Vincent van Gogh, who realized both the torment and the creative aspect of being alone. While he termed himself "a prisoner who is condemned to loneliness,"24 (p. 511) van Gogh gave credit for his accomplishments to self-isolation: "I agree with what I recently read in Zola: 'If at present I am worth something, it is because I am alone....' "24 (p. 508) Art was the single activity through which van Gogh could turn loneliness into the solitude that provided reflection, study, and fantasy. In a letter to his brother Theo, the artist explained his life of poverty and neglect as "a good way to assure the solitude necessary for concentrating on whatever study preoccupies me."24 (p. 509)

Solitude is often considered a cherished commodity. Psychiatrist Ilza Veith, then at the Department of History of Health Sciences, University of California, San Francisco, describes the Coptic Church of Ethiopia that placed its monasteries on nearly inaccessible mountain tops. By restricting access, the monastery ensured escape from the maddening crowds, a step considered necessary in becoming closer to God.²⁵ In his book *The Silent Life*, Trappist monk Thomas Merton notes, "It is in silence and not in commotion, in

solitude and not in crowds, that God best likes to reveal Himself most intimately to men."26

Henry David Thoreau removed himself to the remote Walden Pond for 26 months to find solitude. He reasoned, "I love to be alone. I never found the companion that was so companionable as solitude." (p. 335)

Psychologist Peter Suedfeld, University of British Columbia, Vancouver, Canada, has observed that solitude is regarded by many tribes in North and South America, Africa, Asia, and Australia as the means for reaching a higher level of consciousness considered necessary on the route to adulthood. These tribes each have rituals that force adolescents to leave the community to wander alone for a period of time. Depending upon the tribe, the goal of the enforced solitude may be to dream a magic dream, to communicate with ancestors or gods, or simply to experience the oneness of the universe.28

Tribal members believe that the hallucinations or illusions experienced after periods of solitude are caused by the supernatural. However, Suedfeld found reports of similar responses to enforced solitude by isolated convicts in modern Western prisons. Prisoners experiencing prolonged isolation have reported reverie, fantasy, and religious conversions attributed simply to being alone. 28

Meditating in solitude has also produced interesting experiences, as I have discussed in an earlier essay.²⁹ In Realms of the Unconscious: The Enchanted Frontier, V.V. Nalimov, Laboratory of Mathematical Theory of Experiments, Moscow State University, writes that creative scientific activity, even in its everyday manifestation, has features of unconscious meditation.³⁰

Loneliness Research

While loneliness has always been a common theme in literature, it is interesting to note that most of the published research on loneliness has been produced only in the last 10 years. In fact, Peplau and Perlman observed that of 208 publications in English on loneliness available between 1932 and 1977, only 6 percent were published before 1960.4 The early works on loneliness were primarily commentaries by clinicians based on patient observation. However, Sullivan;5 the late Frieda Fromm-Reichmann, then at the Chestnut Lodge Sanitarium, Rockville, Maryland;31 and the late Margaret Wood, then of Mississippi State College for Women,32 were pioneers in identifying loneliness as a legitimate research topic.

During the 1960s, over 60 new publications on loneliness appeared, with many using empirically based documentation. But it was Weiss's 1973 publication of Loneliness: The Experience of Emotional and Social Isolation³ that brought attention to the field of loneliness.

Reasons for the lack of early research on loneliness are varied. Peplau and Perlman speculate that people were embarrassed to be lonely and subsequently were not particularly open about their feelings of loneliness. Investigators might have felt uncomfortable researching loneliness for fear that people would believe they were researching an unresolved personal problem. While this explanation is appealing, it does not account for the active research in areas that cause pain and intense anxiety such as venereal disease or the phenomenon of grief or dying.

Weiss proposes that people severely underestimate their own past experience with loneliness and consequently downplay the role it has played in the lives of others.³ Sullivan observed that periods of loneliness are later difficult to recall. He noted that loneliness was "an experience which has been so terrible that it practically baffles clear recall." (p. 261) Weiss remarks that "we might expect that those who are not at the moment lonely will have little empathy for those

who are, even if in the recent past they had been lonely themselves."3 (p. 11)

Another barrier to early loneliness research might have been the lack of a valid approach for collecting data. Since loneliness is difficult to manipulate in a laboratory, the highly valued experimental method cannot be used. Consequently, other methods needed to be devised. And because few researchers were working on loneliness, the issues had not yet been defined explicitly nor was there work to be built upon.⁴

Today a variety of measuring techniques have been developed, suggesting that the inability to assess loneliness is no longer a barrier to further research. The early scales that were developed had a variety of problems such as a lack of internal consistency and external validity criteria. In addition, most techniques were lengthy, ranging from 38 to 75 questions.

Daniel Russell, University of Iowa, Peplau, and colleagues addressed the deficiencies in early measuring scales and in 1978 developed the UCLA Loneliness Scale. 33.34 This measurement method is designed to identify several common themes characterizing the experience of loneliness for a broad spectrum of individuals. These experiences include such factors as the antecedents and the consequences of loneliness.

Tests proved that the UCLA Loneliness Scale had high internal consistency, making it a reliable instrument. In addition, when examined in relation to several validity criteria, the loneliness scale score was highly significant.

Loneliness Research Fronts

As a multidisciplinary topic, loneliness research is published in journals spanning several social-science disciplines, as shown in Table 2. We developed this table by determining which journals published loneliness research most frequently, ensuring that psychology, sociology, and psychiatry were all

Table 2: A selected list of journals in which loneliness research appears. A = name of journal. B = 1984 impact factor. First year of publication appears in parentheses.

A	В
A 4. Carial aire (1955)	0.44
Acta Sociologica (1955)	0.44
American Journal of Psychoanalysis (1941)	0.05
American Journal of Sociology (1895)	1.34
Journal of Clinical Psychology (1945)	0.48
Journal of Consulting and Clinical Psychology (1968)	2.07
Journal of Personality (1932)	1.08
Journal of Personality and Social Psychology (1965)	1.75
Journal of Psychology (1936)	0.18
Journal of Social Psychology (1929)	0.38
Journal of Youth and Adolescence (1972)	0.37
Personality and Social Psychology Bulletin (1975)	0.66
Psychiatry (1938)	0.39
Psychological Bulletin (1904)	3.43
Psychological Reports (1955)	0.23
Psychology Today (1967)	0.24
Psychosomatics (1960)	0.91
Social Problems (1953)	0.64
Social Research (1934)	0.25
Social Work (1956)	0.79

represented. In addition, we examined the Science Citation Index® Journal Citation Reports® (JCR®) to see what journals cited and were cited by this list.

A search of ISI®'s files shows two research fronts dealing with loneliness. Linkages between research fronts from year to year enable us to follow the evo-

lution of a field through time. If core documents in a 1983 research front continue to achieve the required citation and co-citation thresholds in 1984, a linkage is formed. In the case of loneliness, research fronts on "Sociological and psychological studies of loneliness and social behavior" (#83-8892) and "Research in the psychological correlates of loneliness" (#84-8977) share highly cited core documents, including Peplau and Perlman's book Loneliness: A Sourcebook of Current Theory, Research and Therapy.35

As the research-front data suggest, loneliness is now recognized as a legitimate research area, and studies have intensified in recent years, perhaps as a result of improved measurement techniques. Yet this topic still remains a frontier open for exploration. Further research is needed to illuminate new strategies that will help people become more satisfied with their social relationships.

My thanks to C.J. Fiscus, Lisa Holland, and Lori Perkins for their help in the preparation of this essay. @ 1986 ISI

REFERENCES

- 1. Rubenstein C & Shaver P. In search of intimacy. New York: Delacorte Press, 1982, 260 p.
- 2. Maisel R. Report of the continuing audit of public attitudes and concerns
- Cambridge, MA: Harvard Medical School, Laboratory of Community Psychiatry, 1969.
- 3. Weiss R S. Loneliness: the experience of emotional and social isolation.
- Cambridge, MA: MIT Press, 1973. 236 p.
 4. Peplau L A & Perlman D. Perspectives on loneliness. (Peplau L A & Perlman D, eds.) Loneliness: a sourcebook of current theory, research and therapy. New York: Wiley, 1982. p. 1-18.
- 5. Sullivan H S. The interpersonal theory of psychiatry. New York: Norton, 1953, 393 p.
- 6. Bowlby J. Attachment and loss. Vol. 1. Attachment. New York: Basic Books, 1969. 428 p.
- 7. Garfield E. The 100 books most cited by social scientists, 1967-1977. Essays of an information scientist. Philadelphia: ISI Press, 1980. Vol. 3. p. 621-32.
- 8. Bowlby J. Citation Classic. Commentary on Attachment and loss. Vol. 1. Attachment. New York: Basic Books, 1969. 428 p. Current Contents/Social & Behavioral Sciences 14(29):18, 19 July 1982.
- Garfield E. The 100 most-cited SSCI authors, 1969-1977, 1. How the names were selected. Essays of an information scientist. Philadelphia: ISI Press, 1980. Vol. 3, p. 633-9.
- 10. Shaver P & Rubenstein C. Childhood attachment experience and adult loneliness. (Wheeler L, ed.) Review of personality and social psychology. Beverly Hills, CA: Sage, 1980. Vol. 1, p. 42-73.
- 11. Riesman D, Denney R & Glazer N. The lonely crowd: a study of the changing American character. New Haven, CT: Yale University Press, 1950. 386 p.

- Riesman D. Citation Classic. Commentary on The lonely crowd: a study of the changing American character. New Haven, CT: Yale University Press, 1950. 386 p. Current Contents/Social & Behavioral Sciences 12(30):20, 28 July 1980.
- Peplau L A & Perlman D. Blueprint for a social psychological theory of loneliness. (Cook M & Wilson G, eds.) Love and attraction. New York: Pergamon Press, 1979. p. 101-10.
- Bragg M E. A comparative study of loneliness and depression. PhD dissertation, University of California, Los Angeles, 1979.
- Peplau L A, Russell D & Heim M. The experience of loneliness. (Frieze J H, Bar-Tal D & Carroll J, eds.) New approaches to social problems. San Francisco, CA: Jossey-Bass, 1979. p. 53-78.
- Garfield E. What do we know about depression? Parts 1-3. Essays of an information scientist. Philadelphia: ISI Press, 1983. Vol. 5, p. 100-15; 157-63.
- Lynch J J & Convey W H. Loneliness, disease, and death: alternative approaches. Psychosomatics 20:702-8, 1979.
- Nerviano V J & Gross W F. Loneliness and locus of control for alcoholic males: validity against Murray need and Cattell trait dimensions. J. Clin. Psychol. 32:479-84, 1976.
- Garfield E. Alcohol: are the benefits worth the risks? Essays of an information scientist. Philadelphia: ISI Press, 1982. Vol. 5, p. 75-83.
- Young J E. Cognitive therapy and loneliness. (Emergy G. Hollon S D & Bedrosian R C, eds.) New directions in cognitive therapy. New York: Guilford Press, 1981. p. 139-59.
- Curran J P. Skills training as an approach to the treatment of heterosexual-social anxiety: a review. Psychol. Bull. 84:140-57, 1977.
- 22. Tillich P. Loneliness and solitude. (Hartog J, Audy J R & Cohen Y A, eds.) The anatomy of loneliness. New York: International Universities Press, 1980. p. 547-53.
- 23. Parkinson T. Loneliness of the poet. Ibid. p. 467-85.
- 24. Lubin A J. Loneliness, creativity and Vincent van Gogh. Ibid. p. 506-36.
- 25. Veith I. Hermits and recluses: healing aspects of voluntary withdrawal from society. Ibid. p. 537-46.
- 26. Merton T. The silent life. New York: Farrar, Straus & Giroux, 1957. p. 38.
- Thoreau H D. Walden. (Harding W, ed.) The selected works of Thoreau. Boston: Houghton Mifflin, 1975. p. 243-465.
- 28. Suedfeld P. Aloneness as a healing experience. (Peplau L A & Perlman D, eds.) Loneliness: a sourcebook of current theory, research and therapy. New York: Wiley, 1982, p. 54-67.
- sourcebook of current theory, research and therapy. New York: Wiley, 1982. p. 54-67.
 29. Garfield E. Meditation, learning, and creativity. Part 2. Can meditation increase learning power and creativity? Current Contents (30):3-10, 29 July 1985.
- Nalimov V V, Realms of the unconscious: the enchanted frontier. Philadelphia: ISI Press, 1982, p. 130.
- 31. Fromm-Reichmann F. Loneliness. Psychiatry 22:1-15, 1959.
- 32. Wood M. Paths of loneliness. New York: Columbia University Press, 1953. 237 p.
- Russell D, Peplau L A & Ferguson M L. Developing a measure of loneliness. J. Personal. Assess. 42:290-4, 1978.
- Russell D, Peplau L A & Cutrona C E. The revised UCLA loneliness scale: concurrent and discriminant validity evidence. J. Personal. Soc. Psychol. 39:472-80, 1980.
- Peplau L A & Perlman D, eds. Loneliness: a sourcebook of current theory, research and therapy. New York: Wiley, 1982, 430 p.